Heritage collection

Finding Aid - Heritage Collection Test (CERN-OBJ)

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Summary information

Repository: Heritage collection

Title: Heritage Collection Test

Reference code: CERN-OBJ

Physical description: Collection of 362 objects

Notes

Restrictions on access

Public

Other notes

- **Publication status**: Published

Series descriptions

<table>
<tr><th>Reference code</th><th>Title</th><th>Dates</th><th>Physical description</th></tr>
<tr><td rowspan="2">CERN-OBJ-
CERN-OBJ-
DE-001 43830
OBJOBJ 0000104</td><td>Item - UA1 prototype detector</td><td>1980</td><td>Object</td></tr>
<tr><td colspan="3">Creator:
Jean Collombet
Note [General] :
Needs some repairs
Scope and content:
Prototype of UA1 central detector inside a plexi tube. The UA1 experiment ran at CERN's Super Proton Synchrotron and made the Nobel Prize winning discovery of W and Z particles in 1983. The UA1 central detector was crucial to understanding the complex topology of proton-antiproton events. It played a most important role in identifying a handful of Ws and Zs among billions of collisions. The detector was essentially a wire chamber - a 6-chamber cylindrical assembly 5.8 m long and 2.3 m in diameter, the largest imaging drift chamber of its day. It recorded the tracks of charged particles curving in a 0.7 Tesla magnetic field, measuring their momentum, the sign of their electric charge and their rate of energy loss (dE/dx). Atoms in the argon-ethane gas mixture filling the chambers were ionised by the passage of charged particles. The electrons which were released drifted along an electric field shaped by field wires and were collected on sense wires. The geometrical arrangement of the 17000 field wires and 6125 sense wires allowed a spectacular 3-D interactive display of reconstructed physics events to be produced.
Restrictions on access:</td></tr>
</table>

	Public		
CERN-OBJ- CERN-OBJ- AC-008 43832 OBJOBJ 0000106	**Item - LHC prototype beam tubes**	1995	Object
	Creator: M. eysselein *Note [General]* : A <2> pages publication from CERN for general public *Scope and content*: Slice of the Large Hadron Collider (LHC) prototype beam tubes in dipole magnet The LHC is the world’s largest and most powerful particle accelerator that accelerates and collides two beams of protons or ions to near the speed of light in opposite directions. It first started up in 2008, and is the latest addition to CERN’s accelerator complex (2025). The LHC consists of a 27-km ring of superconducting magnets with a number of accelerating structures to boost the energy of the particles along the way. Thousands of magnets of different varieties and sizes are used to direct the beams around the accelerator. The high bending and accelerating fields needed can only be reached using superconductor magnets at very low temperature (#271.3°C). There are 1232 dipole magnets like this prototype in the LHC, used to guide the particles around the 27 km ring. Dipole magnets must have an extremely uniform field, which means the current flowing in the coils that produce the magnetic field has to be very precisely controlled. Nowhere before has such precision been achieved at such high currents. The temperature is measured to five thousandths of a degree, the current to one part in a million. The current creating the magnetic field pass through superconducting wires at up to 12 500 amps, about 30 000 times the current flowing in a 100 W light bulb. Since the LHC accelerate two particle beams moving in opposite directions, it is really two accelerators in one. To keep the machine as compact and economical as possible, two dipole magnets are built into a single housing. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- AC-009 43833 OBJOBJ 0000107	**Item - LEP tunnel monorail**	1985	Object
	Scope and content: A monorail from CERN's Large Electron Positron collider (LEP, for short). It ran around the 27km tunnel, transporting equipment and personnel. With its 27-kilometre circumference, LEP was the largest electron-positron accelerator ever built and ran from 1989 to 2000. During 11 years of research, LEP's experiments provided a detailed study of the electroweak interaction. Measurements performed at LEP also proved that there are three – and only three – generations of particles of matter. LEP was closed down on 2 November 2000 to make way for the construction of the Large Hadron Collider in the same tunnel. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-002 43834 OBJOBJ 0000108	**Item - Gargamelle flash tube**	1970	Object
	Scope and content:		

	Flash tube used in Gargamelle. Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. It was designed principally for the detection at CERN of the elusive particles called neutrinos.Gargamelle is on display at CERN in the Microcosm garden. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-003 43835 OBJOBJ 0000109	**Item - lead glass brick** Object *Creator*: Maria Fidecaro *Note [General]* : Many of these lead glass bricks are available for donation to museums. *Scope and content*: When you look through the glass at a picture behind, the picture appears raised up because light is slowed down in the dense glass. It is this density (4.06 gcm-3) that makes lead glass attractive to physicists. The refractive index of the glass is 1.708 at 400nm (violet light), meaning that light travels in the glass at about 58% its normal speed. At CERN, the OPAL detector uses some 12000 blocks of glass like this to measure particle energies. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-004 43836 OBJOBJ 0000110	**Item - wire chamber** Object *Scope and content*: Was used in ISR (Intersecting Storage Ring) split field magnet experiment. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-005 43837 OBJOBJ 0000111	**Item - Bubble chamber film** 1960-1970 Object *Scope and content*: Boxes of bubble chamber film showing photographs of particle collisions. The particle tracks were then analysed on scanning tables (see object CERN-OBJ-DE-029). We have a selection of bubble chamber film available for loan, including some from the Big European Bubble Chamber (BEBC). *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-	**Item - lens** Object

DE-006 43838 OBJOBJ 0000112	*Creator*: Malcom Dykes *Scope and content*: RCVD lens n°4 *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-007 43839 OBJOBJ 0000113	**Item - light guide** Object *Note [General]* : Some small light guides are available to give. Please, contact us for further information. *Scope and content*: A full box of small light guides A full box of small light guides.Light guides like this are used to carry signals to the electronics for recording. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-008 43840 OBJOBJ 0000114	**Item - light guide** Object *Note [General]* : Some light guides are available to give. Please, contact us for further information. *Scope and content*: <2> full boxes of light guides. Light guides like this are used to carry signals to the electronics for recording. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-009 43841 OBJOBJ 0000115	**Item - micro strip gas chamber** 1998 Object *Note [General]* : broken *Scope and content*: About 16 000 Micro Strip Gas Chambers like this one will be used in the CMS tracking detector. They will measure the tracks of charged particles to a hundredth of a millimetre precision in the region near the collision point where the density of particles is very high. Each chamber is filled with a gas mixture of argon and dimethyl ether. Charged particles passing through ionise the gas, knocking out electrons which are collected on the aluminium strips visible under the microscope. Such detectors are being used in radiography. They give higher resolution imaging and reduce the required dose of radiation. *Restrictions on access*: Public

Reference code	Title	Date	Level
CERN-OBJ-CERN-OBJ-DE-010 43842 OBJOBJ 0000116	**Item - NA48 prototype calorimeter**	1990	Object

Scope and content:

This is a calorimeter, a detector which measures the energy of particles. When in use, it is filled with liquid krypton at -152°C. Electrons and photons passing through interact with the krypton, creating a shower of charged particles which are collected on the copper ribbons. The ribbons are aligned to an accuracy of a tenth of a millimetre. The folding at each end allows them to be kept absolutely flat. Each shower of particles also creates a signal in scintillating material embedded in the support disks. These flashes of light are transmitted to electronics by the optical fibres along the side of the detector. They give the time at which the interaction occurred. The photo shows the calorimeter at NA48, a CERN experiment which is trying to understand the lack of anti-matter in the Universe today.

Restrictions on access:

Public

Reference code	Title	Date	Level
CERN-OBJ-CERN-OBJ-DE-011 43843 OBJOBJ 0000117	**Item - bubble chamber lens**		Object

Note [General] :

<2> technical papers The dimensions include the support.

Scope and content:

Before the days of electronic detectors, visual techniques were used to detect particles, using detectors such as spark chambers and bubble chambers. This plexiglass lens was used to focus the image of tracks so they could be photographed.

Restrictions on access:

Public

Reference code	Title	Date	Level
CERN-OBJ-CERN-OBJ-IT-001 43844 OBJOBJ 0000118	**Item - part of an IBM computer**	1985	Object

Scope and content:

Part of the IBM computer that was used for physics simulations in preparation for experiments at LEP. When installed in 1985, it was considered to be very powerful. Nowadays, a PC can outperform it by a factor of ten.

Restrictions on access:

Public

Reference code	Title	Date	Level
CERN-OBJ-CERN-OBJ-IM-001 43845 OBJOBJ 0000119	**Item - gaussmetre**		Object

Scope and content:

Empire scientific corporation. U.S.A. Série 3432

Restrictions on access:

Public

Reference code	Title	Date	Level
CERN-OBJ-CERN-OBJ-	**Item - potentiometre**		Object

IM-002 43846 OBJOBJ 0000121	*Scope and content*: AOIP Paris. Type P12 *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- IM-003 43847 OBJOBJ 0000122	**Item - DC voltmeter** *Scope and content*: Hewlett Packard. 419A *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- AC-001 43848 OBJOBJ 0000123	**Item - simulation of synchro-cyclotron oscillator** *Note [General]* : Article / SC technical notebook n*3 *Scope and content*: The SC (synchro-cyclotron) was the first accelerator built at CERN. It operated from August 1957 until it was closed down at the end of 1990. *Restrictions on access*: Public	1957	Object
CERN-OBJ- CERN-OBJ- IM-004 43849 OBJOBJ 0000124	**Item - Power amplifier** *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- IM-005 43850 OBJOBJ 0000125	**Item - scaler** *Scope and content*: Old. Made at CERN. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- IM-006 43851 OBJOBJ 0000126	**Item - dosimeter** *Note [General]* : users guide, technical description. In a wooden box. *Scope and content*:		Object

	Farmer sub-standard X-ray dosemeter Mk2. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-002 43852 OBJOBJ 0000127	**Item - central region of the SC ion source** *Note [General]* : Technical notebook n*3: "Synchro-cyclotron of 600 Mev" / "Synchro-cyclotron Machine Division"(short text) *Scope and content*: central region of the ion source for the synchro-cyclotron *Restrictions on access*: Public	1970	Object
CERN-OBJ-CERN-OBJ-AC-003 43853 OBJOBJ 0000128	**Item - PS target support** *Note [General]* : <2> pieces.Mesures are of the largest one. *Scope and content*: Target support for the proton synchrotron. The Proton Synchrotron (PS) is the oldest and most versatile of CERN's accelerators. The PS was commissioned in 1959 and has been running continuously ever since. With a diameter of 200 metres and reaching a energy of 28 mev, it was for a while the most powerful accelerator in the world. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-004 43854 OBJOBJ 0000129	**Item - drift tube for linear accelerator** *Creator*: Resegotti *Scope and content*: A drift tube from the Linac 1. This was the first tank of the linear accelerator Linac1, the injection system for the Proton Synchrotron, It ran for 34 years (1958 - 1992). Protons entered at the far end and were accelerated between the copper drift tubes by an oscillating electromagnetic field. The field flipped 200 million times a second (200 MHz) so the protons spent 5 nanoseconds crossing a drift tube and a gap. Moving down the tank, the tubes and gaps had to get longer as the protons gained speed. The tank accelerated protons from 500 KeV to 10 MeV. Linac1 was also used to accelerate deutrons and alpha particles for the Intersecting Storage Rings and oxygen and sulpher ions for the Super Proton Synchrotron heavy ion programme. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-	**Item - PS proton source**	1959	Object

AC-005 43855 OBJOBJ 0000130	*Note [General]* : diagram / "Synchrotron a protons" (extrait du rapport annuel1957 du CERN) The object was part of CERN 40th anniversary exhibition. *Scope and content*: First proton source used at CERN's Proton Synchrotron (PS) which started operation in 1959. The PS was CERN’s first synchrotron. Activated in 1959, it was initially CERN's flagship accelerator, but when the laboratory built new accelerators in the 1970s, the PS’s principal role became to supply particles to the new machines. In the course of its history, it has juggled many different kinds of particles, feeding them directly to experiments or to more powerful accelerators. It is CERN's oldest accelerator still functioning today (2025). It is part of the accelerator chain that supplies proton beams to the Large Hadron Collider. With a circumference of 628 metres, the PS has 277 conventional (room-temperature) electromagnets, including 100 dipoles to bend the beams round the ring. The accelerator operates at up to 26 GeV. In addition to protons, it has accelerated alpha particles (helium nuclei), oxygen, sulphur, argon, xenon and lead nuclei, electrons, positrons and antiprotons. The source is a Thonemann type. In order to extract and accelerate the protons at high energy, a high frequency electrical field is used (140Mhz). The field is transmitted by a coil around a discharge tube in order to maintain the gas hydrogen in a ionised state. An electrical field pulse, in the order of 15kV, is then applied via an impulse transformer between anode and cathode of the discharge tube. The electrons and protons of the plasma formed in the ionised gas in the tube, are then separated. Currents in the order of 200mA during 100 microseconds have been obtained with this type of source. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- CE-001 43856 OBJOBJ 0000131	**Item - boxe of resistors** Object *Scope and content*: <2> boxes of resistors. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- CE-002 43857 OBJOBJ 0000132	**Item - attenuator** Object *Scope and content*: Rhodes Schwarz variable attenuator.Controls the strength of the current produced. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- CE-003 43858 OBJOBJ 0000133	**Item - photomultiplier tubes** Object *Scope and content*: <10>photomultiplier tubes. A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into

	electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public	
CERN-OBJ-CERN-OBJ-AC-006 43864 OBJOBJ 0000139	**Item - accelerating cavity** *Scope and content*: On the inside of the cavity there is a layer of niobium. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-013 43865 OBJOBJ 0000140	**Item - OPAL model** *Scope and content*: Engineering model used for the construction of the OPAL detector at the LEP accelerator.Scale=1/10 *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-014 43869 OBJOBJ 0000144	**Item - light guide** *Note [General]* : Mesures include holder. *Scope and content*: In detectors, light guides like this one are used to carry signals to the electronics for recording. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-015 43870 OBJOBJ 0000145	**Item - Bubble chamber film** *Scope and content*: 3 bubble chamber film rolls from the 2m bubble chamber. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-016 43871 OBJOBJ 0000146	**Item - UA2 central calorimeter** *Scope and content*:	Object

	The UA2 central calorimeter measured the energy of individual particles created in proton-antiproton collisions. Accurate calibration allowed the W and Z masses to be measured with a precision of about 1%. The calorimeter had 24 slices like this one, each weighing 4 tons. The slices were arranged like orange segments around the collision point. Incoming particles produced showers of secondary particles in the layers of heavy material. These showers passed through the layers of plastic scintillator, generating light which was taken by light guides (green) to the data collection electronics. The amount of light was proportional to the energy of the original particle. The inner 23 cm of lead and plastic sandwiches measured electrons and photons; the outer 80 cm of iron and plastic sandwiches measured strongly interacting hadrons. The detector was calibrated by injecting light through optical fibres or by placing a radioactive source in the tube on the bottom edge. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-007 43872 OBJOBJ 0000147	**Item - LEP tunnel** Object *Note [General]* : Model built with SIMA structure. Lighting included. *Scope and content*: Model of the LEP tunnel as it is in the 1990's. LEP(Large Electron Positron collider) was the world biggest accelerator. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-004 43873 OBJOBJ 0000148	**Item - capacitor** Object *Scope and content*: 100KV capacitor *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-017 43874 OBJOBJ 0000149	**Item - Wire chamber** Object *Scope and content*: Wire chamber *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IM-007 43877 OBJOBJ 0000152	**Item - tracer of coordonates** Object *Note [General]* : In a wooden box. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-AC-010 43878 OBJOBJ 0000153	**Item - Collision region of the ISR**	1970	Object
	Note [General] : <2> short texts about the ISR. *Scope and content*: This is a collision region from the world#s first proton collider, the Intersecting Storage Rings. The ISR was used at CERN from 1971-84 to study proton-proton collisions at the highest energy then available (60GeV). When operational, ISR collision regions were surrounded by detectors as shown in the photo. In 1972, the surprising discovery of fragments flying out sideways from head-on proton-proton collisions was the first evidence of quark-quark scattering inside the colliding protons . This was similar to Rutherford#s observation in 1911 of alpha particles scattering off the tiny nucleus inside atoms of gold. The ISR beamtubes had to be as empty as outer space, a vacuum 100 000 times better than other CERN machines at the time. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-011 43879 OBJOBJ 0000154	**Item - Slice of a LEP bending magnet**	1989	Object
	Scope and content: This is a slice of a Large Electron Positron collider (LEP, for short) dipole bending magnet, made as a concrete and iron sandwich The bending field needed in LEP is small (about 1000 Gauss), equivalent to two of the magnets people stick on fridge doors. Because it is very difficult to keep a low field steady, a high field was used in iron plates embedded in concrete. A CERN breakthrough in magnet design, LEP dipoles can be tuned easily and are cheaper than conventional magnets. With its 27-kilometre circumference, LEP was the largest electron-positron accelerator ever built and ran from 1989 to 2000 at CERN. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-012 43880 OBJOBJ 0000155	**Item - section of an accelerating cavity from LEP**		Object
	Note [General] : The dimension includes the support structure. *Scope and content*: This is a section of an accelerating cavity from LEP, cut in half to show the layer of niobium on the inside. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. These challenging requirements pushed European industry to new achievements. 256 of these cavities are now used in LEP to double the energy of the particle beams. *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-DE-018 43881 OBJOBJ 0000156	**Item - piston of BEBC**	1973	Object
	Scope and content: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-008 43882 OBJOBJ 0000157	**Item - graphic recorder**		Object
	Note [General] : Comes in a wooden box. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-003 43883 OBJOBJ 0000158	**Item - GNT 4604 Punching Machine**		Object
	Note [General] : instruction manual *Scope and content*: Mostly used with scanning tables to record data coded on 6 holes. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-013 43884 OBJOBJ 0000159	**Item - first tank of Linac 1**		Object
	Scope and content: This was the first tank of the linear accelerator Linac1, the injection system for the Proton Synchrotron, It ran for 34 years (1958 - 1992). Protons entered at the far end and were accelerated between the copper drift tubes by an oscillating electromagnetic field. The field flipped 200 million times a second (200 MHz) so the protons spent 5 nanoseconds crossing a drift tube and a gap. Moving down the tank, the tubes and gaps had to get longer as the protons gained speed. The tank accelerated protons from 500 KeV to 10 MeV. Linac1 was also used to accelerate deutrons and alpha particles for the Intersecting Storage Rings and oxygen and sulpher ions for the Super Proton Synchrotron heavy ion programme. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-015 43886 OBJOBJ 0000161	**Item - first cyclotron model**	1930	Object
	Note [General] :		

	"Lawrence and his laboratory:Nuclear science at Berkeley 1931-1961" *Scope and content*: The first ever circular particle accelerator, a cyclotron, was just a few centimetres in diameter. Invented in 1930 by Ernest Lawrence, it was the fore-runner of today's huge machines. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-016 43887 OBJOBJ 0000162	**Item - slice of LEP beamtube with getter strip** *Scope and content*: A section of the LEP beam pipe. This is the chamber in which LEP's counter-rotating electron and positron beams travel. It is made of lead-clad aluminium. The beams circulate in the oval cross-section part of the chamber. In the rectangular cross-section part, LEP's innovative getter-strip vacuum pump is installed. After heating to purify the surface of the getter, the strip acts like molecular sticky tape, trapping any stray molecules left behind after the accelerator's traditional vacuum pumps have done their job. *Restrictions on access*: Public	1989	Object
CERN-OBJ-CERN-OBJ-AC-017 43888 OBJOBJ 0000163	**Item - Antiproton Focusing Horn** *Note [General]* : figure *Scope and content*: Was used for the AA (antiproton accumulator). *Restrictions on access*: Public	1980	Object
CERN-OBJ-CERN-OBJ-AC-018 43889 OBJOBJ 0000164	**Item - Cockcroft-Walton high voltage generator** *Scope and content*: Cockcroft-Walton generator (or voltage doubler)(600kV) built by Philips and used in the Linac experimental area of the proton synclotron south hall (1964).Served as high voltage supply for the pre-injector of the 3Mev experimental Linac. *Restrictions on access*: Public	1964	Object
CERN-OBJ-CERN-OBJ-AC-019 43890 OBJOBJ 0000165	**Item - AA quadrupole magnet** *Scope and content*: Focusing magnet used for the AA (antiproton accumulator).Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for	1980	Object

	injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 - three hundred thousand million - antiprotons. About focusing magnets (quadrupoles): Quadrupole magnets are needed to focus the particle beams and squeeze them so that more particles collide when the beams cross. Particle beams are stored for about 10 hours in the LHC. During this time, the particles make four hundred million revolutions around the machine, travelling a distance equivalent to the diameter of the solar system. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-020 43891 OBJOBJ 0000166	**Item - antiproton target** *Note [General]* : Target and focusing horn fixed onto the same holder. *Scope and content*: Antiproton target used for the AA (antiproton accumulator). Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 - three hundred thousand million - antiprotons. *Restrictions on access*: Public	1980	Object
CERN-OBJ-CERN-OBJ-AC-021 43892 OBJOBJ 0000167	**Item - Antiproton focusing horn** *Creator*: Remo Maccaferri *Note [General]* : Focusing horn and antiproton target fixed onto the same holder. *Scope and content*: This focusing horn was developed in 1992 by Remo Maccaferri, Jean Claude Schnuriger and Lubrano di Scampamorte and is still operating in the AD complex at CERN (as of 2017). This device could pulse at 400 KA (160 KA for the previous version). This enabled an antiproton collection ten times better than the old one. Firstly, protons were accelerated to an energy of 26 GeV/c and ejected onto a metal target. From the spray of emerging particles, the magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, ten antiprotons were captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 - three hundred thousand million - antiprotons. Originally magnetic focusing horns were developed by Simon van der Meer - see for example object AC-022 in this database. *Restrictions on access*: Public	1992	Object
CERN-OBJ-CERN-OBJ-DE-019 43893 OBJOBJ 0000168	**Item - BEBC** *Scope and content*:	1973	Object

	The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-020 43894 OBJOBJ 0000169	**Item - Gargamelle** 1971 Object *Scope and content*: Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. It was designed principally for the detection at CERN of the elusive particles called neutrinos.In 1973, André Lagarrigue and his colleagues found evidence for neutral currents in Gargamelle bubble chamber pictures. Gargamelle is on display at CERN in the Microcosm garden. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-021 43895 OBJOBJ 0000170	**Item - bubble chamber lens** Object *Scope and content*: Lens from the RCBC (rapid cycling bubble chamber). Quantity: 2 lenses *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-022 43896 OBJOBJ 0000171	**Item - model of CERN second bubble chamber** 1959 Object *Scope and content*: 30cm diameter hydrogen bubble chamber for the SC (synchro-cyclotron) *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-023 43897 OBJOBJ 0000172	**Item - film holder** Object *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-024 43898 OBJOBJ 0000173	**Item - chamber** Object *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-	**Item - Gargamelle flash control system** Object

DE-025 43899 OBJOBJ 0000174	*Scope and content*: Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. It was designed principally for the detection at CERN of the elusive particles called neutrinos. Gargamelle is on display at CERN in the Microcosm garden. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-026 43900 OBJOBJ 0000175	**Item - Charpak hemispherical wire chamber** *Scope and content*: <3> pieces. Mesures are of the largest one. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public	1970	Object
CERN-OBJ- CERN-OBJ- IM-009 43901 OBJOBJ 0000176	**Item - oscilloscope** *Scope and content*: oldest CERN oscilloscope. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- IM-010 43902 OBJOBJ 0000177	**Item - voltmeter** *Scope and content*: Volts and millivolts. *Restrictions on access*: Public	1955	Object
CERN-OBJ- CERN-OBJ- IM-011 43903 OBJOBJ 0000178	**Item - voltmeter** *Scope and content*: Volts only. *Restrictions on access*: Public	1955	Object

CERN-OBJ-CERN-OBJ-IM-012 43904 OBJOBJ 0000179	**Item - fluxmeter** *Scope and content*: Used to mesure magnetic fields. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IM-013 43905 OBJOBJ 0000180	**Item - ammeter** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IM-014 43906 OBJOBJ 0000181	**Item - fluxmeter** *Scope and content*: Used to mesure the magnetic field. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IM-015 43907 OBJOBJ 0000182	**Item - multimetre** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IM-016 43908 OBJOBJ 0000183	**Item - BEBC hydrolic apparatus** *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IM-017 43909 OBJOBJ 0000184	**Item - power signal generator** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-	**Item - thyristor**	Object

CE-005 43910 OBJOBJ 0000185	*Scope and content*: Siemens. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- CE-006 43911 OBJOBJ 0000186	**Item - FERMI multi-chip module** Object *Scope and content*: This FERMI multi-chip module contains five million transistors. 25 000 of these modules will handle the flood of information through parts of the ATLAS and CMS detectors at the LHC. To select interesting events for recording, crucial decisions are taken before the data leaves the detector. FERMI modules are being developed at CERN in partnership with European industry. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- CE-007 43912 OBJOBJ 0000187	**Item - raw of small thyristors** Object *Scope and content*: Johnson 124-0111-001 *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- CE-008 43913 OBJOBJ 0000188	**Item - variable resistor** Object *Scope and content*: <3> variable resistors. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- CE-009 43914 OBJOBJ 0000189	**Item - flash tube** Object *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- CE-010 43915 OBJOBJ 0000190	**Item - resistor** Object *Scope and content*: Rhodes and Schwarz type RGN. *Restrictions on access*:

	Public
CERN-OBJ-CERN-OBJ-CE-011 43916 OBJOBJ 0000191	**Item - photomultiplier tube** Object *Scope and content*: Philips. 150AVP. A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-012 43917 OBJOBJ 0000192	**Item - photomultiplier tube** Object *Scope and content*: <2> photomultiplier tubes. A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-013 43918 OBJOBJ 0000193	**Item - photomultiplier tube** Object *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-027 43919 OBJOBJ 0000194	**Item - <2> rolls of film with results from BEBC** Object *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*:

	Public		
CERN-OBJ-CERN-OBJ-IM-018 43920 OBJOBJ 0000195	**Item - BEBC control system**		Object
	Scope and content: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-019 43921 OBJOBJ 0000196	**Item - scanning table parts**		Object
	Note [General] : Mesures are of te box containing the 5 parts. Weight is of the 5 parts together. *Scope and content*: Includes notably an ERASME system for displacing the image and a mirror. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-020 43922 OBJOBJ 0000197	**Item - fluxmeter**		Object
	Scope and content: Model F-8A. Used to mesure magnetic fields. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-028 43923 OBJOBJ 0000198	**Item - PS wire chamber**	1970	Object
	Note [General] : Light and display box included. *Scope and content*: A wire chamber used at CERN's Proton Synchrotron accelerator in the 1970s. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-	**Item - Scanning table**	1960	Object

DE-029 43924 OBJOBJ 0000199			
	Scope and content: Before the invention of wire chambers, particles tracks were analysed on scanning tables like this one. Today, the process is electronic and much faster. Bubble chamber film - currently available - (links can be found below) was used for this analysis of the particle tracks. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- AC-022 43925 OBJOBJ 0000200	**Item - magnetic horn**		Object
	Scope and content: Neutrinos and antineutrinos are ideal for probing the weak force because it is effectively the only force they feel. How were they made? Protons fired into a metal target produce a tangle of secondary particles. A magnetic horn like this one, invented by Simon Van der Meer, selected pions and focused them into a sharp beam. Pions decay into muons and neutrinos or antineutrinos. The muons were stopped in a wall of 3000 tons of iron and 1000 tons of concrete, leaving the neutrinos or antineutrinos to reach the Gargamelle bubble chamber. A simple change of magnetic field direction on the horn flipped between focusing positively- or negatively-charged pion beams, and so between neutrinos and antineutrinos. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- CE-014 43926 OBJOBJ 0000201	**Item - electronic tube**		Object
	Scope and content: In copper. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- IM-021 43927 OBJOBJ 0000203	**Item - PS proton beam electronic counter**	1980	Object
	Scope and content: PS= proton synchrotron. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-030 43928 OBJOBJ 0000204	**Item - optics from the LSD**	1968	Object
	Scope and content: LSD= spiral digital reader *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-DE-031 43930 OBJOBJ 0000206	**Item - bubble chamber lens**		Object
	Creator: Maria Fidecaro *Note [General]* : <2> technical papers The support is included in the dimensions. *Scope and content*: Was used in a PS experiment. Before the days of electronic detectors, visual techniques were used to detect particles, using detectors such as spark chambers and bubble chambers. This plexiglass lens was used to focus the image of tracks so they could be photographed. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-032 43931 OBJOBJ 0000207	**Item - CERN first bubble chamber**	1957	Object
	Scope and content: The 10cm diameter chamber made by Charles Peyrou was the first liquid hydrogen bubble chamber built at CERN. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-033 43932 OBJOBJ 0000208	**Item - Gargamelle optical tube**	1970	Object
	Scope and content: Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. The experiment ran at CERN from 1970 - 1976 and in 1973 found the first experimental evidence of the particles responsible for transmitting the weak force. The weak force, one of the 4 fundamental interactions at work in the universe, has long been the subject of research at CERN. The force is responsible for radioactivity and is the reason why the sun shines. Gargamelle observed what is known as neutral currents, the process of a neutrino and electron transforming into a muon and a neutrino by exchanging an electrically neutral force carrier. The interaction was triggered by a beam of neutrinos and recorded by photographing the trail of bubbles left behind in the freon that filled the experiment's main chamber. Gargamelle has been conserved and is now displayed in the Microcosm garden. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-023 43934 OBJOBJ 0000210	**Item - video beam observation panel from the ISR**	1970	Object
	Scope and content: The ISR (intersecting strorage rings) was used at CERN from 1971 to 1984 to study proton-proton collisions (see AC-010) *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-AC-024 43935 OBJOBJ 0000211	**Item - collision zone of an ISR** *Scope and content*: This is a collision region from the world#s first proton collider, the Intersecting Storage Rings. The ISR was used at CERN from 1971-84 to study proton-proton collisions at the highest energy then available (60GeV). When operational, ISR collision regions were surrounded by detectors as shown in the photo. In 1972, the surprising discovery of fragments flying out sideways from head-on proton-proton collisions was the first evidence of quark-quark scattering inside the colliding protons . This was similar to Rutherford#s observation in 1911 of alpha particles scattering off the tiny nucleus inside atoms of gold. The ISR beamtubes had to be as empty as outer space, a vacuum 100 000 times better than other CERN machines at the time. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-025 43936 OBJOBJ 0000212	**Item - SC tuning fork** *Scope and content*: The tuning fork used to modulate the radiofrequency system of the synchro cyclotron (SC) from 1957 to 1973. This piece is an unused spare part. The SC was the 1st accelerator built at CERN. It operated from August 1957 until it was closed down at the end of 1990. In the SC the magnetic field did not change with time, and the particles were accelerated in successive pulses by a radiofrequency voltage of some 20kV which varied in frequency as they spiraled outwards towards the extraction radius. The frequency varied from 30MHz to about 17Mz in each pulse. The tuning fork vibrated at 55MHz in vacuum in an enclosure which formed a variable capacitor in the tuning circuit of the RF system, allowing the RF to vary over the appropriate range to accelerate protons from the centre of the macine up to 600Mev at extraction radius. In operation the tips of the tuning fork blade had an amplitude of movement of over 1 cm. The SC accelerator underwent extensive improvements from 1973 to 1975, including the installation of a rotating condenser instead of the tuning fork as the modulating element of the radiofrequency system (see object AC-027). *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-026 43937 OBJOBJ 0000213	**Item - LINAC 2 prototype** *Scope and content*: Prototype of Linac 2, a Linear proton accelerator used in the PS (proton synchrotron accelerator injection system). A Linearaccelerator is a particle accelerator which accelerates charged particles - electrons, protons or heavy ions - in a straight line. Charged particles enter at one end and are accelerated towards the first drift tube by an electric field. Once inside the drift tube, they are shielded from the field and drift through at a constant velocity. When they arrive at the next gap, the field accelerates them again until they reach the next drift tube. This continues, with the particles picking up more and more energy in each gap, until they shoot out of the accelerator at the other end. Linac 2,also called Alvarez Proton Linac, was first run in 1978 and is still running today. It provides pulsed (1 Hz) beams of up to 170 mA at 50 MeV with pulse lengths varying between 20 and 150 ms depending on the number of protons required. *Restrictions on access*: Public	Object

CERN-OBJ-CERN-OBJ-DE-034 43938 OBJOBJ 0000214	**Item - spark chamber** *Scope and content*: for parts *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-015 43940 OBJOBJ 0000216	**Item - photomultiplier tube** *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-016 43941 OBJOBJ 0000217	**Item - photomultiplier tube** *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-017 43942 OBJOBJ 0000218	**Item - photomultiplier tube** *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-	**Item - IBM data storage disk**	Object

IT-002 43943 OBJOBJ 0000219	*Creator*: Dave Underhill *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- IT-004 43945 OBJOBJ 0000221	**Item - Computer** Object *Scope and content*: Special terminals for the first computer ever used by CERN library. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- IT-005 43948 OBJOBJ 0000224	**Item - ordinateur** Object *Scope and content*: One of the first PC used at CERN.4 pieces. Dimensions are of the largest piece. Weight is of the 4 pieces together. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-035 43949 OBJOBJ 0000225	**Item - Breskin wire chamber** 1970 Object *Creator*: Bouclier *Note [General]* : <!--HTML--><U>Previous exhibition venues:</U> - Center for Art and Media ZKM - Karlsruhe, Germany (4 May - 1 Sept. 2002) *Scope and content*: Prototype made by Breskin.Has never been used. Breskin was a ph.d student working under Charpak supervision. The dimensions include the support. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-036 43950 OBJOBJ 0000226	**Item - scintillator** Object *Scope and content*: <2> scintillators with their support. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-IT-006 43951 OBJOBJ 0000227	**Item - emulator**		Object
	Note [General] : <2> pieces. Dimensions are of the largest one. *Scope and content*: Emulator 370/E used to analyse data from the UA1 detector. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-047 43952 OBJOBJ 0000228	**Item - Prototype muon chamber CMS**		Object
	Creator: Jose Lamas Valver *Scope and content*: prototype of the endcap of CMS (compact muon solenoid), a detector for the LHC. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-027 43953 OBJOBJ 0000229	**Item - rotor of the SC rotating condenser**	1974	Object
	Scope and content: The rotor of the rotating condenser was installed instead of the tuning fork as the modulating element of the radiofrequency system, when the SC accelerator underwent extensive improvements between 1973 to 1975 (see object AC-025). The SC was the first accelerator built at CERN. It operated from August 1957 until it was closed down at the end of 1990. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-037 43954 OBJOBJ 0000230	**Item - PS wire chamber**	1970	Object
	Creator: Maria Fidecaro *Scope and content*: A wire chamber used at CERN's Proton Synchrotron accelerator in the 1970s. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-DE-038 43955 OBJOBJ 0000231	**Item - PS wire chamber**	1970	Object

Creator:

Maria Fidecaro

Note [General] :

<!--HTML--><U>Previous exhibition venues</U>:
- University of Paris (October 1999)

Scope and content:

Three pieces. Wire chambers used for the beams at CERN's Proton Synchrotron accelerator in the 1970s. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle.

Restrictions on access:

Public

CERN-OBJ-CERN-OBJ-DE-039 43956 OBJOBJ 0000232	**Item - wire chamber**		Object

Note [General] :

Needs some repairing.

Scope and content:

Proportional multi-wire chamber. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. Proportional wire chambers allow a much quicker reading than the optical or magnetoscriptive readout wire chambers.

Restrictions on access:

Public

CERN-OBJ-CERN-OBJ-DE-040 43957 OBJOBJ 0000233	**Item - Wire chamber**	1967	Object

Scope and content:

Magnetoscriptive readout wire chamber.Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle.

Restrictions on access:

	Public		
CERN-OBJ-CERN-OBJ-DE-041 43958 OBJOBJ 0000234	**Item - Wire Chamber**		Object
	Scope and content: Magnetoscriptive readout wire chamber. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-042 43959 OBJOBJ 0000235	**Item - experimental instrument for wire chambers**		Object
	Creator: Maria Fidecaro *Scope and content*: Instrument used to test the wires of small chambers before closing them. The chambers were 50cm long, 0.45cm wide and 0.06cm thick. They were meant to be used in a calorimeter for a PS experiment. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-043 43960 OBJOBJ 0000236	**Item - study of a wire chamber split up into sectors**		Object
	Scope and content: This object was a prototype for a wire chamber with a cylindrical symetry. It was never used in an experiment. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-044 43961 OBJOBJ 0000237	**Item - double counter**	1970	Object
	Creator: Jean Marc Gaillard *Scope and content*: A double counter made of a scintillation counter with 8 photomultiplier tubes and a cherenkov counter. Was used to identify particles.The dimensions include the support. *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-DE-045 43962 OBJOBJ 0000238	**Item - needs to be identify** *Scope and content*: wire chamber or spark chamber? *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-046 43963 OBJOBJ 0000239	**Item - bubble chamber camera** *Scope and content*: <4> pieces.The dimensions are of the camera body. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-048 43964 OBJOBJ 0000240	**Item - wire chamber** *Note [General]* : <!--HTML--><U>Previous exhibition venues</U>: - "Science en fête", University of Paris, 18-20.10. 2000 - "Lepfest", CERN *Scope and content*: Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-028 43965 OBJOBJ 0000241	**Item - radiofrequency cavity** *Scope and content*: The pulse of a particle accelerator. 128 of these radio frequency cavities were positioned around CERN's 27-kilometre LEP ring to accelerate electrons and positrons. The acceleration was produced by microwave electric oscillations at 352 MHz. The electrons and positrons were grouped into bunches, like beads on a string, and the copper sphere at the top stored the microwave energy between the passage of individual bunches. This made for valuable energy savings as it reduced the heat generated in the cavity. *Restrictions on access*: Public	1988	Object
CERN-OBJ-CERN-OBJ-DE-049 43966 OBJOBJ 0000242	**Item - fish eye**		Object

	Note [General] : The dimensions are of the box. *Scope and content*: Camera lens for bubble chamber. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-029 43967 OBJOBJ 0000243	**Item - accelerating cavity from LEP** *Scope and content*: This is an accelerating cavity from LEP, with a layer of niobium on the inside. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. These challenging requirements pushed European industry to new achievements. 256 of these cavities are now used in LEP to double the energy of the particle beams. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-050 43968 OBJOBJ 0000245	**Item - Wire chamber** *Scope and content*: Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-051 43969 OBJOBJ 0000246	**Item - wire chamber** *Scope and content*: Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-	**Item - Vacuum Valve**	1974	Object

AC-030 43970 OBJOBJ 0000249			
	Scope and content: This valve was used in the Intersecting Storage Rings (ISR) to protect against the shock waves that would be caused if air were to enter the vacuum tube. Some of the ISR chambers were very fragile, with very thin walls - a design required by physicists on the lookout for new particles. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- AC-031 43971 OBJOBJ 0000250	**Item - Magnetic Focusing Horn**	1974	Object
	Note [General] : Focusing horn and antiproton target fixed onto the same holder. *Scope and content*: This magnetic focusing horn was used for the AA (antiproton accumulator). Its development was an important step towards using CERN's Super Proton Synchrotron as a proton - antiproton collider. This eventually led to the discovery of the W and Z particles in 1983. Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 -, three hundred thousand million - antiprotons. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-052 43973 OBJOBJ 0000252	**Item - DELPHI Silicon Tracker**		Object
	Scope and content: DELPHI was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. The silicon tracking detector was nearest to the collision point in the centre of the detector. It was used to pinpoint the collision and catch short-lived particles. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-053 43974 OBJOBJ 0000253	**Item - DELPHI Barrel Ring Imaging Cherenkov Detector**		Object
	Scope and content: DELPHI was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. This is a piece of the Barrel Ring Imaging Cherenkov detector which was used to identify particles in DELPHI.It measured the Cherenkov light emitted when particles travelled faster than the speed of light through the material of the detector. The photo shows the complete Cherenkov detector. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ-	**Item - OPAL Central Detector (Including vertex, jet and Z chambers)**		Object

DE-056 43977 OBJOBJ 0000256	*Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. OPAL's central tracking system consists of (in order of increasing radius) a silicon microvertex detector, a vertex detector, a jet chamber, and z-chambers. All the tracking detectors work by observing the ionization of atoms by charged particles passing by: when the atoms are ionized, electrons are knocked out of their atomic orbitals, and are then able to move freely in the detector. These ionization electrons are detected in the different parts of the tracking system. (This piece includes the vertex, jet and Z chambers) In the picture above, the central detector is the piece being removed to the right. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-057 43978 OBJOBJ 0000257	**Item - Array of lead-glass blocks from OPAL** Object *Scope and content*: OPAL was one of the 4 experiments at CERN's Large Electron Positron collider (LEP) which ran from 1989 - 2000. This array of 96 lead glass bricks formed part of the OPAL electromagnetic calorimeter. In total, there were 9440 lead glass counters in the OPAL electromagnetic calorimeter, made of Schott type SF57 glass and each block weighs about 25 kg and consists of 76% PbO by weight. Each block has a Hamamatsu R2238 photomultiplier glued on to it. The complete detector was in the form of a cylinder 7m long and 6m in diameter. It was used to measure the energy of electrons and photons produced in LEP electron positron collisions. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-058 43985 OBJOBJ 0000264	**Item - OPAL Various Lead Glass Blocks** Object *Scope and content*: These lead glass blocks were part of a CERN detector called OPAL (one of the four experiments at the LEP particle detector). OPAL uses some 12 000 blocks of glass like this to measure particle energies in the electromagnetic calorimeter. This detector measured the energy deposited when electrons and photons were slowed down and stopped. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-059 43986 OBJOBJ 0000265	**Item - OPAL Silicon Tungsten Luminometer** Object *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. The Silicon Tungsten Luminometer was part of OPAL's calorimeter which was used to measure the energy of particles. Most particles end their journey in calorimeters. These detectors measure the energy deposited when particles are slowed down and stopped. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-DE-060 43987 OBJOBJ 0000266	**Item - OPAL Example Segment of Silicon Tungsten Luminometer** *Note [General]* : Awaiting intervention of Dick Kellogg to open up detector and reveal insides. *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. The Silicon Tungsten Luminometer was part of OPAL's calorimeter which was used to measure the energy of particles. Most particles end their journey in calorimeters. These detectors measure the energy deposited when particles are slowed down and stopped. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-032 43988 OBJOBJ 0000268	**Item - Niobium LEP 2 accelerating cavities** *Scope and content*: An accelerating cavity from LEP. This could be cut open to show the layer of niobium on the inside. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. These challenging requirements pushed European industry to new achievements. 256 of these cavities were used in an upgrade of the LEP accelerator to double the energy of the particle beams. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-033 43989 OBJOBJ 0000269	**Item - LEP Machine** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-034 43990 OBJOBJ 0000270	**Item - LEP Machine 2 half Cells** *Note [General]* : Gone to Delphi for exhibition. (Contact person: Philippe Charpentier) *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-062 43991 OBJOBJ 0000271	**Item - OPAL Forward Calorimeter (half cylinder with lead scintillator)** *Note [General]* :	Object

	<!--HTML-->The forward detector can have its upper panel removed to show the lead - scintillator sandwich construction. <P> <U>Previous exhibition venues</U>: - Technisches Museum Wien "When Energy Becomes Matter" (May-October 2001)</P> *Scope and content*: 1 half cylinder piece is available for loan. The OPAL forward Detector Calorimeter was made in 4 half cylindrical pieces. Two full cylinders were placed round the LEP beam pipe about 3m downstream of the interaction point. The detector was used primarily to measure the luminosity of LEP (rate of interactions) and also to trigger on 2-photon events. In addition it formed an essential part of the detector coverage which OPAL needed to carry out searches for new particles such as the Higgs boson. The detector is made of scintillators sandwiched between lead sheets. The light from the scintillators passes via bars of wavelength shifter and light guides on its way to be measured by photomultipliers. There is a layer of gas filled tube chambers within the calorimeter. These provide a measure of the position of the particles interacting in the calorimeter. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-035 43992 OBJOBJ 0000272	**Item - LEP: Supra Conducting Magnet + quadrupole** — Object *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-036 43993 OBJOBJ 0000273	**Item - LEP Radio Frequency Copper Cavity** — Object *Note [General]* : <!--HTML--><BLINK>Some cavities are available to give.</BLINK> Please, contact us for further information. *Scope and content*: The pulse of a particle accelerator. 128 of these radio frequency cavities were positioned around CERN's 27-kilometre LEP ring to accelerate electrons and positrons. The acceleration was produced by microwave electric oscillations at 352 MHz. The electrons and positrons were grouped into bunches, like beads on a string, and the copper sphere at the top stored the microwave energy between the passage of individual bunches. This made for valuable energy savings as it reduced the heat generated in the cavity. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-065 43995 OBJOBJ 0000277	**Item - OPAL Jet Chamber Prototype** — 1984-86 — Object *Creator*: Alasdair Smith *Note [General]* : lighting, mobile support structure and plexi-glass cover included. (Photos: Exhibition "TESLA - Licht der Zukunft" VW-Forum, Berlin (Germany). *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. OPAL's central tracking system consists of (in order of increasing radius) a silicon microvertex detector,

	a vertex detector, a jet chamber, and z-chambers. All the tracking detectors work by observing the ionization of atoms by charged particles passing by: when the atoms are ionized, electrons are knocked out of their atomic orbitals, and are then able to move freely in the detector. These ionization electrons are detected in the dirfferent parts of the tracking system. This piece is a prototype of the jet chambers *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-066 43996 OBJOBJ 0000278	**Item - DELPHI Forward Muon Chamber**		Object
	Creator: Catherine De Clercq *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-067 43997 OBJOBJ 0000279	**Item - DELPHI Barrel Muon Chamber Module**	1989	Object
	Creator: Alan Segar *Note [General]* : This module is a special short module, used to cover the region close to the support legs of DELPHI. *Scope and content*: The module was used as part of the muon identification system on the barrel of the DELPHI detector at LEP, and was in active use from 1989 to 2000. The module consists of 7 individual muons chambers arranged in 2 layers. Chambers in the upper layer are staggered by half a chamber width with respect to the lower layer. Each individual chamber is a drift chamber consisting of an anode wire, 47 microns in diameter, and a wrapped copper delay line. Each chamber provided 3 signal for each muon passing through the chamber, from which a 3D space-point could be reconstructed. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-068 43998 OBJOBJ 0000280	**Item - CMS Tracker Model**		Object
	Creator: Antti Onnela *Scope and content*: Model of the tracking detector for the CMS experiment at the LHC. This object is a mock-up of an early design of the CMS Tracker mechanics. It is a segment of a “Wheel” to support Micro-Strip Gas Chamber (MSGC) detector modules on the outer layers and silicon-strip detector modules in the innermost layers. The particularity of that design is that modules are organised in spirals, along which power and optical cables and cooling pipes were planned to be routed. Some of such spirals are illustrated in the mock-up by the colors of the modules. With the detector development it became, however, evident that the silicon detectors would need to be operated in LHC experiments in cold temperatures, while the MSGC could stay in normal room-temperature. That split in two temperatures lead to separating those two detector types by a thermal barrier and therefore jeopardizing the idea of using common, vertical Wheels with services arranged along spirals.		

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-DE-069 43999 OBJOBJ 0000281	**Item - OPAL Muon Chamber**	1989-2000	Object
	Note [General] : - *Scope and content*: OPAL was one of the 4 experiments installed at the LEP particle accelerator from 1989 to 2000. This is a slice of the outermost layer of OPAL : the muon chambers. This outside layer detects particles which are not stopped by the previous layers. These are mostly muons. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-071 44001 OBJOBJ 0000283	**Item - Obelix Wire Chamber**	1986	Object
	Note [General] : These 2 wire chambers are spectacular. Holes can be cut to reveal the wires behind the layers of electronics. *Scope and content*: Two wire chambers made originally for the R807 Experiment at CERN's Intersecting Storage Rings. In 1986 they were used for the PS 201 experiment (Obelix Experiment) at LEAR, the Low Energy Antiproton Ring. The group of researchers from Turin, using the chambers at that time, changed the acquisition system using for the first time 8 bit (10 bit non linear) analog to digital conversion for incoming signals from the chambers. The acquisition system was controlled by 54 CPU and 80 digital signal processors. The power required for all the electronics was 40 kW. For the period, this system was one of the most powerful on-line apparatus in the world. The Obelix Experiment was closed in 1996. To find more about how a wire chamber works, see the description for object CERN-OBJ-DE-038. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-007 44002 OBJOBJ 0000284	**Item - Cisco ASM Router**	2001	Object
	Scope and content: One of the two "ASM/2-32EM" boxes installed in 1988, from "Cisco Systems Inc." - then an unknown 20-employee company in Menlo Park, California (USA). This is one of the first two Cisco boxes to appear in Switzerland, and possibly Europe. The 220v power supply was a special modification made for use at CERN. They supported IP address filtering, which seemed just what CERN needed to help protect the new Cray XMP-48 super computer from network hackers. The two ASM boxes were both routers and terminal servers. They protected a secure private Ethernet segment used by the Cray project, as well as providing secure terminal connections to that segment, including CERN's first dialback terminal service, which allowed Cray and CERN system analysts to work on the machine from home, using another Cisco feature called TACACS. (Kindly offered by B. Segal who discovered this company while at a Usenix Conference in Phoenix, Arizona in June 1987.) *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-AC-038 44003 OBJOBJ 0000285

Item - Slice of a LEP bending magnet Object

Scope and content:

This is a slice of a LEP dipole bending magnet, made as a concrete and iron sandwich. The bending field needed in LEP is small (about 1000 Gauss), equivalent to two of the magnets people stick on fridge doors. Because it is very difficult to keep a low field steady, a high field was used in iron plates embedded in concrete. A CERN breakthrough in magnet design, LEP dipoles can be tuned easily and are cheaper than conventional magnets.

Restrictions on access:

Public

CERN-OBJ-CERN-OBJ-AC-039 44005 OBJOBJ 0000287

Item - Antiproton Target 1980 Object

Note [General] :

Targets designed and made by C. Johnson and M. Frauchiger, CERN

Scope and content:

<!--HTML-->Antiproton target used for the AA (antiproton accumulator). The first type of antiproton production target used from 1980 to 1982 comprised a rod of copper 3mm diameter and 120mm long embedded in a graphite cylinder that was itself pressed into a finned aluminium container. This assembly was air-cooled and it was used in conjunction with the Van der Meer magnetic horn. In 1983 Fermilab provided us with lithium lenses to replace the horn with a view to increasing the antiproton yield by about 30%. These lenses needed a much shorter target made of heavy metal - iridium was chosen for this purpose. The 50 mm iridium rod was housed in an extension to the original finned target container so that it could be brought very close to the entrance to the lithium lens. Picture 1 shows this target assembly and Picture 2 shows it mounted together with the lithium lens. These target containers had a short lifetime due to a combination of beam heating and radiation damage. This led to the design of the water-cooled target in a titanium alloy body <A href="http://weblib.cern.ch/format/showfull?uid=519512&base=OBJOBJ&sysnb=0000166"> (see object AC-020).</A>

Restrictions on access:

Public

CERN-OBJ-CERN-OBJ-AC-040 44007 OBJOBJ 0000289

Item - Klystron 1990 Object

Scope and content:

<!--HTML-->
This klystron has been specially designed to be used as an RF source in particle accelertators. It is a five-cavity, high-gain, sealed-off klystron amplifier, able to deliver 17.5 kW of minimum average power and 35 MW minimum peak power at 2998.5 MHz. The maximum RF pulse duration available from this high-power klystron is 4.5 µsec. This klystron includes an ion pump, which ensures a continuous high vacuum.
Used in the LEP injector LP1.

Restrictions on access:

Public

CERN-OBJ-CERN-OBJ-DE-012 710588 OBJOBJ 0000120

Item - CHORUS light guide Object

Scope and content:

	Chorus light guide and a selection of fibres in wooden box. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-074 2235799	**Item - ATLAS Transition Radiation Tracker - small piece** *Scope and content*: The ATLAS transition radiation tracker is made of 300'000 straw tubes, up to 144cm long. Filled with a gas mixture and threaded with a wire, each straw is a complete mini-detector in its own right. An electric field is applied between the wire and the outside wall of the straw. As particles pass through, they collide with atoms in the gas, knocking out electrons. The avalanche of electrons is detected as an electrical signal on the wire in the centre. The tracker plays two important roles. Firstly, it makes more position measurements, giving more dots for the computers to join up to recreate the particle tracks. Also, together with the ATLAS calorimeters, it distinguishes between different types of particles depending on whether they emit radiation as they make the transition from the surrounding foil into the straws. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-AC-048 2253655	**Item - Niobium Titanium and Copper wire samples** *Scope and content*: Two wire samples, both for carrying 13'000Amperes. I sample is copper. The other is the Niobium Titanium wiring used in the LHC magnets. The high magnetic fields needed for guiding particles around the Large Hadron Collider (LHC) ring are created by passing 12’500 amps of current through coils of superconducting wiring. At very low temperatures, superconductors have no electrical resistance and therefore no power loss. The LHC is the largest superconducting installation ever built. The magnetic field must also be extremely uniform. This means the current flowing in the coils has to be very precisely controlled. Indeed, nowhere before has such precision been achieved at such high currents. Magnet coils are made of copper-clad niobium–titanium cables — each wire in the cable consists of 9’000 niobium–titanium filaments ten times finer than a hair. The cables carry up to 12’500 amps and must withstand enormous electromagnetic forces. At full field, the force on one metre of magnet is comparable to the weight of a jumbo jet. Coil winding requires great care to prevent movements as the field changes. Friction can create hot spots which “quench” the magnet and ruin its superconductivity. A quench in any of the LHC superconducting magnets would stop machine operation. 50’000 tonnes of steel sheets are used to make the magnet yokes that keep the wiring firmly in place. The yokes constitute approximately 80% of the accelerator's weight and, placed side by side, stretch over 20 km! *Restrictions on access*: Public	2009	Object
CERN-OBJ-CERN-OBJ-AC-060 2253707	**Item - Section of LHC beampipe** *Scope and content*: A short section of the LHC beampipe including beam screen. Particle beams circulate for around 10 hours in the Large Hadron Collider (LHC). During this time, the particles make four hundred million revolutions of the machine, travelling a distance equivalent to the diameter of the solar system. The beams must travel in a pipe which is emptied of air, to avoid collisions between the particles and air molecules (which are considerably bigger than protons). The beam pipes are pumped down to an air pressure similar to that on the surface of the moon. Emptying the air from the two 27 km long Large Hadron Collider beam-pipes is equivalent in volume to emptying the nave of the Notre Dame cathedral in Paris. Initially, the air pressure is reduced by pumping. Then, cold sections of the beam-pipe are further	2009	Object

	emptied using the temperature gradient across special beam-screens inside the tube where particles travel. The warm sections are emptied using a coating called a getter that works like molecular fly-paper. This vacuum technology has applications in high performance solar panels. More technical information: In the LHC, particles circulate under vacuum. The vacuum chamber can be at room temperature (for example, in the experimental areas), or at cryogenic temperature, in the superconductive magnets. This piece is located in the superconductive magnets. The outer pipe is the vacuum chamber, which is in contact with the magnets, at cryogenic temperature (1.9K). It is called the “cold bore”. The inner tube is the beam screen. Its main goal is to protect the magnets from the heat load coming from the synchrotron radiation. Indeed, when high energy protons’ trajectory is bent, photons are emitted by the beam. They are intercepted by the beam screen. The temperature of the beam screen is kept between 5 and 20K by a circulation of gaseous helium in the small pipes on both sides of the beam screen. As those surfaces are at cryogenic temperature. The residual gas present in the accelerator is sticking on the surfaces. This phenomenon called “adsorption” is used to maintain a very low pressure in the vacuum chamber of the accelerator. About materials: The cold bore is in stainless steel. The beam screen is in stainless steel with colaminated copper. Both those material have a low outgassing rates, which means that they release few molecules in the vacuum chamber. About beam and impedance: The goal of the copper, which has a good electrical conductivity, is to facilitate the circulation of the image current. The beam is composed of charged particules circulating: it is an electric current. When it is circulating, an image current is produced. It is called induction. If the image current cannot circulate properly, the beam is slowed down. About adsorption process: When the beam circulates, photons from synchrotron radiation are emitted and hit the beam screen. By doing so, they desorb molecules from the walls. The molecules are then pumped down on the outer pipe (where they cannot be reached by the photons anymore), through the small holes in the beam screen. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-079 2254084	**Item - ATLAS Liquid Argon Calorimeter 2m prototype** 1990 Object *Creator*: Claire Bouradrios *Scope and content*: This module was built and tested with beam to validate the ATLAS electromagnetic calorimeter design. One original design feature is the folding. 10 000 lead plates and electrodes are folded into an accordion shape and immersed in liquid argon. As they cross the folds, particles are slowed down by the lead. As they collide with the lead atoms, electrons and photons are ejected. There is a knock-on effect and as they continue on into the argon, a whole shower is produced. The electrodes collect up all the electrons and this signal gives a measurement of the energy of the initial particle. This 2 m long module dates back to the first detector studies for the LHC in the 1990’s. It was built by the R&D collaboration RD-3 to evaluate the performances of liquid argon calorimetry for the physics programme - the search for the Higgs boson decays into two photons, in particular. After the choice of that technology by the ATLAS collaboration, the design of its elements were reassessed in view of production and a new module was tested in the CERN beam lines, leading to the Technical Design Report in 1996. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-072 2264547	**Item - Silicon detector** Object *Scope and content*: Used in LEP experiment. It is a element of the first OPAL silicon strip vertex detector. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-DE-073 2264550	**Item - ATLAS muon detector** *Scope and content*: Muon detectors from the outer layer of the ATLAS experiment at the Large Hadron Collider. Over a million individual detectors combine to make up the outer layer of ATLAS. All of this is exclusively to track the muons, the only detectable particles to make it out so far from the collision point. How the muon's path curves in the magnetic field depends on how fast it is travelling. A fast muon curves only a very little, a slower one curves a lot. Together with the calorimeters, the muon detectors play an essential role in deciding which collisions to store and which to ignore. Certain signals from muons are a sure sign of exciting discoveries. To make sure the data from these collisions is not lost, some of the muon detectors react very quickly and trigger the electronics to record. The other detectors take a little longer, but are much more precise. Their job is to measure exactly where the muons have passed, calculating the curvature of their tracks in the magnetic field to the nearest five hundredths of a millimetre. Even these precision detectors are not exactly sluggish – they react within a millionth of a second. Such a fast response is essential when new collisions are occurring in the centre of ATLAS 40 million times every second! This muon detector is a drift tube - an aluminium tube with a wall thickness of some 1/10 mm that is filled with a special gas mixture. Inside the tube there is a wire that is tightened all over the length of the tube and fixed at the end caps. Particles (or ionizing radiation) that enter the tube ionize the gas molecules and liberate electrons. Since there is a high voltage between the wire and the tube wall, the released negatively charged electrons move towards the wire in the centre of the tube. On their way to the central wire, the moving electrons induce an electric signal that can be amplified and registered by further electronics. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-075 2264554	**Item - DELPHI prototype lead glass brick** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-076 2264617	**Item - DUMAND detector** *Creator*: dominique.bertola@cern.ch Dominique Bertola *Scope and content*: This object is one of the 256 other detectors of the DUMAND (Deep Underwater Muon And Neutrino Detection) experiment. The goal of the experiment was the construction of the first deep ocean high energy neutrino detector, to be placed at 4800 m depth in the Pacific Ocean off Keahole Point on the Big Island of Hawaii. A few years ago, a European conference with Cosmic experiments was organized at CERN as they were projects like DUMAND in Hawaii. Along with the conference, a temporary exhibition was organised as well. It was a collaboration of institutions from Germany, Japan, Switzerland and the U.S.A. CERN had borrowed equipment and objects from different institutes around the world, including this detector of the DUMAND experiment. Most of the equipment were sent back to the institutes, however this detector sphere was offered to a CERN member of the personnel. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-077 2264663	**Item - Equipment from UA1**	Object

	Scope and content: Donated by B. Chaddaz. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-078 2264664	**Item - unknown** *Scope and content*: Various pieces. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-047 2266136	**Item - LHC magnet support post** *Scope and content*: A prototype magnet support for the Large Hadron Collider (LHC). The magnet supports have to bridge a difference in temperature of 300 degrees. Electrical connections, instrumentation and the posts on which the magnets stand are the only points where heat transfer can happen through conduction. They are all carefully designed to draw off heat progressively. The posts are made of 4 mm thick glass-fibre– epoxy composite material. Each post supports 10 000 kg of magnet and leaks just 0.1 W of heat. This piece required a long development period which started in the early ’90s and continued until the end of the decade. The wires next to the support post are wires from strain gauges, which are employed to measure the stress level in the material when the support is mechanically loaded. These supports are mechanically optimized to withstand a weight of up to 100Kn (10 tons) while being as thin as possible to minimize conduction heat to magnets. This is the reason why the stress measurement was extensively done in the prototyping phase. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-AC-044 2266150	**Item - Focusing horn** *Scope and content*: This was the first magnetic horn developed by Simon Van der Meer to collect antiprotons in the AD complex. It was used for the AA (antiproton accumulator). Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV/c (protons at 26GeV/c, antiprotons at 3.6GeV/c) in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 -, three hundred thousand million - antiprotons. The development of this technology was a key step to the functioning of CERN's Super Proton Synchrotron as a proton - antiproton collider. *Restrictions on access*: Public	1980	Object
CERN-OBJ-CERN-OBJ-IT-008 2266312	**Item - 140Mb 9-track tape** *Scope and content*:	1965	Object

	With arrival of CDC 6600 at CERN in January 1965, there came the first half-inch wide 7-tracks tape units with magnetic tapes at recording densities of 200, 556 and 800 bpi (bytes per inch). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-009 2266313	**Item - 10 MB disk platter from CDC 7638**	1974	Object
	Scope and content: This magnetic disk was one of three which interfaced with various Control Data machines. This single platter came from a Control Data 7638 Disk Storage Subsystem and could contain up to 10MB - about the size of a few MP4's on your iPod. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-010 2266314	**Item - IBM 3851 Mass Storage Cartridges**	1978	Object
	Scope and content: These cartridges represent the first step in technologies to automate the reading, writing and retrieval of data. Previous to this, all data had to be retrieved, loaded and dismounted by hand. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-011 2266316	**Item - StorageTek T10000 Tape Cartridge**	1985	Object
	Scope and content: Oracle StorageTek T10000T2 cartridge has total capacity of 5 TB. It is actually manufactured by Fuji Film, uses Barium Ferrite (BaFe) particles technology data store, but is also equipped with RFID chip. There is over 1 km of tape inside of the cartridge with 3584 data tracks and it supports over 25000 load/ unload cycles. The archival life is estimated to be around 30 years and uncorrected bit error rate is 10-19. CERN however usually migrates data to newer technologies roughly every 5 years in order to keep the footprint under control. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-012 2266317	**Item - IBM 3390 Hard Disk Platter**	1991	Object
	Scope and content: The 3390 disks rotated faster than those in the previous model 3380. Faster disk rotation reduced rotational delay (ie. the time required for the correct area of the disk surface to move to the point where data could be read or written). In the 3390's initial models, the average rotational delay was reduced to 7.1 milliseconds from 8.3 milliseconds for the 3380 family. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-013 2266318	**Item - 2TB hard disk drive**		Object
	Scope and content:		

	This particular object was used up until 2012 in the Data Centre. It slots into one of the Disk Server trays. Hard disks were invented in the 1950s. They started as large disks up to 20 inches in diameter holding just a few megabytes (link is external). They were originally called "fixed disks" or "Winchesters" (a code name used for a popular IBM product). They later became known as "hard disks" to distinguish them from "floppy disks (link is external)." Hard disks have a hard platter that holds the magnetic medium, as opposed to the flexible plastic film found in tapes and floppies. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-014 2266319	**Item - Disk Storage Server**		Object
	Scope and content: This model was a disk storage server used in the Data Centre up until 2012. Each tray contains a hard disk drive (see the 5TB hard disk drive on the main disk display section - this actually fits into one of the trays). There are 16 trays in all per server. There are hundreds of these servers mounted on racks in the Data Centre, as can be seen. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-015 2266320	**Item - CERNET Interface Card**	1978	Object
	Scope and content: Homegrown networking technology pre-dating the internet. This is a CERNnet card developed and built at CERN. There was a lot of space on the card between the components, so the engineers decided to put their portraits on it. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-016 2266321	**Item - 10BASE5 Ethernet Cable & Vampire Tap**	1983	Object
	Scope and content: 10BASE5 Thick Ethernet Cable, 10Mbit/sec. In the 1980s and early 1990's, Ethernet became more popular and provided a much faster data transmission rate. This cable is one of the first ethernet cables from 1983, a thick, bulky affair. Computers were attached via "Vampire Taps" which were connectors screwed straight through the shielding of the cable. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-017 2266322	**Item - NExT server**	1989	Object
	Scope and content: The first website at CERN - and in the world - was dedicated to the World Wide Web project itself and was hosted on Berners-Lee's NeXT computer. The website described the basic features of the web; how to access other people's documents and how to set up your own server. This NeXT machine - the original web server - is still at CERN. As part of the project to restore the first website, in 2013 CERN reinstated the world's first website to its original address. *Restrictions on access*:		

	Public
CERN-OBJ-CERN-OBJ-IT-018 2266323	**Item - Brocade router** Object *Scope and content*: A modern 2.8TB/s router, the backbone of our internet connectivity. This model was in service at CERN from 2008 until 2012. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-019 2266325	**Item - Optical Fibre Bundle** Object *Scope and content*: These are sample fibre optic cables which are used for networking. Optical fibers are widely used in fiber-optic communications, where they permit transmission over longer distances and at higher bandwidths (data rates) than wire cables. Fibers are used instead of metal wires because signals travel along them with less loss and are also immune to electromagnetic interference. This is useful for somewhere like CERN where magnets with their highly powerful magnetic fields could pose a problem. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-020 2266326	**Item - CDC 6600 Magnetic Core Memory** Object *Scope and content*: A plan of magnetic core memory with 64x64 bits (4Kb) as used in a CDC 6600. The very first CDC 6600 was delivered to CERN in 1965 and was the fastest supercomputer of its time. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-021 2266327	**Item - IBM 3090 CPU chips** Object *Scope and content*: The most powerful IBM computer system of its time, the IBM 3090 high-end processor of the IBM 308X computer series incorporated one-million-bit memory chips. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-022 2266328	**Item - CPU Server** Object *Scope and content*: The CERN computer centre has hundreds of racks like these. They are over a million times more powerful than our first computer in the 1960's. This tray is a 'dual-core' server. This means it effectively has two CPUs in it (eg. two of your home computers minimised to fit into a single box). Also note the copper cooling fins, to help dissipate the heat. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-DE-080 2266338	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-081 2266342	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-082 2266343	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-083 2266344	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-085 2266346	**Item - Prototype for the ALEPH Time Projection Chamber** *Scope and content*: This is a prototype endplate piece constructed during R&D for the ALEPH Time Projection Chamber (TPC). ALEPH was one of 4 experiments at CERN's 27km Large Electron Positron collider (LEP) that ran from 1989 to 2000. ALEPH's TPC was a large-volume tracking chamber, 4.4 metres long and 3.6 metres in diameter - the largest TPC in existance at the time. This object is one of the endplates of a “Kind” sector, the smallest of the three types of sectors. The patterns etched into the copper form the cathode pads that measured particle track coordinates in the r-phi direction. It included a laser calibration system, a gating system to prevent space charge buildup, and a new radial pad geometry to improve resolution. the ALEPH TPC allowed for precise momentum measurements of the high-momentum particles from W and Z decays. The following institutes participated: CERN, Athens, Glasgow, Mainz, MPI Munich, INFN-Pisa, INFN-Trieste, Wisconsin. *Restrictions on access*: Public	1980	Object
CERN-OBJ-CERN-OBJ-DE-086 2266347	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-087 2266348	**Item - unknown** *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-DE-088 2266443	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-089 2266444	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-090 2266445	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-091 2266446	**Item - Detector Unit** *Creator*: Erik Bracke *Scope and content*: Original detector unit of the Instituut voor Kernfysisch Onderzoek (IKO) BOL project. This detector unit shows that silicon detectors for nuclear physics particle detection were already developed and in use in the 1960's in Amsterdam. Also the idea of putting 'strips' onto the silicon for high spatial resolution of a particle's impact on the detector were implemented in the BOL project which used 64 of these detector units. The IKO BOL project with its silicon particle detectors was designed, built and operated from 1965 to roughly 1977. Detector Unit of the BOL project: These detectors, notably the ‘checkerboard detector’, were developed during the years 1964-1968 in Amsterdam, The Netherlands, by the Natuurkundig Laboratorium of the N.V. Philips Gloeilampen Fabrieken. This was done in close collaboration with the Instituut voor Kernfysisch Onderzoek (IKO) where the read-out electronics for their use in the BOL Project was developed and produced. *Restrictions on access*: Public	1960	Object
CERN-OBJ-CERN-OBJ-DE-092 2266447	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-023 2272997	**Item - CDC 7600 Module** *Scope and content*: The CDC 7600 has been created by Seymour Cray. It was designed to be compatible with the 6600, which allows for a substantial increase in performance. Furthermore the rise of new technologies has enabled this performance by reducing the minor cycle clock period from 100 ns to 27.5 ns (4 time faster). A very large machine, the 7600 had over 120 miles of hand-wired interconnections. It was the most powerful computer of its time. However, this speed caused a ground-loop problem causing intermittent	1970	Object

	faults, and eventually requiring all modules to be fitted with sheathed rubber bands. The CDC 7600 was replaced in 1983 by CRAY-1A. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-024 2273012	**Item - CDC 6600 Cordwood Module**	1964	Object
	Scope and content: The CDC 6600 cordwood module containing 64 silicon transistors. The module was mounted between two plates that were cooled conductive by a refrigeration unit via the front panel. The construction of this module uses the cord method, so called because the resistors seem to be stacked like cord between the two circuit boards in order to obtain a high density. The 6600 model contained nearly 6,000 such modules. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-025 2273210	**Item - Model of the VAX-11/780**	1977	Object
	Scope and content: It was the first member of the VAX family of computers, the first commercially available 32-bit computer and the first MIPS (one million instructions per second). It is a family of abandoned mini-computers developed and manufactured by Digital Equipment Corporation (DEC). The name "VAX" comes from an acronym for "Virtual address eXtension" as the successor to the PDP-11. The computer and its operating system (VMS) were designed from scratch. The result was a truly reliable, powerful and user-friendly system. In addition its affordable price has enabled many institutions and universities to acquire it. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-026 2273230	**Item - SecurID**		Object
	Scope and content: Now called RSA SecurID, SecurID is a mechanism developed by Security Dynamics that allows two-factor authentication for a user on a network resource. It works on the principle of the unique password mode, based on a shared secret. Every sixty seconds, the component generates a new six-digit token on the screen. The latter comes from the current time (internal clock) and the seed (SecurID private key that is available on the component, and is also from the SecurID server). During an authentication request, the SecurID server will check the entered token by performing exactly the same calculation as that performed by your component. The server knows the two information required for this calculation: the current time and the seed of your component. Access is allowed if the token calculated by the server matches the token you specified. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-027 2273234	**Item - IBM 3705 Communications Controller**	1972	Object
	Scope and content:		

	The IBM 3705 Communications Controller is a simple computer which attaches to an IBM System/360 or System/370. Its purpose is to connect communication lines to the mainframe channel. It was a first communications controller of the popular IBM 37xx series. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-028 2273243	**Item - AMD AM29116**	1982	Object
	Scope and content: The AM29116 is a microprogrammed 16-bit processor. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-029 2273249	**Item - Gandalf LDS 105**	1990-1999	Object
	Scope and content: It was essentially a folded sheet metal box with an internal circuit board, but Gandalf Box was a form of modem, a terminal host selector that allowed computer terminals to connect to a number of computers, Host computers via a single interface. Gandalf Technologies was a Canadian data communications company based in Ottawa. It was best known for their modems and terminal adapters. The rapid development of ethernet, remote access and subsequent high-speed connections killed technology and the company went bankrupt in 1997. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-030 2273253	**Item - One of the First Portable Macs**	1989	Object
	Scope and content: It was one of the first portable macs released. The Portable had many new advances in mobile computing : The display was crispy clear, and looked beautiful when used in daylight ; The Portable came with a Lead-acid gel/cell battery that could run a anywhere from 6 -12 hours ; It supported to internal hard drives, and an external one. The reaction to the laptop was weak because it was slow, it had no capacity for expansion, it weighed heavily, its price was expensive. It has been stayed 1 year and half on the market. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-031 2273273	**Item - Olivetti M10**	1983	Object
	Scope and content: The Olivetti M10 is a small Italian computer, it is a first attempt to create a real laptop with its screen tilting offering a good legibility. Its success was mainly due to the good quality keyboard with its accented keys that allows a fast typing as well as has its long battery life. It can operate several hours on four standard batteries. Otherwise, in terms of software, the machine has Basic in ROM, as well as various small office programs such as spreadsheet, word processor, calendar and address book. *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-IT-032 2273289	**Item - DEC VT220**	1983	Object
	Scope and content: The DEC (Digital Equipment Corporation) VT220 is a text terminal which uses an redesigned keyboard(LK201). The VT220 improved on the earlier VT100 series of terminals with much smaller physical packaging and and a much faster microprocessor. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-033 2273362	**Item - Osborne 1**	1981	Object
	Scope and content: The Osborne 1 Released by the Osborne Computer Corporation is considered to be the first true portable, full-featured computer intended for a larger audience than companies. It includes all the components required to be a completely useful and operational computer system. Indeed the Osborne 1 was cost $ 1,795which is now $ 4,773. Another attractive point was that it was sold with several software, which, sold separately, cost almost the same price as the machine. However this computer has some disadvantages like its weight (11 kg) or its tiny screen that could display only a little character per lines and sized the average size of a phone screen . Another problem was that the computer was a bit prone to overheating. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-034 2273364	**Item - Mitsubishi LSA820W LCD Display**		Object
	Scope and content: This is a LCD Screen with a 1280x1024 resolution. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-035 2273368	**Item - iMac G3 Blueberry 350MHz**	2000	Object
	Scope and content: The iMac G3 is an all-in-one personal computer, encompassing both the monitor and the computer in one package. It allowed to revitalize the Apple brand that was in decline and close to financial ruin. Originally released in striking bondi blue and later a range of other translucent plastic envelopes in bright colors. The iMac comes with a keyboard and mouse matching the color of the case. The iMac G3 was sold from 1998 to 2003 and has been updated many times. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-036 2273519	**Item - Verbatim Floppy Disk**	1976	Object
	Scope and content: Introduced under the name "Verbatim", Latin for "literally", these disks that sized more than 5¼ inches have become almost universal on dedicated word processing systems and personal computers. This format was replaced more slowly by the 3½-inch format, introduced for the first time in 1982. Compared		

	to today, these large format disks stored very little data. In reality, they could only contain a few pages of text. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-037 2273523	**Item - 8-inch IBM floppy disk** *Scope and content*: The 8-inch floppy disk was a magnetic storage disk for the data introduced commercially by IBM in 1971. It was designed by an IBM team as an inexpensive way to load data into the IBM System / 370. Plus it was a read-only bare disk containing 80 KB of data. The first read-write version was introduced in 1972 by Memorex and could contain 175 KB on 50 tracks (with 8 sectors per track). Other improvements have led to various coatings and increased capacities. Finally, it was surpassed by the mini diskette of 5.25 inches introduced in 1976. *Restrictions on access*: Public	1971	Object
CERN-OBJ-CERN-OBJ-IT-038 2273531	**Item - The Imation 9840 Tape Cartridge** *Scope and content*: It’s a 20 GB uncompressed center-load cartridge used in StorageTek T9840 tape drives. The tape is a Metal Particle (MP) tape suitable for use on all Oracle/Sun/StorageTek 9840 A, B, C and D drives. The 9840 tape has an archival life of 15-30 years. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-039 2273541	**Item - Sony D-Eight** *Scope and content*: The 8mm backup format is a format for storing magnetic tape data used in computer systems, launched by Exabyte Corporation. It is also known as Data8, often abbreviated to D8 and writes D-Eight on some Sony brand media. The company was formed in order to take the 8 mm video format and make it suitable for data storage. They did this by building a mechanism and a reliable data format that used the common 8 mm video tape technology that was available at the time. This was the first form of helical scanning used commercially for data storage. The ribbon was made vertically and has a length of 112 meters. It was designed to withstand heat and high temperatures. It has been introduced in at CERN in 1994. *Restrictions on access*: Public	1987	Object
CERN-OBJ-CERN-OBJ-IT-040 2273680	**Item - Western Digital Caviar 31200** *Scope and content*: Western Digital hard drive. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-041 2273691	**Item - StorageTek RedWood SD-3 tape drive**	1995	Object

	Scope and content: A helical scan recording drive, with a high-speed rotating head sweeping across the tape every few micrometers. Based on a professional video recording system, modified to be suitable for digital data recording. These are commonly used with large computer systems, typically in conjunction with a robotic tape library. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-042 2273694	**Item - IBM 3480 tape cartridge** *Scope and content*: The 3480 tape format is a magnetic tape data storage format developed by IBM. The cartridge contains a single reel. IBM's 3480 cartridge tape system sought to replace the traditional reels of magnetic tape in the computer center. Because of their speed, reliability, durability and low media cost, these tapes and tape drives are still in high demand. A hallmark of the genre is transferability. Tapes recorded with one tape drive are generally readable on another drive, even if the tape drives were built by different manufacturers. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-043 2273698	**Item - Sun Ultra 5** *Scope and content*: The Sun Ultra 5 is a 64-bit personal computer based on the UltraSPARC microprocessor line at a low price. The Ultra 5 has been declined in several variants: thus, some models have a processor with less cache memory to further decrease the price of the computer. *Restrictions on access*: Public	1998	Object
CERN-OBJ-CERN-OBJ-IT-044 2273800	**Item - 6250 BPI Magnetic Tape** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-045 2273804	**Item - IBM WDI-325Q 21MB Hard Drive** *Scope and content*: Size : 20 Mb *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-046 2273838	**Item - Acoustic Coupler Modem**		Object

	Scope and content: It's an acoustic coupler modem 300 bit/s from the 1970s. It is attaches to an ordinary telephone handset. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-047 2273906	**Item - Graham Magnetics EPOCH 480 Magnetic Reel Tape** *Scope and content*: This media disk, used for stored audio and visual information, has a stronger binding system than the tape and can last a million uses. *Restrictions on access*: Public	1970-1979	Object
CERN-OBJ-CERN-OBJ-IT-048 2273915	**Item - Scotch 777 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-049 2273920	**Item - CERNET High Speed Data Link** *Scope and content*: This card, based on a "4 slot DEC module", arbitrated the access priority of 15 datalinks of a CERNET node. Each datalinks could transfer data full duplex at 2.5 Mbit/sec over 1 Km of twisted pair (POD) cable. This was the frontier technology in 1980. The modest amount of integrated circuits was compensated by printing on the board photographs of the hardware designers, whose Belgian, Dutch and French nationality was underlined by the the short poem. *Restrictions on access*: Public	1975	Object
CERN-OBJ-CERN-OBJ-IT-050 2273923	**Item - Intel 10 Gbit/s Network Card** *Scope and content*: One of the first Intel 10 Gbit/s Network Card (long-range 10 km lasers). *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-051 2273932	**Item - Paper Punch Tape** *Scope and content*: Physicists coded and recorded their programs through series of holes on punch paper tape or on punched cards. It was popular in the 1970s due to its high throughput speed and low cost, paper tape was one of the original data storage methods for computers. Information was encoded in the distinct pattern of holes punched in the paper; the paper itself was oiled to facilitate being run through the reading mechanism and to prevent tears due to brittleness. Though the paper was cheap, it had low storage capacity (only a few		Object

	dozen kilobytes per roll) and the machinery involved in punching the holes was quite expensive. Higher capacity alternatives, such as magnetic tape, has get developped. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-052 2273938	**Item - Computer Data Punch Cards**	1970-1979	Object
	Scope and content: Those card are printed with minimal layout aids for the formatting of FORTRAN programs, plus extra guidelines every ten columns suggesting a generic tabular data layout. A punch card is a piece of stiff paper that can be used to contain digital information represented by the presence or absence of holes in predefined positions. Punched cards were used for specialized unit record machines, organized into semiautomatic data processing systems, used punched cards for data input, output, and storage. Furthermore many new digital computers started to used punched cards. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-053 2273948	**Item - StorageTek T10000 Data Cartridge**		Object
	Scope and content: This data cartridge works on several StorageTek systems. The goal is to provide cartridge compatibility across several system. It has been designed for space saving and ultra-high capacity tape. It permit to fulfill high-volume backup, archiving, and disaster recovery. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-054 2273956	**Item - Sun StorageTek T9940 Tape Drive**	2002	Object
	Scope and content: Technology allowed reuse of the same data cartridge at higher capacity with later model of the tape drive hence offering significant savings of the media cost. It has been use by the CERN from 2002 to 2008. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-055 2273963	**Item - SONY SD1-1300L**	1995	Object
	Scope and content: Cartridge used in the SONY DMS-24 automated tape library system installed at CERN in 1995 and still in use by the NA49 experiment. Tape length is 1300 m with 100 GB storage capacity. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-056 2273973	**Item - IBM 3480**	1985	Object
	Scope and content: Introduced at CERN in 1985. It has a storage capacity of 200 MB *Restrictions on access*:		

	Public		
CERN-OBJ-CERN-OBJ-IT-057 2273977	**Item - DLT 2000 (CompactTape III)**	1994	Object
	Scope and content: It has been introduced at CERN in 1994 and used until recently in the DEC TL820 robot. It has a capacity of 10 GB and 1.25 MB/s. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-058 2273991	**Item - Power Macintosh 7300/166**	1997	Object
	Scope and content: The Power Macintosh 7300 was released in 1997 and was the same case as the Power Macintosh 7600. Its main evolution is that it was equipped with a faster processor. It also had a bigger hard drive (2 GB) and a faster CD-ROM drive (12x to 8x). In return, Apple chose to remove the audiovisual connections that were present on all its predecessors of the range 7x00. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-059 2273994	**Item - 32 Word ROM Memory for a PDP 11 (Circa 1971)**	1971	Object
	Scope and content: It occupies a quad-width, double-height flipchip board you can visually read off its contents (presence or absence of diodes). In its time it represented a giant leap forward since you no longer had to toggle the bootstrap in on the frontpanel switches. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-060 2273997	**Item - Intel Quad Core Processor**		Object
	Scope and content: Intel quad core processor in its casing and mounted with copper heats sink on a motherboard. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-061 2274072	**Item - Iomega ZIP 250**		Object
	Scope and content: It's a 250 MB External Zip Disk Drive Portable *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-062 2274075	**Item - CDC Cyber Series**	1960-1969	Object
	Restrictions on access:		

	Public		
CERN-OBJ-CERN-OBJ-IT-063 2274081	**Item - Quicksilver Power Mac G4** *Scope and content*: A new generation with a reworked motherboard is launched on 2001 with however the same Graphite box. It also included a processor speed-bump, and brought the DVD-R "SuperDrive" to the mid-level model. The Quicksilver PowerMac was available in three configurations: The 733 MHz model, with 128 MB of RAM, a 40 GB hard drive, and a CD-RW drive, was 1,699 dollars, the 867 MHz configuration, with 128 MB of RAM, a 60 GB hard drive and a DVD-R drive, was 2,499 dollars, and the high-end dual-800 MHz model, with 256 MB of RAM, an 80 GB hard drive and a DVD-R drive, was 3,499 dollars. The 733 MHz model is the first personal computer to have a DVD burner, named SuperDrive at Apple. The design was updated on 2002 with 800 MHz, 933 MHz and dual 1 GHz configurations, becoming the first Mac to reach 1 GHz. *Restrictions on access*: Public	2001	Object
CERN-OBJ-CERN-OBJ-IT-064 2274088	**Item - Seagate Medalist ST38641A IDE Hard Drive** *Scope and content*: This hard drive has got a capacity of 8,6 Gb. *Restrictions on access*: Public	1998	Object
CERN-OBJ-CERN-OBJ-IT-065 2274092	**Item - Storagetek 411225803** *Scope and content*: It's a hand gripper assembly with camera for 9310. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-066 2274098	**Item - IBM 3090 TCM CPU** *Scope and content*: This is a Thermal Conduction Module from an IBM 3090. This is a water cooled unit that holds loads of chips. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-067 2274102	**Item - Display Apple M7649Zm** *Scope and content*: It was Designed for the Power Mac G4. This Apple studio display gives you edge-to-edge distortion-free images. With more than 16.7 million colors and 1,280 x 1,024 dpi resolution, you view brilliant and bright images on this Apple 17-inch monitor. *Restrictions on access*:	2001	Object

	Public		
CERN-OBJ-CERN-OBJ-IT-068 2274118	**Item - IBM 3380 E** *Scope and content*: In 1985 IBM announced a double density version. The Extended Capability Models of the 3380 (3380 E) having 5.04 gigabytes per chassis, that is, two 1.26 gigabyte actuators on two hard disk assemblies in one chassis. *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-IT-069 2274385	**Item - Olivetti M6 640** *Scope and content*: The M6-640 is the highest performance personal computer workstation in the Suprema range with multimedia, document imaging and communications capabilities. It has a 90MHz Pentium processor with 256Kb of secondary cache. It can accommodate up to 128Mb RAM and supports hard disks of up to 1Gb through an IDE interface. *Restrictions on access*: Public	1993	Object
CERN-OBJ-CERN-OBJ-IT-070 2274387	**Item - M-Office DW 500 Typewriter** *Scope and content*: It's the M-Office DW 500 Typewriter. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-071 2274393	**Item - IBM Storage Disk** *Scope and content*: IBM storage disk used in the 70s and 80s. This stack of eight 35 cm disks weighs more than 10 Kg, and can store 320 Megabytes or 34 minutes of music *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-072 2274398	**Item - Disk Interface 3380** *Scope and content*: Disk Interface for a disk cabinet. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-073 2274400	**Item - Olivetti OPE XM 5220/2** *Scope and content*:		Object

	MFM Hard Drive. (Type of hard disk used in XT computers) *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-074 2274411	**Item - Bus and Tag Terminators for IBM system/360** *Scope and content*: Control units were connected to the channels with "Bus and Tag" cable pairs. The bus cables carried the address and data information and the tag cables identified what data was on the bus. There were three general types of bus-and-tag cables produced by IBM. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-075 2274412	**Item - Western Digital Hard Drive** *Scope and content*: MFM Hard Drive with a capacity of 20 Mb. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-076 2274414	**Item - 6250 BPI Magnetic Tape Olivetti** *Scope and content*: BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-077 2274420	**Item - RPS Micro Diskette** *Scope and content*: Small flexible plastic disk covered with a magnetic substance used to record data and computer programs. They can normally contain 1.44 MB of data and they are convenient for moving small amounts of data as they are transportable. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-078 2274422	**Item - Port Switch** *Scope and content*: It's a 48 x 1 Gbit/s port switch with 10 Gbit/s optical uplink connection. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-079 2274589	**Item - Amdahl 470 Chip Package**	1975	Object

	Scope and content: In the late 70s the larger IBM computers were water cooled. Amdahl, an IBM competitor, invented an air cooling technology for it's computers. His company worked hard, developing a computer that was faster and less expensive than the IBM System/360 mainframe computer systems. This object contains an actual Amdahl series 470 computer logic chip with an air cooling device mounted on top. The package leads and cooling tower are gold-plated. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-080 2274594	**Item - Multi-Core Itanium Processor** *Scope and content*: First Multi-Core Itanium processor. It has 1,7 billion transistors and 24 MB on die-cache. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-081 2274603	**Item - Dual-core Itanium Processor** *Scope and content*: Intel's first dual-core Itanium processor, code-named "Montecito" is a major release of Intel's Itanium 2 Processor Family, which implements the Intel Itanium architecture on a dual-core processor with two cores per die (integrated circuit). Itanium 2 is much more powerful than its predecessor. It has lower power consumption and thermal dissipation. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-082 2274619	**Item - CDC 7600 module slice** *Scope and content*: Each module contained 8 circuit cards for a total of about 300-500 uncovered transistors packaged with face plates so the Freon plates wouldn't touch the circuits. (cooling plates that surrounded each module). *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-083 2274621	**Item - Single Platter of a CDC 7638 Disk Drive** *Scope and content*: This large 7638 disk on the CDC 7600 is primarily used as a sort of « paging store » for tape files and permanent files staged over from the front-end CDC6500. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-IT-084 2274733	**Item - Wafer of Intel Pentium 4 Prescott Chips** *Scope and content*:		Object

	Silicon wafer with hundreds of Penryn cores (microprocessor). There are around four times as many Prescott chips can be made per wafer than with the previous generation of Northwood-core Pentium 4 processors. It is faster and cheaper. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-085 2274743	**Item - 3M No. 700 Black Watch 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-086 2274745	**Item - Disque PC IDE** *Scope and content*: It's a disque PC IDE 850 Mbytes. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-087 2274753	**Item - SRAM chip** *Scope and content*: It has a capacity of 1 Mb. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-088 2274772	**Item - Fuji Toshiba 360K 5.25 Internal Floppy Drive FDD** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-089 2274914	**Item - CDC Cyber Series Electronic Plate** *Restrictions on access*: Public	1965-1970	Object
CERN-OBJ-CERN-OBJ-IT-090 2274921	**Item - Sony 40 MB Vintage Hard Drive** *Restrictions on access*: Public	1990	Object
CERN-OBJ-CERN-OBJ-IT-091 2274939	**Item - Cable 18000 Volt** *Scope and content*:		Object

	Capacity of this cable : 15 MVA / 13,5 MW / 450 Ampères. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-092 2274946	**Item - Hitachi Travelstar C4K60 Hard Disk Drives** *Scope and content*: Hitachi Travelstar C4K60 with a storage capacity of 60GB, 4200RPM. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-093 2274950	**Item - Quantum Hard Disk** *Scope and content*: It has a storage capacity of 40 Mb. *Restrictions on access*: Public	1987	Object
CERN-OBJ-CERN-OBJ-IT-094 2274951	**Item - Rodime Hard Drive** *Scope and content*: It has a storage capacity of 200 Mb. *Restrictions on access*: Public	1992	Object
CERN-OBJ-CERN-OBJ-IT-095 2274962	**Item - A Diode Matrix model M792** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-096 2274963	**Item - Cern DD4424 ROM Diode Matrix** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-097 2274968	**Item - DEC Digital PDP11 H214 8KX16 Planar Core Memory** *Scope and content*: Digital Equipment Corporation (DEC) introduced the PDP 11 line of computers in 1970. *Restrictions on access*: Public	1972	Object
CERN-OBJ-CERN-OBJ-IT-098 2275036	**Item - 6250 BPI IBM reduce version 3.3** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	1988	Object
CERN-OBJ-CERN-OBJ-IT-099 2275044	**Item - Newtronics Co. LTD Floppy Drive 0705449 D359T6** *Scope and content*: There is a floppy disk on it. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-100 2275052	**Item - Intel Core 2 Duo Processor E6600** *Scope and content*: This processor relies on two key points: maximum performance and minimum heat output. 4M Cache ; frequency 2.40 GHz ; 1066 MHz FSB *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-101 2275057	**Item - IBM 4 Gbyte Hard Disk** *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-102 2275072	**Item - Control Data Floppy Disk** *Scope and content*: 8-inch floppy diskettes of the 70's and 80's. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-103 2275078	**Item - Seagate ST-225 Hard Drive**	1984	Object

	Scope and content: This hard drive was developed by Seagate in 1984, and had a capacity of 20 MB. It was the single most common 20MB drive ever to be produced. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-104 2275083	**Item - IBM 3000 Information Recorder I** *Scope and content*: The IBM 3000 is an information recorder which was used for data collection. The data were collected by being punched directly onto IBM cards. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-105 2275167	**Item - HP ProCurve J8694A 3500yl/6200yl Switch Module** *Restrictions on access*: Public	2005	Object
CERN-OBJ-CERN-OBJ-IT-106 2275217	**Item - CDC 3300 Timing Disk** *Scope and content*: It's a timing disc from the CDC 3300 computer. This computer was released in 1965. Moreover CDC means Control Data Corporation. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-107 2275219	**Item - CDC 6600 VAXBARN Logic Board** *Restrictions on access*: Public	1964	Object
CERN-OBJ-CERN-OBJ-IT-108 2277607	**Item - System Software 7 Macintosh** *Scope and content*: System 7 is a single-user graphical user interface-based operating system for Macintosh computers and was part of the classic Mac OS line of operating systems. It was introduced on May 13, 1991, by Apple Computer. It succeeded System 6, and was the main Macintosh operating system until it was succeeded by Mac OS 8 in 1997. Features added with the System 7 release included virtual memory, personal file sharing, QuickTime, QuickDraw 3D, and an improved user interface. This is the first real major evolution of the Macintosh system, bringing a significant improvement in the user interface, improved stability and many new features such as the ability to use multiple applications at the same time. "System 7" is the last operating system name of the Macintosh that contains the word "system". Macintosh operating systems were later called "Mac OS" (for Macintosh Operating System). *Restrictions on access*: Public	1991	Object

CERN-OBJ-CERN-OBJ-IT-109 2277608	**Item - NextStation Color**		Object
	Scope and content: Steve Jobs created a NeXT generation operating system. The NeXTstation provides functionality that other computers are just providing today.The NS Color I/O cable attaches to the back of the computer on one end and on the other end the cable is split to connect to the display and the Sound Box. The Sound Box also has a keyboard signal port. Like a MAC or SUN of the same vintage, the mouse connects to the keyboard. These boxes run NEXTSTEP, which a full object-oriented OS. It has UNIX as a base and provides a gorgeous graphical interface. NEXTSTEP was also available for other platforms. They tend to run a little slow. But they have great digital sound and full color displays. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-110 2277609	**Item - Vectronic's Power Macintosh G3 (B & W)**	1999	Object
	Scope and content: Apple introduced the Power Macintosh G3 Blue and White (B & W) on January 5, 1999. The Power Macintosh G3 line stayed in production until August 1999, and was replaced by the Power Macintosh G4, which used the same chassis. The Power Macintosh G3 originally cost between $1599 and $2900 depending on options. The three original Power Macintosh G3 models shipped with a 300 MHz, 350 MHz, or 400 MHz PowerPC 750 (G3) processor. Just pull on the small round handle on the side of the tower, and the entire side of the computer opens up. The G3's motherboard is mounted on that surface, giving you easy access for upgrading RAM or installed PCI cards. Apple added new ports (USB and the much-anticipated FireWire) that took the place of historic, and quickly becoming antiquated, Mac serial (printer and modem) ports. The Power Macintosh G3 has two USB (12 Mbps) ports, two FireWire (400 Mbps) ports, one 10/100BaseT Ethernet port, an RJ-11 jack for an optional 56K modem, a sound out and sound in jack, and one ADB (Apple Desktop Bus) port. The maximum RAM for the G3 is 1 GB. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-111 2277694	**Item - Macintosh Plus**	1986	Object
	Scope and content: Apple introduced the Macintosh Plus on January 16, 1986. The Macintosh Plus has an 8 MHz 68000 processor and an internal 800K floppy disk drive. It supports up to 4 MB of RAM. The Plus is a significant improvement over the previous compact Macs primarily due to the addition of the SCSI bus. Previous Macs did not have SCSI, thus making it more difficult to find a suitable external hard drive able to connect through the drive port, the printer port, or the modem port. These drives are considerably slower (as much as 4 times slower) than external SCSI hard drives. The Macintosh Plus is a very important computer in the history of the Apple Computers. It set up many of the standards that Apple followed for over a decade going forward. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-112 2277708	**Item - IMac G4/800 (Flat Panel)**	2002	Object
	Scope and content: Apple introduced the iMac G4/800 on January 7, 2002. The total cost was about $2000 (base price of $1799 plus RAM upgrade). The iMac G4/800 has an 800 MHz G4 processor. The G4/800 has the		

	following ports: three USB 1.1 ports, two Fire Wire 400-Mbps ports, one RJ-45, 10/100BASE-T Ethernet port, one RJ-11 56K V.90 modem port, one Mini-VGA output port, one speaker jack, and one headphone jack. There is a built in microphone set on the front of the monitor in the bottom left corner. There is a single internal SuperDrive capable of reading and writing CDs and DVDs. The disk drive is on the front of the computer. It opens by pushing the disk drive button on the iMac's keyboard. The monitor size is 15 inches. The G4/800 has a NVIDIA GeForce2 MX graphics processor with AGP 2X support that provides 32 MB of dedicated Double Data Rate (DDR) video memory. Native resolution is 1024 x 768, but the built in monitor is also capable of 640 x 480 and 800 x 600. RAM can be changed by removing a panel on the bottom of the chassis. This iMac is AirPort ready but does not have an AirPort Card installed. The internal hard drive is 60 GB. The G4/800 has a small internal speaker. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-113 2277709	**Item - Weston Standard battery** *Scope and content*: This is a Weston AOIP standard battery with its calibration certificate (1956). Inside, the glassware forms an "H". Its name comes from the British physicist Edward Weston. A standard is the materialization of a given quantity whose value is known with great accuracy. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-114 2277763	**Item - PM 3655 PHILIPS Logic analyzer** *Scope and content*: A logic analyzer is an electronic instrument that captures and displays multiple signals from a digital system or digital circuit. A logic analyzer may convert the captured data into timing diagrams, protocol decodes, state machine traces, assembly language, or may correlate assembly with source-level software. Logic Analyzers have advanced triggering capabilities, and are useful when a user needs to see the timing relationships between many signals in a digital system. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-115 2279933	**Item - Philips LTC 2009/51** *Scope and content*: It was part of a range of high-performance monitors (computers screens) that were associated with other units such as Philip's video surveillance systems, cameras or transmission and control equipment. Included in this range of Philips monitors are LTC 2009 (like this one), LTC 2012, LTC 2017 and LTC 2020 Series monochrome monitors. They offer high-performance images with a resolution of 900 TVL (TV-Lines), or in the case of the LTC 2017 monitor, 700 TVL, making them ideal for remote viewing and video applications. The monitor housing consists of a robust rectangular metal case which minimizes interference from external signals and allows “stacking” of monitors when used in large numbers. *Restrictions on access*: Public	1999	Object
CERN-OBJ-CERN-OBJ-IT-116 2279959	**Item - CHT, CERN HIPPI Testbox** *Scope and content*:	1990	Object

	To allow CERN to test and maintain HIPPI equipment (High Performance Parallel Interface), a powerful test falcility is required. A tester has been developed at Los Alamos National Laboratories [9,10]. The CERN HIPPI testbox allows testing of HIPPI equipment both inside and outside the specifications. This includes the possibility of deliberately introducing errors. The main features of this testbox are: Manual set-up Processor controlled set-up Possibilities for remote analysis Checking the HIPPI specifications Checking illegal conditions *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-117 2279960	**Item - IBM model M keyboard**	1985	Object
	Scope and content: In 1985, the IBM Model M keyboard was created. This timeless classic was a hit. IBM came out with several varients of the model M. They had the space saver 104 key which is the one most seen today and many international versions of that as well. The second type, and rarest is the 122 key model M which has 24 extra keys at the very top, dubbed the “programmers keyboard”. IBM manufactured these keyboards until 1991. The model M features “caps” over the actual keys that can be taken off separately one at a time for cleaning or to replace them with colored keys or keys of another language, that was a very cost effective way of shipping out internationally the keyboards. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-118 2280048	**Item - IBM 5150 computer**	1981	Object
	Scope and content: IBM’s first personal computer arrived nearly 10 years after others companies, but instantly legitimized the market. IBM introduced its PC in 1981. IBM equipped the model 5150 with a cassette port for connecting a cassette drive. The first IBM PC ran on a 4.77 MHz Intel 8088 microprocessor. The PC came equipped with 16 kilobytes of memory, expandable to 256k. The PC came with one or two 160k floppy disk drives and an optional color monitor. The price tag started at $1,565, which would be nearly $4,000 (about €3,400) today. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-119 2280057	**Item - HP 2671G GRAPHICS**	1981	Object
	Scope and content: The 2671 was a text-only printer with a maximum print speed of 120 characters per second. The 2671 printers are very robust. For paper, they use normal thermal roll paper sold in most office supply stores for older fax machines. Although thermal printing is a quiet technology, the paper advance mechanism of these printers is plenty loud. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-001 43830 OBJOBJ 0000104	**Item - UA1 prototype detector**	1980	Object
	Creator:		

	Jean Collombet *Note [General]* : Needs some repairs *Scope and content*: Prototype of UA1 central detector inside a plexi tube. The UA1 experiment ran at CERN's Super Proton Synchrotron and made the Nobel Prize winning discovery of W and Z particles in 1983. The UA1 central detector was crucial to understanding the complex topology of proton-antiproton events. It played a most important role in identifying a handful of Ws and Zs among billions of collisions. The detector was essentially a wire chamber - a 6-chamber cylindrical assembly 5.8 m long and 2.3 m in diameter, the largest imaging drift chamber of its day. It recorded the tracks of charged particles curving in a 0.7 Tesla magnetic field, measuring their momentum, the sign of their electric charge and their rate of energy loss (dE/dx). Atoms in the argon-ethane gas mixture filling the chambers were ionised by the passage of charged particles. The electrons which were released drifted along an electric field shaped by field wires and were collected on sense wires. The geometrical arrangement of the 17000 field wires and 6125 sense wires allowed a spectacular 3-D interactive display of reconstructed physics events to be produced. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-008 43832 OBJOBJ 0000106	**Item - LHC prototype beam tubes**	1995	Object
	Creator: M. eysselein *Note [General]* : A <2> pages publication from CERN for general public *Scope and content*: Slice of the Large Hadron Collider (LHC) prototype beam tubes in dipole magnet The LHC is the world’s largest and most powerful particle accelerator that accelerates and collides two beams of protons or ions to near the speed of light in opposite directions. It first started up in 2008, and is the latest addition to CERN’s accelerator complex (2025). The LHC consists of a 27-km ring of superconducting magnets with a number of accelerating structures to boost the energy of the particles along the way. Thousands of magnets of different varieties and sizes are used to direct the beams around the accelerator. The high bending and accelerating fields needed can only be reached using superconductor magnets at very low temperature (#271.3°C). There are 1232 dipole magnets like this prototype in the LHC, used to guide the particles around the 27 km ring. Dipole magnets must have an extremely uniform field, which means the current flowing in the coils that produce the magnetic field has to be very precisely controlled. Nowhere before has such precision been achieved at such high currents. The temperature is measured to five thousandths of a degree, the current to one part in a million. The current creating the magnetic field pass through superconducting wires at up to 12 500 amps, about 30 000 times the current flowing in a 100 W light bulb. Since the LHC accelerate two particle beams moving in opposite directions, it is really two accelerators in one. To keep the machine as compact and economical as possible, two dipole magnets are built into a single housing. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-009 43833 OBJOBJ 0000107	**Item - LEP tunnel monorail**	1985	Object
	Scope and content:		

	A monorail from CERN's Large Electron Positron collider (LEP, for short). It ran around the 27km tunnel, transporting equipment and personnel. With its 27-kilometre circumference, LEP was the largest electron-positron accelerator ever built and ran from 1989 to 2000. During 11 years of research, LEP's experiments provided a detailed study of the electroweak interaction. Measurements performed at LEP also proved that there are three – and only three – generations of particles of matter. LEP was closed down on 2 November 2000 to make way for the construction of the Large Hadron Collider in the same tunnel. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-002 43834 OBJOBJ 0000108	**Item - Gargamelle flash tube** *Scope and content*: Flash tube used in Gargamelle. Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. It was designed principally for the detection at CERN of the elusive particles called neutrinos.Gargamelle is on display at CERN in the Microcosm garden. *Restrictions on access*: Public	1970	Object
CERN-OBJ-CERN-OBJ-DE-003 43835 OBJOBJ 0000109	**Item - lead glass brick** *Creator*: Maria Fidecaro *Note [General]* : Many of these lead glass bricks are available for donation to museums. *Scope and content*: When you look through the glass at a picture behind, the picture appears raised up because light is slowed down in the dense glass. It is this density (4.06 gcm-3) that makes lead glass attractive to physicists. The refractive index of the glass is 1.708 at 400nm (violet light), meaning that light travels in the glass at about 58% its normal speed. At CERN, the OPAL detector uses some 12000 blocks of glass like this to measure particle energies. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-004 43836 OBJOBJ 0000110	**Item - wire chamber** *Scope and content*: Was used in ISR (Intersecting Storage Ring) split field magnet experiment. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*:		Object

	Public		
CERN-OBJ- CERN-OBJ- DE-005 43837 OBJOBJ 0000111	**Item - Bubble chamber film** *Scope and content*: Boxes of bubble chamber film showing photographs of particle collisions. The particle tracks were then analysed on scanning tables (see object CERN-OBJ-DE-029). We have a selection of bubble chamber film available for loan, including some from the Big European Bubble Chamber (BEBC). *Restrictions on access*: Public	1960-1970	Object
CERN-OBJ- CERN-OBJ- DE-006 43838 OBJOBJ 0000112	**Item - lens** *Creator*: Malcom Dykes *Scope and content*: RCVD lens n°4 *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- DE-007 43839 OBJOBJ 0000113	**Item - light guide** *Note [General]* : Some small light guides are available to give. Please, contact us for further information. *Scope and content*: A full box of small light guides A full box of small light guides.Light guides like this are used to carry signals to the electronics for recording. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- DE-008 43840 OBJOBJ 0000114	**Item - light guide** *Note [General]* : Some light guides are available to give. Please, contact us for further information. *Scope and content*: <2> full boxes of light guides. Light guides like this are used to carry signals to the electronics for recording. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ-	**Item - micro strip gas chamber**	1998	Object

DE-009 43841 OBJOBJ 0000115	*Note [General]* : broken *Scope and content*: About 16 000 Micro Strip Gas Chambers like this one will be used in the CMS tracking detector. They will measure the tracks of charged particles to a hundredth of a millimetre precision in the region near the collision point where the density of particles is very high. Each chamber is filled with a gas mixture of argon and dimethyl ether. Charged particles passing through ionise the gas, knocking out electrons which are collected on the aluminium strips visible under the microscope. Such detectors are being used in radiography. They give higher resolution imaging and reduce the required dose of radiation. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-010 43842 OBJOBJ 0000116	**Item - NA48 prototype calorimeter** 1990 Object *Scope and content*: This is a calorimeter, a detector which measures the energy of particles. When in use, it is filled with liquid krypton at -152°C. Electrons and photons passing through interact with the krypton, creating a shower of charged particles which are collected on the copper ribbons. The ribbons are aligned to an accuracy of a tenth of a millimetre. The folding at each end allows them to be kept absolutely flat. Each shower of particles also creates a signal in scintillating material embedded in the support disks. These flashes of light are transmitted to electronics by the optical fibres along the side of the detector. They give the time at which the interaction occurred. The photo shows the calorimeter at NA48, a CERN experiment which is trying to understand the lack of anti-matter in the Universe today. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-011 43843 OBJOBJ 0000117	**Item - bubble chamber lens** Object *Note [General]* : <2> technical papers The dimensions include the support. *Scope and content*: Before the days of electronic detectors, visual techniques were used to detect particles, using detectors such as spark chambers and bubble chambers. This plexiglass lens was used to focus the image of tracks so they could be photographed. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- IT-001 43844 OBJOBJ 0000118	**Item - part of an IBM computer** 1985 Object *Scope and content*: Part of the IBM computer that was used for physics simulations in preparation for experiments at LEP. When installed in 1985, it was considered to be very powerful. Nowadays, a PC can outperform it by a factor of ten.

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IM-001 43845 OBJOBJ 0000119	**Item - gaussmetre** *Scope and content*: Empire scientific corporation. U.S.A. Série 3432 *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-002 43846 OBJOBJ 0000121	**Item - potentiometre** *Scope and content*: AOIP Paris. Type P12 *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-003 43847 OBJOBJ 0000122	**Item - DC voltmeter** *Scope and content*: Hewlett Packard. 419A *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-001 43848 OBJOBJ 0000123	**Item - simulation of synchro-cyclotron oscillator** *Note [General]* : Article / SC technical notebook n*3 *Scope and content*: The SC (synchro-cyclotron) was the first accelerator built at CERN. It operated from August 1957 until it was closed down at the end of 1990. *Restrictions on access*: Public	1957	Object
CERN-OBJ-CERN-OBJ-IM-004 43849 OBJOBJ 0000124	**Item - Power amplifier** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-	**Item - scaler**		Object

IM-005 43850 OBJOBJ 0000125			
	Scope and content: Old. Made at CERN. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- IM-006 43851 OBJOBJ 0000126	**Item - dosimeter**		Object
	Note [General] : users guide, technical description. In a wooden box. *Scope and content*: Farmer sub-standard X-ray dosemeter Mk2. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- AC-002 43852 OBJOBJ 0000127	**Item - central region of the SC ion source**	1970	Object
	Note [General] : Technical notebook n*3: "Synchro-cyclotron of 600 Mev" / "Synchro-cyclotron Machine Division"(short text) *Scope and content*: central region of the ion source for the synchro-cyclotron *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- AC-003 43853 OBJOBJ 0000128	**Item - PS target support**		Object
	Note [General] : <2> pieces.Mesures are of the largest one. *Scope and content*: Target support for the proton synchrotron. The Proton Synchrotron (PS) is the oldest and most versatile of CERN's accelerators. The PS was commissioned in 1959 and has been running continuously ever since. With a diameter of 200 metres and reaching a energy of 28 mev, it was for a while the most powerful accelerator in the world. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- AC-004 43854 OBJOBJ 0000129	**Item - drift tube for linear accelerator**		Object
	Creator: Resegotti		

	Scope and content: A drift tube from the Linac 1. This was the first tank of the linear accelerator Linac1, the injection system for the Proton Synchrotron, It ran for 34 years (1958 - 1992). Protons entered at the far end and were accelerated between the copper drift tubes by an oscillating electromagnetic field. The field flipped 200 million times a second (200 MHz) so the protons spent 5 nanoseconds crossing a drift tube and a gap. Moving down the tank, the tubes and gaps had to get longer as the protons gained speed. The tank accelerated protons from 500 KeV to 10 MeV. Linac1 was also used to accelerate deutrons and alpha particles for the Intersecting Storage Rings and oxygen and sulpher ions for the Super Proton Synchrotron heavy ion programme. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-005 43855 OBJOBJ 0000130	**Item - PS proton source**	1959	Object
	Note [General] : diagram / "Synchrotron a protons" (extrait du rapport annuel1957 du CERN) The object was part of CERN 40th anniversary exhibition. *Scope and content*: First proton source used at CERN's Proton Synchrotron (PS) which started operation in 1959. The PS was CERN’s first synchrotron. Activated in 1959, it was initially CERN's flagship accelerator, but when the laboratory built new accelerators in the 1970s, the PS’s principal role became to supply particles to the new machines. In the course of its history, it has juggled many different kinds of particles, feeding them directly to experiments or to more powerful accelerators. It is CERN's oldest accelerator still functioning today (2025). It is part of the accelerator chain that supplies proton beams to the Large Hadron Collider. With a circumference of 628 metres, the PS has 277 conventional (room-temperature) electromagnets, including 100 dipoles to bend the beams round the ring. The accelerator operates at up to 26 GeV. In addition to protons, it has accelerated alpha particles (helium nuclei), oxygen, sulphur, argon, xenon and lead nuclei, electrons, positrons and antiprotons. The source is a Thonemann type. In order to extract and accelerate the protons at high energy, a high frequency electrical field is used (140Mhz). The field is transmitted by a coil around a discharge tube in order to maintain the gas hydrogen in a ionised state. An electrical field pulse, in the order of 15kV, is then applied via an impulse transformer between anode and cathode of the discharge tube. The electrons and protons of the plasma formed in the ionised gas in the tube, are then separated. Currents in the order of 200mA during 100 microseconds have been obtained with this type of source. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-CE-001 43856 OBJOBJ 0000131	**Item - boxe of resistors**		Object
	Scope and content: <2> boxes of resistors. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-CE-002 43857 OBJOBJ 0000132	**Item - attenuator**		Object
	Scope and content:		

	Rhodes Schwarz variable attenuator.Controls the strength of the current produced. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-003 43858 OBJOBJ 0000133	**Item - photomultiplier tubes** Object *Scope and content*: <10>photomultiplier tubes. A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-006 43864 OBJOBJ 0000139	**Item - accelerating cavity** Object *Scope and content*: On the inside of the cavity there is a layer of niobium. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-013 43865 OBJOBJ 0000140	**Item - OPAL model** Object *Scope and content*: Engineering model used for the construction of the OPAL detector at the LEP accelerator.Scale=1/10 *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-014 43869 OBJOBJ 0000144	**Item - light guide** Object *Note [General]* : Mesures include holder. *Scope and content*: In detectors, light guides like this one are used to carry signals to the electronics for recording. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-DE-015 43870 OBJOBJ 0000145	**Item - Bubble chamber film** *Scope and content*: 3 bubble chamber film rolls from the 2m bubble chamber. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-016 43871 OBJOBJ 0000146	**Item - UA2 central calorimeter** *Scope and content*: The UA2 central calorimeter measured the energy of individual particles created in proton-antiproton collisions. Accurate calibration allowed the W and Z masses to be measured with a precision of about 1%. The calorimeter had 24 slices like this one, each weighing 4 tons. The slices were arranged like orange segments around the collision point. Incoming particles produced showers of secondary particles in the layers of heavy material. These showers passed through the layers of plastic scintillator, generating light which was taken by light guides (green) to the data collection electronics. The amount of light was proportional to the energy of the original particle. The inner 23 cm of lead and plastic sandwiches measured electrons and photons; the outer 80 cm of iron and plastic sandwiches measured strongly interacting hadrons. The detector was calibrated by injecting light through optical fibres or by placing a radioactive source in the tube on the bottom edge. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-007 43872 OBJOBJ 0000147	**Item - LEP tunnel** *Note [General]* : Model built with SIMA structure. Lighting included. *Scope and content*: Model of the LEP tunnel as it is in the 1990's. LEP(Large Electron Positron collider) was the world biggest accelerator. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-004 43873 OBJOBJ 0000148	**Item - capacitor** *Scope and content*: 100KV capacitor *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-017 43874 OBJOBJ 0000149	**Item - Wire chamber**	Object

	Scope and content: Wire chamber *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-007 43877 OBJOBJ 0000152	**Item - tracer of coordonates** *Note [General]* : In a wooden box. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-010 43878 OBJOBJ 0000153	**Item - Collision region of the ISR** *Note [General]* : <2> short texts about the ISR. *Scope and content*: This is a collision region from the world#s first proton collider, the Intersecting Storage Rings. The ISR was used at CERN from 1971-84 to study proton-proton collisions at the highest energy then available (60GeV). When operational, ISR collision regions were surrounded by detectors as shown in the photo. In 1972, the surprising discovery of fragments flying out sideways from head-on proton-proton collisions was the first evidence of quark-quark scattering inside the colliding protons . This was similar to Rutherford#s observation in 1911 of alpha particles scattering off the tiny nucleus inside atoms of gold. The ISR beamtubes had to be as empty as outer space, a vacuum 100 000 times better than other CERN machines at the time. *Restrictions on access*: Public	1970	Object
CERN-OBJ-CERN-OBJ-AC-011 43879 OBJOBJ 0000154	**Item - Slice of a LEP bending magnet** *Scope and content*: This is a slice of a Large Electron Positron collider (LEP, for short) dipole bending magnet, made as a concrete and iron sandwich The bending field needed in LEP is small (about 1000 Gauss), equivalent to two of the magnets people stick on fridge doors. Because it is very difficult to keep a low field steady, a high field was used in iron plates embedded in concrete. A CERN breakthrough in magnet design, LEP dipoles can be tuned easily and are cheaper than conventional magnets. With its 27-kilometre circumference, LEP was the largest electron-positron accelerator ever built and ran from 1989 to 2000 at CERN. *Restrictions on access*: Public	1989	Object
CERN-OBJ-CERN-OBJ-AC-012 43880 OBJOBJ 0000155	**Item - section of an accelerating cavity from LEP** *Note [General]* :		Object

	The dimension includes the support structure. *Scope and content*: This is a section of an accelerating cavity from LEP, cut in half to show the layer of niobium on the inside. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. These challenging requirements pushed European industry to new achievements. 256 of these cavities are now used in LEP to double the energy of the particle beams. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-018 43881 OBJOBJ 0000156	**Item - piston of BEBC** 1973 Object *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IM-008 43882 OBJOBJ 0000157	**Item - graphic recorder** Object *Note [General]* : Comes in a wooden box. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-003 43883 OBJOBJ 0000158	**Item - GNT 4604 Punching Machine** Object *Note [General]* : instruction manual *Scope and content*: Mostly used with scanning tables to record data coded on 6 holes. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-013 43884 OBJOBJ 0000159	**Item - first tank of Linac 1** Object *Scope and content*: This was the first tank of the linear accelerator Linac1, the injection system for the Proton Synchrotron, It ran for 34 years (1958 - 1992). Protons entered at the far end and were accelerated between the copper

	drift tubes by an oscillating electromagnetic field. The field flipped 200 million times a second (200 MHz) so the protons spent 5 nanoseconds crossing a drift tube and a gap. Moving down the tank, the tubes and gaps had to get longer as the protons gained speed. The tank accelerated protons from 500 KeV to 10 MeV. Linac1 was also used to accelerate deutrons and alpha particles for the Intersecting Storage Rings and oxygen and sulpher ions for the Super Proton Synchrotron heavy ion programme. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-015 43886 OBJOBJ 0000161	**Item - first cyclotron model**	1930	Object
	Note [General] : "Lawrence and his laboratory:Nuclear science at Berkeley 1931-1961" *Scope and content*: The first ever circular particle accelerator, a cyclotron, was just a few centimetres in diameter. Invented in 1930 by Ernest Lawrence, it was the fore-runner of today's huge machines. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-016 43887 OBJOBJ 0000162	**Item - slice of LEP beamtube with getter strip**	1989	Object
	Scope and content: A section of the LEP beam pipe. This is the chamber in which LEP's counter-rotating electron and positron beams travel. It is made of lead-clad aluminium. The beams circulate in the oval cross-section part of the chamber. In the rectangular cross-section part, LEP's innovative getter-strip vacuum pump is installed. After heating to purify the surface of the getter, the strip acts like molecular sticky tape, trapping any stray molecules left behind after the accelerator's traditional vacuum pumps have done their job. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-017 43888 OBJOBJ 0000163	**Item - Antiproton Focusing Horn**	1980	Object
	Note [General] : figure *Scope and content*: Was used for the AA (antiproton accumulator). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-018 43889 OBJOBJ 0000164	**Item - Cockcroft-Walton high voltage generator**	1964	Object
	Scope and content:		

	Cockcroft-Walton generator (or voltage doubler)(600kV) built by Philips and used in the Linac experimental area of the proton synclotron south hall (1964).Served as high voltage supply for the pre-injector of the 3Mev experimental Linac. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-019 43890 OBJOBJ 0000165	**Item - AA quadrupole magnet** 1980 Object *Scope and content*: Focusing magnet used for the AA (antiproton accumulator).Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 - three hundred thousand million - antiprotons. About focusing magnets (quadrupoles): Quadrupole magnets are needed to focus the particle beams and squeeze them so that more particles collide when the beams cross. Particle beams are stored for about 10 hours in the LHC. During this time, the particles make four hundred million revolutions around the machine, travelling a distance equivalent to the diameter of the solar system. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-020 43891 OBJOBJ 0000166	**Item - antiproton target** 1980 Object *Note [General]* : Target and focusing horn fixed onto the same holder. *Scope and content*: Antiproton target used for the AA (antiproton accumulator). Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 - three hundred thousand million - antiprotons. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-021 43892 OBJOBJ 0000167	**Item - Antiproton focusing horn** 1992 Object *Creator*: Remo Maccaferri *Note [General]* : Focusing horn and antiproton target fixed onto the same holder. *Scope and content*: This focusing horn was developed in 1992 by Remo Maccaferri, Jean Claude Schnuriger and Lubrano di Scampamorte and is still operating in the AD complex at CERN (as of 2017). This device could pulse at

	400 KA (160 KA for the previous version). This enabled an antiproton collection ten times better than the old one. Firstly, protons were accelerated to an energy of 26 GeV/c and ejected onto a metal target. From the spray of emerging particles, the magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, ten antiprotons were captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 - three hundred thousand million - antiprotons. Originally magnetic focusing horns were developed by Simon van der Meer - see for example object AC-022 in this database. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-019 43893 OBJOBJ 0000168	**Item - BEBC** *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public	1973	Object
CERN-OBJ-CERN-OBJ-DE-020 43894 OBJOBJ 0000169	**Item - Gargamelle** *Scope and content*: Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. It was designed principally for the detection at CERN of the elusive particles called neutrinos.In 1973, André Lagarrigue and his colleagues found evidence for neutral currents in Gargamelle bubble chamber pictures. Gargamelle is on display at CERN in the Microcosm garden. *Restrictions on access*: Public	1971	Object
CERN-OBJ-CERN-OBJ-DE-021 43895 OBJOBJ 0000170	**Item - bubble chamber lens** *Scope and content*: Lens from the RCBC (rapid cycling bubble chamber). Quantity: 2 lenses *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-022 43896 OBJOBJ 0000171	**Item - model of CERN second bubble chamber** *Scope and content*: 30cm diameter hydrogen bubble chamber for the SC (synchro-cyclotron) *Restrictions on access*: Public	1959	Object
CERN-OBJ-CERN-OBJ-	**Item - film holder**		Object

DE-023 43897 OBJOBJ 0000172	*Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-024 43898 OBJOBJ 0000173	**Item - chamber** *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- DE-025 43899 OBJOBJ 0000174	**Item - Gargamelle flash control system** *Scope and content*: Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. It was designed principally for the detection at CERN of the elusive particles called neutrinos. Gargamelle is on display at CERN in the Microcosm garden. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- DE-026 43900 OBJOBJ 0000175	**Item - Charpak hemispherical wire chamber** *Scope and content*: <3> pieces. Mesures are of the largest one. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public	1970	Object
CERN-OBJ- CERN-OBJ- IM-009 43901 OBJOBJ 0000176	**Item - oscilloscope** *Scope and content*: oldest CERN oscilloscope. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- IM-010 43902 OBJOBJ 0000177	**Item - voltmeter** *Scope and content*:	1955	Object

	Volts and millivolts. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-011 43903 OBJOBJ 0000178	**Item - voltmeter** *Scope and content*: Volts only. *Restrictions on access*: Public	1955	Object
CERN-OBJ-CERN-OBJ-IM-012 43904 OBJOBJ 0000179	**Item - fluxmeter** *Scope and content*: Used to mesure magnetic fields. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-013 43905 OBJOBJ 0000180	**Item - ammeter** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-014 43906 OBJOBJ 0000181	**Item - fluxmeter** *Scope and content*: Used to mesure the magnetic field. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-015 43907 OBJOBJ 0000182	**Item - multimetre** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-016 43908 OBJOBJ 0000183	**Item - BEBC hydrolic apparatus** *Scope and content*:		Object

	The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public	
CERN-OBJ-CERN-OBJ-IM-017 43909 OBJOBJ 0000184	**Item - power signal generator** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-005 43910 OBJOBJ 0000185	**Item - thyristor** *Scope and content*: Siemens. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-006 43911 OBJOBJ 0000186	**Item - FERMI multi-chip module** *Scope and content*: This FERMI multi-chip module contains five million transistors. 25 000 of these modules will handle the flood of information through parts of the ATLAS and CMS detectors at the LHC. To select interesting events for recording, crucial decisions are taken before the data leaves the detector. FERMI modules are being developed at CERN in partnership with European industry. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-007 43912 OBJOBJ 0000187	**Item - raw of small thyristors** *Scope and content*: Johnson 124-0111-001 *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-008 43913 OBJOBJ 0000188	**Item - variable resistor** *Scope and content*: <3> variable resistors. *Restrictions on access*: Public	Object

CERN-OBJ-CERN-OBJ-CE-009 43914 OBJOBJ 0000189	**Item - flash tube** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-010 43915 OBJOBJ 0000190	**Item - resistor** *Scope and content*: Rhodes and Schwarz type RGN. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-011 43916 OBJOBJ 0000191	**Item - photomultiplier tube** *Scope and content*: Philips. 150AVP. A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-012 43917 OBJOBJ 0000192	**Item - photomultiplier tube** *Scope and content*: <2> photomultiplier tubes. A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-013 43918 OBJOBJ 0000193	**Item - photomultiplier tube** *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect;	Object

	secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-027 43919 OBJOBJ 0000194	**Item - <2> rolls of film with results from BEBC** *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-018 43920 OBJOBJ 0000195	**Item - BEBC control system** *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-019 43921 OBJOBJ 0000196	**Item - scanning table parts** *Note [General]* : Mesures are of te box containing the 5 parts. Weight is of the 5 parts together. *Scope and content*: Includes notably an ERASME system for displacing the image and a mirror. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-020 43922 OBJOBJ 0000197	**Item - fluxmeter** *Scope and content*: Model F-8A. Used to mesure magnetic fields. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-028 43923 OBJOBJ 0000198	**Item - PS wire chamber** *Note [General]* :	1970	Object

	Light and display box included. *Scope and content*: A wire chamber used at CERN's Proton Synchrotron accelerator in the 1970s. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-029 43924 OBJOBJ 0000199	**Item - Scanning table** *Scope and content*: Before the invention of wire chambers, particles tracks were analysed on scanning tables like this one. Today, the process is electronic and much faster. Bubble chamber film - currently available - (links can be found below) was used for this analysis of the particle tracks. *Restrictions on access*: Public	1960	Object
CERN-OBJ-CERN-OBJ-AC-022 43925 OBJOBJ 0000200	**Item - magnetic horn** *Scope and content*: Neutrinos and antineutrinos are ideal for probing the weak force because it is effectively the only force they feel. How were they made? Protons fired into a metal target produce a tangle of secondary particles. A magnetic horn like this one, invented by Simon Van der Meer, selected pions and focused them into a sharp beam. Pions decay into muons and neutrinos or antineutrinos. The muons were stopped in a wall of 3000 tons of iron and 1000 tons of concrete, leaving the neutrinos or antineutrinos to reach the Gargamelle bubble chamber. A simple change of magnetic field direction on the horn flipped between focusing positively- or negatively-charged pion beams, and so between neutrinos and antineutrinos. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-CE-014 43926 OBJOBJ 0000201	**Item - electronic tube** *Scope and content*: In copper. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-021 43927 OBJOBJ 0000203	**Item - PS proton beam electronic counter** *Scope and content*:	1980	Object

	PS= proton synchrotron. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-030 43928 OBJOBJ 0000204	**Item - optics from the LSD** *Scope and content*: LSD= spiral digital reader *Restrictions on access*: Public	1968	Object
CERN-OBJ-CERN-OBJ-DE-031 43930 OBJOBJ 0000206	**Item - bubble chamber lens** *Creator*: Maria Fidecaro *Note [General]* : <2> technical papers The support is included in the dimensions. *Scope and content*: Was used in a PS experiment. Before the days of electronic detectors, visual techniques were used to detect particles, using detectors such as spark chambers and bubble chambers. This plexiglass lens was used to focus the image of tracks so they could be photographed. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-032 43931 OBJOBJ 0000207	**Item - CERN first bubble chamber** *Scope and content*: The 10cm diameter chamber made by Charles Peyrou was the first liquid hydrogen bubble chamber built at CERN. *Restrictions on access*: Public	1957	Object
CERN-OBJ-CERN-OBJ-DE-033 43932 OBJOBJ 0000208	**Item - Gargamelle optical tube** *Scope and content*: Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. The experiment ran at CERN from 1970 - 1976 and in 1973 found the first experimental evidence of the particles responsible for transmitting the weak force. The weak force, one of the 4 fundamental interactions at work in the universe, has long been the subject of research at CERN. The force is responsible for radioactivity and is the reason why the sun shines. Gargamelle observed what is known as neutral currents, the process of a neutrino and electron transforming into a muon and a neutrino by exchanging an electrically neutral force carrier. The interaction was triggered by a beam of neutrinos	1970	Object

	and recorded by photographing the trail of bubbles left behind in the freon that filled the experiment's main chamber. Gargamelle has been conserved and is now displayed in the Microcosm garden. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-023 43934 OBJOBJ 0000210	**Item - video beam observation panel from the ISR** *Scope and content*: The ISR (intersecting strorage rings) was used at CERN from 1971 to 1984 to study proton-proton collisions (see AC-010) *Restrictions on access*: Public	1970	Object
CERN-OBJ-CERN-OBJ-AC-024 43935 OBJOBJ 0000211	**Item - collision zone of an ISR** *Scope and content*: This is a collision region from the world#s first proton collider, the Intersecting Storage Rings. The ISR was used at CERN from 1971-84 to study proton-proton collisions at the highest energy then available (60GeV). When operational, ISR collision regions were surrounded by detectors as shown in the photo. In 1972, the surprising discovery of fragments flying out sideways from head-on proton-proton collisions was the first evidence of quark-quark scattering inside the colliding protons . This was similar to Rutherford#s observation in 1911 of alpha particles scattering off the tiny nucleus inside atoms of gold. The ISR beamtubes had to be as empty as outer space, a vacuum 100 000 times better than other CERN machines at the time. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-025 43936 OBJOBJ 0000212	**Item - SC tuning fork** *Scope and content*: The tuning fork used to modulate the radiofrequency system of the synchro cyclotron (SC) from 1957 to 1973. This piece is an unused spare part. The SC was the 1st accelerator built at CERN. It operated from August 1957 until it was closed down at the end of 1990. In the SC the magnetic field did not change with time, and the particles were accelerated in successive pulses by a radiofrequency voltage of some 20kV which varied in frequency as they spiraled outwards towards the extraction radius. The frequency varied from 30MHz to about 17Mz in each pulse. The tuning fork vibrated at 55MHz in vacuum in an enclosure which formed a variable capacitor in the tuning circuit of the RF system, allowing the RF to vary over the appropriate range to accelerate protons from the centre of the macine up to 600Mev at extraction radius. In operation the tips of the tuning fork blade had an amplitude of movement of over 1 cm. The SC accelerator underwent extensive improvements from 1973 to 1975, including the installation of a rotating condenser instead of the tuning fork as the modulating element of the radiofrequency system (see object AC-027). *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-	**Item - LINAC 2 prototype**		Object

AC-026 43937 OBJOBJ 0000213	*Scope and content*: Prototype of Linac 2, a Linear proton accelerator used in the PS (proton synchrotron accelerator injection system). A Linearaccelerator is a particle accelerator which accelerates charged particles - electrons, protons or heavy ions - in a straight line. Charged particles enter at one end and are accelerated towards the first drift tube by an electric field. Once inside the drift tube, they are shielded from the field and drift through at a constant velocity. When they arrive at the next gap, the field accelerates them again until they reach the next drift tube. This continues, with the particles picking up more and more energy in each gap, until they shoot out of the accelerator at the other end. Linac 2,also called Alvarez Proton Linac, was first run in 1978 and is still running today. It provides pulsed (1 Hz) beams of up to 170 mA at 50 MeV with pulse lengths varying between 20 and 150 ms depending on the number of protons required. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-034 43938 OBJOBJ 0000214	**Item - spark chamber** Object *Scope and content*: for parts *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-015 43940 OBJOBJ 0000216	**Item - photomultiplier tube** Object *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-016 43941 OBJOBJ 0000217	**Item - photomultiplier tube** Object *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-CE-017 43942 OBJOBJ 0000218	**Item - photomultiplier tube**		Object
	Scope and content: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-002 43943 OBJOBJ 0000219	**Item - IBM data storage disk**		Object
	Creator: Dave Underhill *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-004 43945 OBJOBJ 0000221	**Item - Computer**		Object
	Scope and content: Special terminals for the first computer ever used by CERN library. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-005 43948 OBJOBJ 0000224	**Item - ordinateur**		Object
	Scope and content: One of the first PC used at CERN.4 pieces. Dimensions are of the largest piece. Weight is of the 4 pieces together. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-035 43949 OBJOBJ 0000225	**Item - Breskin wire chamber**	1970	Object
	Creator: Bouclier *Note [General]* : <!--HTML--><U>Previous exhibition venues:</U> - Center for Art and Media ZKM - Karlsruhe, Germany (4 May - 1 Sept. 2002)		

	Scope and content: Prototype made by Breskin.Has never been used. Breskin was a ph.d student working under Charpak supervision. The dimensions include the support. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-036 43950 OBJOBJ 0000226	**Item - scintillator** *Scope and content*: <2> scintillators with their support. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-006 43951 OBJOBJ 0000227	**Item - emulator** *Note [General]* : <2> pieces. Dimensions are of the largest one. *Scope and content*: Emulator 370/E used to analyse data from the UA1 detector. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-047 43952 OBJOBJ 0000228	**Item - Prototype muon chamber CMS** *Creator*: Jose Lamas Valver *Scope and content*: prototype of the endcap of CMS (compact muon solenoid), a detector for the LHC. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-027 43953 OBJOBJ 0000229	**Item - rotor of the SC rotating condenser** *Scope and content*: The rotor of the rotating condenser was installed instead of the tuning fork as the modulating element of the radiofrequency system, when the SC accelerator underwent extensive improvements between 1973 to 1975 (see object AC-025). The SC was the first accelerator built at CERN. It operated from August 1957 until it was closed down at the end of 1990. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-	**Item - PS wire chamber**	1970	Object

DE-037 43954 OBJOBJ 0000230	*Creator*: Maria Fidecaro *Scope and content*: A wire chamber used at CERN's Proton Synchrotron accelerator in the 1970s. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-038 43955 OBJOBJ 0000231	**Item - PS wire chamber** 1970 Object *Creator*: Maria Fidecaro *Note [General]* : <!--HTML--><U>Previous exhibition venues</U>: - University of Paris (October 1999) *Scope and content*: Three pieces. Wire chambers used for the beams at CERN's Proton Synchrotron accelerator in the 1970s. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-039 43956 OBJOBJ 0000232	**Item - wire chamber** Object *Note [General]* : Needs some repairing. *Scope and content*: Proportional multi-wire chamber. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. Proportional wire chambers allow a much quicker reading than the optical or magnetoscriptive readout wire chambers. *Restrictions on access*:

	Public		
CERN-OBJ-CERN-OBJ-DE-040 43957 OBJOBJ 0000233	**Item - Wire chamber** *Scope and content*: Magnetoscriptive readout wire chamber.Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public	1967	Object
CERN-OBJ-CERN-OBJ-DE-041 43958 OBJOBJ 0000234	**Item - Wire Chamber** *Scope and content*: Magnetoscriptive readout wire chamber. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-042 43959 OBJOBJ 0000235	**Item - experimental instrument for wire chambers** *Creator*: Maria Fidecaro *Scope and content*: Instrument used to test the wires of small chambers before closing them. The chambers were 50cm long, 0.45cm wide and 0.06cm thick. They were meant to be used in a calorimeter for a PS experiment. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-043 43960 OBJOBJ 0000236	**Item - study of a wire chamber split up into sectors** *Scope and content*: This object was a prototype for a wire chamber with a cylindrical symetry. It was never used in an experiment. *Restrictions on access*:		Object

	Public		
CERN-OBJ-CERN-OBJ-DE-044 43961 OBJOBJ 0000237	**Item - double counter** *Creator*: Jean Marc Gaillard *Scope and content*: A double counter made of a scintillation counter with 8 photomultiplier tubes and a cherenkov counter. Was used to identify particles.The dimensions include the support. *Restrictions on access*: Public	1970	Object
CERN-OBJ-CERN-OBJ-DE-045 43962 OBJOBJ 0000238	**Item - needs to be identify** *Scope and content*: wire chamber or spark chamber? *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-046 43963 OBJOBJ 0000239	**Item - bubble chamber camera** *Scope and content*: <4> pieces.The dimensions are of the camera body. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-048 43964 OBJOBJ 0000240	**Item - wire chamber** *Note [General]* : <!--HTML--><U>Previous exhibition venues</U>: - "Science en fête", University of Paris, 18-20.10. 2000 - "Lepfest", CERN *Scope and content*: Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-	**Item - radiofrequency cavity**	1988	Object

AC-028 43965 OBJOBJ 0000241	*Scope and content*: The pulse of a particle accelerator. 128 of these radio frequency cavities were positioned around CERN's 27-kilometre LEP ring to accelerate electrons and positrons. The acceleration was produced by microwave electric oscillations at 352 MHz. The electrons and positrons were grouped into bunches, like beads on a string, and the copper sphere at the top stored the microwave energy between the passage of individual bunches. This made for valuable energy savings as it reduced the heat generated in the cavity. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-049 43966 OBJOBJ 0000242	**Item - fish eye** Object *Note [General]* : The dimensions are of the box. *Scope and content*: Camera lens for bubble chamber. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- AC-029 43967 OBJOBJ 0000243	**Item - accelerating cavity from LEP** Object *Scope and content*: This is an accelerating cavity from LEP, with a layer of niobium on the inside. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. These challenging requirements pushed European industry to new achievements. 256 of these cavities are now used in LEP to double the energy of the particle beams. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- DE-050 43968 OBJOBJ 0000245	**Item - Wire chamber** Object *Scope and content*: Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-DE-051 43969 OBJOBJ 0000246	**Item - wire chamber**	1985	Object
	Scope and content: Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-030 43970 OBJOBJ 0000249	**Item - Vacuum Valve**	1974	Object
	Scope and content: This valve was used in the Intersecting Storage Rings (ISR) to protect against the shock waves that would be caused if air were to enter the vacuum tube. Some of the ISR chambers were very fragile, with very thin walls - a design required by physicists on the lookout for new particles. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-031 43971 OBJOBJ 0000250	**Item - Magnetic Focusing Horn**	1974	Object
	Note [General] : Focusing horn and antiproton target fixed onto the same holder. *Scope and content*: This magnetic focusing horn was used for the AA (antiproton accumulator). Its development was an important step towards using CERN's Super Proton Synchrotron as a proton - antiproton collider. This eventually led to the discovery of the W and Z particles in 1983. Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 -, three hundred thousand million - antiprotons. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-052 43973 OBJOBJ 0000252	**Item - DELPHI Silicon Tracker**		Object
	Scope and content: DELPHI was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. The silicon tracking detector was nearest to the collision point in the centre of the detector. It was used to pinpoint the collision and catch short-lived particles. *Restrictions on access*:		

	Public	
CERN-OBJ-CERN-OBJ-DE-053 43974 OBJOBJ 0000253	**Item - DELPHI Barrel Ring Imaging Cherenkov Detector** *Scope and content*: DELPHI was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. This is a piece of the Barrel Ring Imaging Cherenkov detector which was used to identify particles in DELPHI.It measured the Cherenkov light emitted when particles travelled faster than the speed of light through the material of the detector. The photo shows the complete Cherenkov detector. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-056 43977 OBJOBJ 0000256	**Item - OPAL Central Detector (Including vertex, jet and Z chambers)** *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. OPAL's central tracking system consists of (in order of increasing radius) a silicon microvertex detector, a vertex detector, a jet chamber, and z-chambers. All the tracking detectors work by observing the ionization of atoms by charged particles passing by: when the atoms are ionized, electrons are knocked out of their atomic orbitals, and are then able to move freely in the detector. These ionization electrons are detected in the different parts of the tracking system. (This piece includes the vertex, jet and Z chambers) In the picture above, the central detector is the piece being removed to the right. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-057 43978 OBJOBJ 0000257	**Item - Array of lead-glass blocks from OPAL** *Scope and content*: OPAL was one of the 4 experiments at CERN's Large Electron Positron collider (LEP) which ran from 1989 - 2000. This array of 96 lead glass bricks formed part of the OPAL electromagnetic calorimeter. In total, there were 9440 lead glass counters in the OPAL electromagnetic calorimeter, made of Schott type SF57 glass and each block weighs about 25 kg and consists of 76% PbO by weight. Each block has a Hamamatsu R2238 photomultiplier glued on to it. The complete detector was in the form of a cylinder 7m long and 6m in diameter. It was used to measure the energy of electrons and photons produced in LEP electron positron collisions. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-058 43985 OBJOBJ 0000264	**Item - OPAL Various Lead Glass Blocks** *Scope and content*: These lead glass blocks were part of a CERN detector called OPAL (one of the four experiments at the LEP particle detector). OPAL uses some 12 000 blocks of glass like this to measure particle energies in the electromagnetic calorimeter. This detector measured the energy deposited when electrons and photons were slowed down and stopped.	Object

	Restrictions on access: Public
CERN-OBJ-CERN-OBJ-DE-059 43986 OBJOBJ 0000265	**Item - OPAL Silicon Tungsten Luminometer** Object *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. The Silicon Tungsten Luminometer was part of OPAL's calorimeter which was used to measure the energy of particles. Most particles end their journey in calorimeters. These detectors measure the energy deposited when particles are slowed down and stopped. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-060 43987 OBJOBJ 0000266	**Item - OPAL Example Segment of Silicon Tungsten Luminometer** Object *Note [General]* : Awaiting intervention of Dick Kellogg to open up detector and reveal insides. *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. The Silicon Tungsten Luminometer was part of OPAL's calorimeter which was used to measure the energy of particles. Most particles end their journey in calorimeters. These detectors measure the energy deposited when particles are slowed down and stopped. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-032 43988 OBJOBJ 0000268	**Item - Niobium LEP 2 accelerating cavities** Object *Scope and content*: An accelerating cavity from LEP. This could be cut open to show the layer of niobium on the inside. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. These challenging requirements pushed European industry to new achievements. 256 of these cavities were used in an upgrade of the LEP accelerator to double the energy of the particle beams. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-033 43989 OBJOBJ 0000269	**Item - LEP Machine** Object *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-AC-034 43990 OBJOBJ 0000270	**Item - LEP Machine 2 half Cells** *Note [General]* : Gone to Delphi for exhibition. (Contact person: Philippe Charpentier) *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-062 43991 OBJOBJ 0000271	**Item - OPAL Forward Calorimeter (half cylinder with lead scintillator)** *Note [General]* : <!--HTML-->The forward detector can have its upper panel removed to show the lead - scintillator sandwich construction. <P> <U>Previous exhibition venues</U>: - Technisches Museum Wien "When Energy Becomes Matter" (May-October 2001)</P> *Scope and content*: 1 half cylinder piece is available for loan. The OPAL forward Detector Calorimeter was made in 4 half cylindrical pieces. Two full cylinders were placed round the LEP beam pipe about 3m downstream of the interaction point. The detector was used primarily to measure the luminosity of LEP (rate of interactions) and also to trigger on 2-photon events. In addition it formed an essential part of the detector coverage which OPAL needed to carry out searches for new particles such as the Higgs boson. The detector is made of scintillators sandwiched between lead sheets. The light from the scintillators passes via bars of wavelength shifter and light guides on its way to be measured by photomultipliers. There is a layer of gas filled tube chambers within the calorimeter. These provide a measure of the position of the particles interacting in the calorimeter. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-035 43992 OBJOBJ 0000272	**Item - LEP: Supra Conducting Magnet + quadrupole** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-036 43993 OBJOBJ 0000273	**Item - LEP Radio Frequency Copper Cavity** *Note [General]* : <!--HTML--><BLINK>Some cavities are available to give.</BLINK> Please, contact us for further information. *Scope and content*: The pulse of a particle accelerator. 128 of these radio frequency cavities were positioned around CERN's 27-kilometre LEP ring to accelerate electrons and positrons. The acceleration was produced by microwave electric oscillations at 352 MHz. The electrons and positrons were grouped into bunches, like beads on a string, and the copper sphere at the top stored the microwave energy between the passage of individual bunches. This made for valuable energy savings as it reduced the heat generated in the cavity. *Restrictions on access*:	Object

	Public		
CERN-OBJ-CERN-OBJ-DE-065 43995 OBJOBJ 0000277	**Item - OPAL Jet Chamber Prototype**	1984-86	Object
	Creator: Alasdair Smith *Note [General]* : lighting, mobile support structure and plexi-glass cover included. (Photos: Exhibition "TESLA - Licht der Zukunft" VW-Forum, Berlin (Germany). *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. OPAL's central tracking system consists of (in order of increasing radius) a silicon microvertex detector, a vertex detector, a jet chamber, and z-chambers. All the tracking detectors work by observing the ionization of atoms by charged particles passing by: when the atoms are ionized, electrons are knocked out of their atomic orbitals, and are then able to move freely in the detector. These ionization electrons are detected in the dirfferent parts of the tracking system. This piece is a prototype of the jet chambers *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-066 43996 OBJOBJ 0000278	**Item - DELPHI Forward Muon Chamber**		Object
	Creator: Catherine De Clercq *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-067 43997 OBJOBJ 0000279	**Item - DELPHI Barrel Muon Chamber Module**	1989	Object
	Creator: Alan Segar *Note [General]* : This module is a special short module, used to cover the region close to the support legs of DELPHI. *Scope and content*: The module was used as part of the muon identification system on the barrel of the DELPHI detector at LEP, and was in active use from 1989 to 2000. The module consists of 7 individual muons chambers arranged in 2 layers. Chambers in the upper layer are staggered by half a chamber width with respect to the lower layer. Each individual chamber is a drift chamber consisting of an anode wire, 47 microns in diameter, and a wrapped copper delay line. Each chamber provided 3 signal for each muon passing through the chamber, from which a 3D space-point could be reconstructed. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-	**Item - CMS Tracker Model**		Object

DE-068 43998 OBJOBJ 0000280	*Creator*: Antti Onnela *Scope and content*: Model of the tracking detector for the CMS experiment at the LHC. This object is a mock-up of an early design of the CMS Tracker mechanics. It is a segment of a “Wheel” to support Micro-Strip Gas Chamber (MSGC) detector modules on the outer layers and silicon-strip detector modules in the innermost layers. The particularity of that design is that modules are organised in spirals, along which power and optical cables and cooling pipes were planned to be routed. Some of such spirals are illustrated in the mock-up by the colors of the modules. With the detector development it became, however, evident that the silicon detectors would need to be operated in LHC experiments in cold temperatures, while the MSGC could stay in normal room-temperature. That split in two temperatures lead to separating those two detector types by a thermal barrier and therefore jeopardizing the idea of using common, vertical Wheels with services arranged along spirals. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-069 43999 OBJOBJ 0000281	**Item - OPAL Muon Chamber** *Note [General]* : - *Scope and content*: OPAL was one of the 4 experiments installed at the LEP particle accelerator from 1989 to 2000. This is a slice of the outermost layer of OPAL : the muon chambers. This outside layer detects particles which are not stopped by the previous layers. These are mostly muons. *Restrictions on access*: Public	1989-2000	Object
CERN-OBJ- CERN-OBJ- DE-071 44001 OBJOBJ 0000283	**Item - Obelix Wire Chamber** *Note [General]* : These 2 wire chambers are spectacular. Holes can be cut to reveal the wires behind the layers of electronics. *Scope and content*: Two wire chambers made originally for the R807 Experiment at CERN's Intersecting Storage Rings. In 1986 they were used for the PS 201 experiment (Obelix Experiment) at LEAR, the Low Energy Antiproton Ring. The group of researchers from Turin, using the chambers at that time, changed the acquisition system using for the first time 8 bit (10 bit non linear) analog to digital conversion for incoming signals from the chambers. The acquisition system was controlled by 54 CPU and 80 digital signal processors. The power required for all the electronics was 40 kW. For the period, this system was one of the most powerful on-line apparatus in the world. The Obelix Experiment was closed in 1996. To find more about how a wire chamber works, see the description for object CERN-OBJ-DE-038. *Restrictions on access*: Public	1986	Object
CERN-OBJ- CERN-OBJ-	**Item - Cisco ASM Router**	2001	Object

IT-007 44002 OBJOBJ 0000284	*Scope and content*: One of the two "ASM/2-32EM" boxes installed in 1988, from "Cisco Systems Inc." - then an unknown 20-employee company in Menlo Park, California (USA). This is one of the first two Cisco boxes to appear in Switzerland, and possibly Europe. The 220v power supply was a special modification made for use at CERN. They supported IP address filtering, which seemed just what CERN needed to help protect the new Cray XMP-48 super computer from network hackers. The two ASM boxes were both routers and terminal servers. They protected a secure private Ethernet segment used by the Cray project, as well as providing secure terminal connections to that segment, including CERN's first dialback terminal service, which allowed Cray and CERN system analysts to work on the machine from home, using another Cisco feature called TACACS. (Kindly offered by B. Segal who discovered this company while at a Usenix Conference in Phoenix, Arizona in June 1987.) *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- AC-038 44003 OBJOBJ 0000285	**Item - Slice of a LEP bending magnet** *Scope and content*: This is a slice of a LEP dipole bending magnet, made as a concrete and iron sandwich. The bending field needed in LEP is small (about 1000 Gauss), equivalent to two of the magnets people stick on fridge doors. Because it is very difficult to keep a low field steady, a high field was used in iron plates embedded in concrete. A CERN breakthrough in magnet design, LEP dipoles can be tuned easily and are cheaper than conventional magnets. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- AC-039 44005 OBJOBJ 0000287	**Item - Antiproton Target** *Note [General]* : Targets designed and made by C. Johnson and M. Frauchiger, CERN *Scope and content*: <!--HTML-->Antiproton target used for the AA (antiproton accumulator). The first type of antiproton production target used from 1980 to 1982 comprised a rod of copper 3mm diameter and 120mm long embedded in a graphite cylinder that was itself pressed into a finned aluminium container. This assembly was air-cooled and it was used in conjunction with the Van der Meer magnetic horn. In 1983 Fermilab provided us with lithium lenses to replace the horn with a view to increasing the antiproton yield by about 30%. These lenses needed a much shorter target made of heavy metal - iridium was chosen for this purpose. The 50 mm iridium rod was housed in an extension to the original finned target container so that it could be brought very close to the entrance to the lithium lens. Picture 1 shows this target assembly and Picture 2 shows it mounted together with the lithium lens. These target containers had a short lifetime due to a combination of beam heating and radiation damage. This led to the design of the water-cooled target in a titanium alloy body <A href="http://weblib.cern.ch/format/showfull?uid=519512&base=OBJOBJ&sysnb=0000166"> (see object AC-020).</A> *Restrictions on access*: Public	1980	Object
CERN-OBJ- CERN-OBJ-	**Item - Klystron**	1990	Object

AC-040 44007 OBJOBJ 0000289	*Scope and content*: <!--HTML--> This klystron has been specially designed to be used as an RF source in particle accelertators. It is a five-cavity, high-gain, sealed-off klystron amplifier, able to deliver 17.5 kW of minimum average power and 35 MW minimum peak power at 2998.5 MHz. The maximum RF pulse duration available from this high-power klystron is 4.5 µsec. This klystron includes an ion pump, which ensures a continuous high vacuum. Used in the LEP injector LP1. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-012 710588 OBJOBJ 0000120	**Item - CHORUS light guide** *Scope and content*: Chorus light guide and a selection of fibres in wooden box. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- DE-074 2235799	**Item - ATLAS Transition Radiation Tracker - small piece** *Scope and content*: The ATLAS transition radiation tracker is made of 300'000 straw tubes, up to 144cm long. Filled with a gas mixture and threaded with a wire, each straw is a complete mini-detector in its own right. An electric field is applied between the wire and the outside wall of the straw. As particles pass through, they collide with atoms in the gas, knocking out electrons. The avalanche of electrons is detected as an electrical signal on the wire in the centre. The tracker plays two important roles. Firstly, it makes more position measurements, giving more dots for the computers to join up to recreate the particle tracks. Also, together with the ATLAS calorimeters, it distinguishes between different types of particles depending on whether they emit radiation as they make the transition from the surrounding foil into the straws. *Restrictions on access*: Public	2006	Object
CERN-OBJ- CERN-OBJ- AC-048 2253655	**Item - Niobium Titanium and Copper wire samples** *Scope and content*: Two wire samples, both for carrying 13'000Amperes. I sample is copper. The other is the Niobium Titanium wiring used in the LHC magnets. The high magnetic fields needed for guiding particles around the Large Hadron Collider (LHC) ring are created by passing 12’500 amps of current through coils of superconducting wiring. At very low temperatures, superconductors have no electrical resistance and therefore no power loss. The LHC is the largest superconducting installation ever built. The magnetic field must also be extremely uniform. This means the current flowing in the coils has to be very precisely controlled. Indeed, nowhere before has such precision been achieved at such high currents. Magnet coils are made of copper-clad niobium–titanium cables — each wire in the cable consists of 9’000 niobium–titanium filaments ten times finer than a hair. The cables carry up to 12’500 amps and must withstand enormous electromagnetic forces. At full field, the force on one metre of magnet is comparable to the weight of a jumbo jet. Coil winding requires great care to prevent movements as the field changes. Friction can create hot spots which “quench” the magnet and ruin its superconductivity. A quench in any of the LHC superconducting magnets would stop machine operation. 50’000 tonnes of steel sheets are	2009	Object

	used to make the magnet yokes that keep the wiring firmly in place. The yokes constitute approximately 80% of the accelerator's weight and, placed side by side, stretch over 20 km! *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-060 2253707	**Item - Section of LHC beampipe** 2009 Object *Scope and content*: A short section of the LHC beampipe including beam screen. Particle beams circulate for around 10 hours in the Large Hadron Collider (LHC). During this time, the particles make four hundred million revolutions of the machine, travelling a distance equivalent to the diameter of the solar system. The beams must travel in a pipe which is emptied of air, to avoid collisions between the particles and air molecules (which are considerably bigger than protons). The beam pipes are pumped down to an air pressure similar to that on the surface of the moon. Emptying the air from the two 27 km long Large Hadron Collider beam-pipes is equivalent in volume to emptying the nave of the Notre Dame cathedral in Paris. Initially, the air pressure is reduced by pumping. Then, cold sections of the beam-pipe are further emptied using the temperature gradient across special beam-screens inside the tube where particles travel. The warm sections are emptied using a coating called a getter that works like molecular fly-paper. This vacuum technology has applications in high performance solar panels. More technical information: In the LHC, particles circulate under vacuum. The vacuum chamber can be at room temperature (for example, in the experimental areas), or at cryogenic temperature, in the superconductive magnets. This piece is located in the superconductive magnets. The outer pipe is the vacuum chamber, which is in contact with the magnets, at cryogenic temperature (1.9K). It is called the “cold bore”. The inner tube is the beam screen. Its main goal is to protect the magnets from the heat load coming from the synchrotron radiation. Indeed, when high energy protons’ trajectory is bent, photons are emitted by the beam. They are intercepted by the beam screen. The temperature of the beam screen is kept between 5 and 20K by a circulation of gaseous helium in the small pipes on both sides of the beam screen. As those surfaces are at cryogenic temperature. The residual gas present in the accelerator is sticking on the surfaces. This phenomenon called “adsorption” is used to maintain a very low pressure in the vacuum chamber of the accelerator. About materials: The cold bore is in stainless steel. The beam screen is in stainless steel with colaminated copper. Both those material have a low outgassing rates, which means that they release few molecules in the vacuum chamber. About beam and impedance: The goal of the copper, which has a good electrical conductivity, is to facilitate the circulation of the image current. The beam is composed of charged particules circulating: it is an electric current. When it is circulating, an image current is produced. It is called induction. If the image current cannot circulate properly, the beam is slowed down. About adsorption process: When the beam circulates, photons from synchrotron radiation are emitted and hit the beam screen. By doing so, they desorb molecules from the walls. The molecules are then pumped down on the outer pipe (where they cannot be reached by the photons anymore), through the small holes in the beam screen. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-079 2254084	**Item - ATLAS Liquid Argon Calorimeter 2m prototype** 1990 Object *Creator*: Claire Bouradrios *Scope and content*: This module was built and tested with beam to validate the ATLAS electromagnetic calorimeter design. One original design feature is the folding. 10 000 lead plates and electrodes are folded into an accordion shape and immersed in liquid argon. As they cross the folds, particles are slowed down by the lead. As they collide with the lead atoms, electrons and photons are ejected. There is a knock-on effect and as they continue on into the argon, a whole shower is produced. The electrodes collect up all the electrons and

	this signal gives a measurement of the energy of the initial particle. This 2 m long module dates back to the first detector studies for the LHC in the 1990's. It was built by the R&D collaboration RD-3 to evaluate the performances of liquid argon calorimetry for the physics programme - the search for the Higgs boson decays into two photons, in particular. After the choice of that technology by the ATLAS collaboration, the design of its elements were reassessed in view of production and a new module was tested in the CERN beam lines, leading to the Technical Design Report in 1996. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-072 2264547	**Item - Silicon detector** Object *Scope and content*: Used in LEP experiment. It is a element of the first OPAL silicon strip vertex detector. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-073 2264550	**Item - ATLAS muon detector** Object *Scope and content*: Muon detectors from the outer layer of the ATLAS experiment at the Large Hadron Collider. Over a million individual detectors combine to make up the outer layer of ATLAS. All of this is exclusively to track the muons, the only detectable particles to make it out so far from the collision point. How the muon's path curves in the magnetic field depends on how fast it is travelling. A fast muon curves only a very little, a slower one curves a lot. Together with the calorimeters, the muon detectors play an essential role in deciding which collisions to store and which to ignore. Certain signals from muons are a sure sign of exciting discoveries. To make sure the data from these collisions is not lost, some of the muon detectors react very quickly and trigger the electronics to record. The other detectors take a little longer, but are much more precise. Their job is to measure exactly where the muons have passed, calculating the curvature of their tracks in the magnetic field to the nearest five hundredths of a millimetre. Even these precision detectors are not exactly sluggish – they react within a millionth of a second. Such a fast response is essential when new collisions are occurring in the centre of ATLAS 40 million times every second! This muon detector is a drift tube - an aluminium tube with a wall thickness of some 1/10 mm that is filled with a special gas mixture. Inside the tube there is a wire that is tightened all over the length of the tube and fixed at the end caps. Particles (or ionizing radiation) that enter the tube ionize the gas molecules and liberate electrons. Since there is a high voltage between the wire and the tube wall, the released negatively charged electrons move towards the wire in the centre of the tube. On their way to the central wire, the moving electrons induce an electric signal that can be amplified and registered by further electronics. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-075 2264554	**Item - DELPHI prototype lead glass brick** Object *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-076 2264617	**Item - DUMAND detector** Object *Creator*:

	dominique.bertola@cern.ch Dominique Bertola *Scope and content*: This object is one of the 256 other detectors of the DUMAND (Deep Underwater Muon And Neutrino Detection) experiment. The goal of the experiment was the construction of the first deep ocean high energy neutrino detector, to be placed at 4800 m depth in the Pacific Ocean off Keahole Point on the Big Island of Hawaii. A few years ago, a European conference with Cosmic experiments was organized at CERN as they were projects like DUMAND in Hawaii. Along with the conference, a temporary exhibition was organised as well. It was a collaboration of institutions from Germany, Japan, Switzerland and the U.S.A. CERN had borrowed equipment and objects from different institutes around the world, including this detector of the DUMAND experiment. Most of the equipment were sent back to the institutes, however this detector sphere was offered to a CERN member of the personnel. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-077 2264663	**Item - Equipment from UA1** *Scope and content*: Donated by B. Chaddaz. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-078 2264664	**Item - unknown** *Scope and content*: Various pieces. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-047 2266136	**Item - LHC magnet support post** *Scope and content*: A prototype magnet support for the Large Hadron Collider (LHC). The magnet supports have to bridge a difference in temperature of 300 degrees. Electrical connections, instrumentation and the posts on which the magnets stand are the only points where heat transfer can happen through conduction. They are all carefully designed to draw off heat progressively. The posts are made of 4 mm thick glass-fibre– epoxy composite material. Each post supports 10 000 kg of magnet and leaks just 0.1 W of heat. This piece required a long development period which started in the early ’90s and continued until the end of the decade. The wires next to the support post are wires from strain gauges, which are employed to measure the stress level in the material when the support is mechanically loaded. These supports are mechanically optimized to withstand a weight of up to 100Kn (10 tons) while being as thin as possible to minimize conduction heat to magnets. This is the reason why the stress measurement was extensively done in the prototyping phase. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-AC-044 2266150	**Item - Focusing horn** *Scope and content*:	1980	Object

	This was the first magnetic horn developed by Simon Van der Meer to collect antiprotons in the AD complex. It was used for the AA (antiproton accumulator). Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV/c (protons at 26GeV/c, antiprotons at 3.6GeV/c) in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 -, three hundred thousand million - antiprotons. The development of this technology was a key step to the functioning of CERN's Super Proton Synchrotron as a proton - antiproton collider. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-008 2266312	**Item - 140Mb 9-track tape**	1965	Object
	Scope and content: With arrival of CDC 6600 at CERN in January 1965, there came the first half-inch wide 7-tracks tape units with magnetic tapes at recording densities of 200, 556 and 800 bpi (bytes per inch). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-009 2266313	**Item - 10 MB disk platter from CDC 7638**	1974	Object
	Scope and content: This magnetic disk was one of three which interfaced with various Control Data machines. This single platter came from a Control Data 7638 Disk Storage Subsystem and could contain up to 10MB - about the size of a few MP4's on your iPod. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-010 2266314	**Item - IBM 3851 Mass Storage Cartridges**	1978	Object
	Scope and content: These cartridges represent the first step in technologies to automate the reading, writing and retrieval of data. Previous to this, all data had to be retrieved, loaded and dismounted by hand. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-011 2266316	**Item - StorageTek T10000 Tape Cartridge**	1985	Object
	Scope and content: Oracle StorageTek T10000T2 cartridge has total capacity of 5 TB. It is actually manufactured by Fuji Film, uses Barium Ferrite (BaFe) particles technology data store, but is also equipped with RFID chip. There is over 1 km of tape inside of the cartridge with 3584 data tracks and it supports over 25000 load/unload cycles. The archival life is estimated to be around 30 years and uncorrected bit error rate is 10-19. CERN however usually migrates data to newer technologies roughly every 5 years in order to keep the footprint under control. *Restrictions on access*:		

	Public		
CERN-OBJ-CERN-OBJ-IT-012 2266317	**Item - IBM 3390 Hard Disk Platter** *Scope and content*: The 3390 disks rotated faster than those in the previous model 3380. Faster disk rotation reduced rotational delay (ie. the time required for the correct area of the disk surface to move to the point where data could be read or written). In the 3390's initial models, the average rotational delay was reduced to 7.1 milliseconds from 8.3 milliseconds for the 3380 family. *Restrictions on access*: Public	1991	Object
CERN-OBJ-CERN-OBJ-IT-013 2266318	**Item - 2TB hard disk drive** *Scope and content*: This particular object was used up until 2012 in the Data Centre. It slots into one of the Disk Server trays. Hard disks were invented in the 1950s. They started as large disks up to 20 inches in diameter holding just a few megabytes (link is external). They were originally called "fixed disks" or "Winchesters" (a code name used for a popular IBM product). They later became known as "hard disks" to distinguish them from "floppy disks (link is external)." Hard disks have a hard platter that holds the magnetic medium, as opposed to the flexible plastic film found in tapes and floppies. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-014 2266319	**Item - Disk Storage Server** *Scope and content*: This model was a disk storage server used in the Data Centre up until 2012. Each tray contains a hard disk drive (see the 5TB hard disk drive on the main disk display section - this actually fits into one of the trays). There are 16 trays in all per server. There are hundreds of these servers mounted on racks in the Data Centre, as can be seen. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-015 2266320	**Item - CERNET Interface Card** *Scope and content*: Homegrown networking technology pre-dating the internet. This is a CERNnet card developed and built at CERN. There was a lot of space on the card between the components, so the engineers decided to put their portraits on it. *Restrictions on access*: Public	1978	Object
CERN-OBJ-CERN-OBJ-IT-016 2266321	**Item - 10BASE5 Ethernet Cable & Vampire Tap** *Scope and content*:	1983	Object

	10BASE5 Thick Ethernet Cable, 10Mbit/sec. In the 1980s and early 1990's, Ethernet became more popular and provided a much faster data transmission rate. This cable is one of the first ethernet cables from 1983, a thick, bulky affair. Computers were attached via "Vampire Taps" which were connectors screwed straight through the shielding of the cable. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-017 2266322	**Item - NExT server** *Scope and content*: The first website at CERN - and in the world - was dedicated to the World Wide Web project itself and was hosted on Berners-Lee's NeXT computer. The website described the basic features of the web; how to access other people's documents and how to set up your own server. This NeXT machine - the original web server - is still at CERN. As part of the project to restore the first website, in 2013 CERN reinstated the world's first website to its original address. *Restrictions on access*: Public	1989	Object
CERN-OBJ-CERN-OBJ-IT-018 2266323	**Item - Brocade router** *Scope and content*: A modern 2.8TB/s router, the backbone of our internet connectivity. This model was in service at CERN from 2008 until 2012. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-019 2266325	**Item - Optical Fibre Bundle** *Scope and content*: These are sample fibre optic cables which are used for networking. Optical fibers are widely used in fiber-optic communications, where they permit transmission over longer distances and at higher bandwidths (data rates) than wire cables. Fibers are used instead of metal wires because signals travel along them with less loss and are also immune to electromagnetic interference. This is useful for somewhere like CERN where magnets with their highly powerful magnetic fields could pose a problem. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-020 2266326	**Item - CDC 6600 Magnetic Core Memory** *Scope and content*: A plan of magnetic core memory with 64x64 bits (4Kb) as used in a CDC 6600. The very first CDC 6600 was delivered to CERN in 1965 and was the fastest supercomputer of its time. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-021 2266327	**Item - IBM 3090 CPU chips**		Object

	Scope and content: The most powerful IBM computer system of its time, the IBM 3090 high-end processor of the IBM 308X computer series incorporated one-million-bit memory chips. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-022 2266328	**Item - CPU Server** *Scope and content*: The CERN computer centre has hundreds of racks like these. They are over a million times more powerful than our first computer in the 1960's. This tray is a 'dual-core' server. This means it effectively has two CPUs in it (eg. two of your home computers minimised to fit into a single box). Also note the copper cooling fins, to help dissipate the heat. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-080 2266338	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-081 2266342	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-082 2266343	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-083 2266344	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-085 2266346	**Item - Prototype for the ALEPH Time Projection Chamber** *Scope and content*: This is a prototype endplate piece constructed during R&D for the ALEPH Time Projection Chamber (TPC). ALEPH was one of 4 experiments at CERN's 27km Large Electron Positron collider (LEP) that ran from 1989 to 2000. ALEPH's TPC was a large-volume tracking chamber, 4.4 metres long and 3.6 metres in diameter - the largest TPC in existance at the time. This object is one of the endplates of a “Kind” sector, the smallest of the three types of sectors. The patterns etched into the copper form the cathode pads that measured particle track coordinates in the r-phi direction. It included a laser calibration system, a gating system to prevent space charge buildup, and a new radial pad geometry to improve resolution. the ALEPH TPC allowed for precise momentum measurements of the high-momentum	1980	Object

	particles from W and Z decays. The following institutes participated: CERN, Athens, Glasgow, Mainz, MPI Munich, INFN-Pisa, INFN-Trieste, Wisconsin. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-086 2266347	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-087 2266348	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-088 2266443	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-089 2266444	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-090 2266445	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-091 2266446	**Item - Detector Unit** *Creator*: Erik Bracke *Scope and content*: Original detector unit of the Instituut voor Kernfysisch Onderzoek (IKO) BOL project. This detector unit shows that silicon detectors for nuclear physics particle detection were already developed and in use in the 1960's in Amsterdam. Also the idea of putting 'strips' onto the silicon for high spatial resolution of a particle's impact on the detector were implemented in the BOL project which used 64 of these detector units. The IKO BOL project with its silicon particle detectors was designed, built and operated from 1965 to roughly 1977. Detector Unit of the BOL project: These detectors, notably the ‘checkerboard detector’, were developed during the years 1964-1968 in Amsterdam, The Netherlands, by the Natuurkundig Laboratorium of the N.V. Philips Gloeilampen Fabrieken. This was done in close collaboration with the Instituut voor Kernfysisch Onderzoek (IKO) where the read-out electronics for their use in the BOL Project was developed and produced. *Restrictions on access*: Public	1960	Object

CERN-OBJ-CERN-OBJ-DE-092 2266447	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-023 2272997	**Item - CDC 7600 Module** *Scope and content*: The CDC 7600 has been created by Seymour Cray. It was designed to be compatible with the 6600, which allows for a substantial increase in performance. Furthermore the rise of new technologies has enabled this performance by reducing the minor cycle clock period from 100 ns to 27.5 ns (4 time faster). A very large machine, the 7600 had over 120 miles of hand-wired interconnections. It was the most powerful computer of its time. However, this speed caused a ground-loop problem causing intermittent faults, and eventually requiring all modules to be fitted with sheathed rubber bands. The CDC 7600 was replaced in 1983 by CRAY-1A. *Restrictions on access*: Public	1970	Object
CERN-OBJ-CERN-OBJ-IT-024 2273012	**Item - CDC 6600 Cordwood Module** *Scope and content*: The CDC 6600 cordwood module containing 64 silicon transistors. The module was mounted between two plates that were cooled conductive by a refrigeration unit via the front panel. The construction of this module uses the cord method, so called because the resistors seem to be stacked like cord between the two circuit boards in order to obtain a high density. The 6600 model contained nearly 6,000 such modules. *Restrictions on access*: Public	1964	Object
CERN-OBJ-CERN-OBJ-IT-025 2273210	**Item - Model of the VAX-11/780** *Scope and content*: It was the first member of the VAX family of computers, the first commercially available 32-bit computer and the first MIPS (one million instructions per second). It is a family of abandoned mini-computers developed and manufactured by Digital Equipment Corporation (DEC). The name "VAX" comes from an acronym for "Virtual address eXtension" as the successor to the PDP-11. The computer and its operating system (VMS) were designed from scratch. The result was a truly reliable, powerful and user-friendly system. In addition its affordable price has enabled many institutions and universities to acquire it. *Restrictions on access*: Public	1977	Object
CERN-OBJ-CERN-OBJ-IT-026 2273230	**Item - SecurID** *Scope and content*: Now called RSA SecurID, SecurID is a mechanism developed by Security Dynamics that allows two-factor authentication for a user on a network resource. It works on the principle of the unique password mode, based on a shared secret. Every sixty seconds, the component generates a new six-digit token on		Object

	the screen. The latter comes from the current time (internal clock) and the seed (SecurID private key that is available on the component, and is also from the SecurID server). During an authentication request, the SecurID server will check the entered token by performing exactly the same calculation as that performed by your component. The server knows the two information required for this calculation: the current time and the seed of your component. Access is allowed if the token calculated by the server matches the token you specified. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-027 2273234	**Item - IBM 3705 Communications Controller** *Scope and content*: The IBM 3705 Communications Controller is a simple computer which attaches to an IBM System/360 or System/370. Its purpose is to connect communication lines to the mainframe channel. It was a first communications controller of the popular IBM 37xx series. *Restrictions on access*: Public	1972	Object
CERN-OBJ-CERN-OBJ-IT-028 2273243	**Item - AMD AM29116** *Scope and content*: The AM29116 is a microprogrammed 16-bit processor. *Restrictions on access*: Public	1982	Object
CERN-OBJ-CERN-OBJ-IT-029 2273249	**Item - Gandalf LDS 105** *Scope and content*: It was essentially a folded sheet metal box with an internal circuit board, but Gandalf Box was a form of modem, a terminal host selector that allowed computer terminals to connect to a number of computers, Host computers via a single interface. Gandalf Technologies was a Canadian data communications company based in Ottawa. It was best known for their modems and terminal adapters. The rapid development of ethernet, remote access and subsequent high-speed connections killed technology and the company went bankrupt in 1997. *Restrictions on access*: Public	1990-1999	Object
CERN-OBJ-CERN-OBJ-IT-030 2273253	**Item - One of the First Portable Macs** *Scope and content*: It was one of the first portable macs released. The Portable had many new advances in mobile computing : The display was crispy clear, and looked beautiful when used in daylight ; The Portable came with a Lead-acid gel/cell battery that could run a anywhere from 6 -12 hours ; It supported to internal hard drives, and an external one. The reaction to the laptop was weak because it was slow, it had no capacity for expansion, it weighed heavily, its price was expensive. It has been stayed 1 year and half on the market. *Restrictions on access*: Public	1989	Object

CERN-OBJ-CERN-OBJ-IT-031 2273273	**Item - Olivetti M10**	1983	Object
	Scope and content: The Olivetti M10 is a small Italian computer, it is a first attempt to create a real laptop with its screen tilting offering a good legibility. Its success was mainly due to the good quality keyboard with its accented keys that allows a fast typing as well as has its long battery life. It can operate several hours on four standard batteries. Otherwise, in terms of software, the machine has Basic in ROM, as well as various small office programs such as spreadsheet, word processor, calendar and address book. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-032 2273289	**Item - DEC VT220**	1983	Object
	Scope and content: The DEC (Digital Equipment Corporation) VT220 is a text terminal which uses an redesigned keyboard(LK201). The VT220 improved on the earlier VT100 series of terminals with much smaller physical packaging and and a much faster microprocessor. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-033 2273362	**Item - Osborne 1**	1981	Object
	Scope and content: The Osborne 1 Released by the Osborne Computer Corporation is considered to be the first true portable, full-featured computer intended for a larger audience than companies. It includes all the components required to be a completely useful and operational computer system. Indeed the Osborne 1 was cost $ 1,795which is now $ 4,773. Another attractive point was that it was sold with several software, which, sold separately, cost almost the same price as the machine. However this computer has some disadvantages like its weight (11 kg) or its tiny screen that could display only a little character per lines and sized the average size of a phone screen . Another problem was that the computer was a bit prone to overheating. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-034 2273364	**Item - Mitsubishi LSA820W LCD Display**		Object
	Scope and content: This is a LCD Screen with a 1280x1024 resolution. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-035 2273368	**Item - iMac G3 Blueberry 350MHz**	2000	Object
	Scope and content: The iMac G3 is an all-in-one personal computer, encompassing both the monitor and the computer in one package. It allowed to revitalize the Apple brand that was in decline and close to financial ruin. Originally released in striking bondi blue and later a range of other translucent plastic envelopes in bright		

	colors. The iMac comes with a keyboard and mouse matching the color of the case. The iMac G3 was sold from 1998 to 2003 and has been updated many times. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-036 2273519	**Item - Verbatim Floppy Disk** *Scope and content*: Introduced under the name "Verbatim", Latin for "literally", these disks that sized more than 5¼ inches have become almost universal on dedicated word processing systems and personal computers. This format was replaced more slowly by the 3½-inch format, introduced for the first time in 1982. Compared to today, these large format disks stored very little data. In reality, they could only contain a few pages of text. *Restrictions on access*: Public	1976	Object
CERN-OBJ-CERN-OBJ-IT-037 2273523	**Item - 8-inch IBM floppy disk** *Scope and content*: The 8-inch floppy disk was a magnetic storage disk for the data introduced commercially by IBM in 1971. It was designed by an IBM team as an inexpensive way to load data into the IBM System / 370. Plus it was a read-only bare disk containing 80 KB of data. The first read-write version was introduced in 1972 by Memorex and could contain 175 KB on 50 tracks (with 8 sectors per track). Other improvements have led to various coatings and increased capacities. Finally, it was surpassed by the mini diskette of 5.25 inches introduced in 1976. *Restrictions on access*: Public	1971	Object
CERN-OBJ-CERN-OBJ-IT-038 2273531	**Item - The Imation 9840 Tape Cartridge** *Scope and content*: It’s a 20 GB uncompressed center-load cartridge used in StorageTek T9840 tape drives. The tape is a Metal Particle (MP) tape suitable for use on all Oracle/Sun/StorageTek 9840 A, B, C and D drives. The 9840 tape has an archival life of 15-30 years. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-039 2273541	**Item - Sony D-Eight** *Scope and content*: The 8mm backup format is a format for storing magnetic tape data used in computer systems, launched by Exabyte Corporation. It is also known as Data8, often abbreviated to D8 and writes D-Eight on some Sony brand media. The company was formed in order to take the 8 mm video format and make it suitable for data storage. They did this by building a mechanism and a reliable data format that used the common 8 mm video tape technology that was available at the time. This was the first form of helical scanning used commercially for data storage. The ribbon was made vertically and has a length of 112 meters. It was designed to withstand heat and high temperatures. It has been introduced in at CERN in 1994. *Restrictions on access*:	1987	Object

	Public		
CERN-OBJ-CERN-OBJ-IT-040 2273680	**Item - Western Digital Caviar 31200** *Scope and content*: Western Digital hard drive. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-041 2273691	**Item - StorageTek RedWood SD-3 tape drive** *Scope and content*: A helical scan recording drive, with a high-speed rotating head sweeping across the tape every few micrometers. Based on a professional video recording system, modified to be suitable for digital data recording. These are commonly used with large computer systems, typically in conjunction with a robotic tape library. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-042 2273694	**Item - IBM 3480 tape cartridge** *Scope and content*: The 3480 tape format is a magnetic tape data storage format developed by IBM. The cartridge contains a single reel. IBM's 3480 cartridge tape system sought to replace the traditional reels of magnetic tape in the computer center. Because of their speed, reliability, durability and low media cost, these tapes and tape drives are still in high demand. A hallmark of the genre is transferability. Tapes recorded with one tape drive are generally readable on another drive, even if the tape drives were built by different manufacturers. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-043 2273698	**Item - Sun Ultra 5** *Scope and content*: The Sun Ultra 5 is a 64-bit personal computer based on the UltraSPARC microprocessor line at a low price. The Ultra 5 has been declined in several variants: thus, some models have a processor with less cache memory to further decrease the price of the computer. *Restrictions on access*: Public	1998	Object
CERN-OBJ-CERN-OBJ-IT-044 2273800	**Item - 6250 BPI Magnetic Tape** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*:		Object

	Public		
CERN-OBJ-CERN-OBJ-IT-045 2273804	**Item - IBM WDI-325Q 21MB Hard Drive** *Scope and content*: Size : 20 Mb *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-046 2273838	**Item - Acoustic Coupler Modem** *Scope and content*: It's an acoustic coupler modem 300 bit/s from the 1970s. It is attaches to an ordinary telephone handset. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-047 2273906	**Item - Graham Magnetics EPOCH 480 Magnetic Reel Tape** *Scope and content*: This media disk, used for stored audio and visual information, has a stronger binding system than the tape and can last a million uses. *Restrictions on access*: Public	1970-1979	Object
CERN-OBJ-CERN-OBJ-IT-048 2273915	**Item - Scotch 777 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-049 2273920	**Item - CERNET High Speed Data Link** *Scope and content*: This card, based on a "4 slot DEC module", arbitrated the access priority of 15 datalinks of a CERNET node. Each datalinks could transfer data full duplex at 2.5 Mbit/sec over 1 Km of twisted pair (POD) cable. This was the frontier technology in 1980. The modest amount of integrated circuits was compensated by printing on the board photographs of the hardware designers, whose Belgian, Dutch and French nationality was underlined by the the short poem. *Restrictions on access*: Public	1975	Object
CERN-OBJ-CERN-OBJ-IT-050 2273923	**Item - Intel 10 Gbit/s Network Card** *Scope and content*:		Object

	One of the first Intel 10 Gbit/s Network Card (long-range 10 km lasers). *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-051 2273932	**Item - Paper Punch Tape** Object *Scope and content*: Physicists coded and recorded their programs through series of holes on punch paper tape or on punched cards. It was popular in the 1970s due to its high throughput speed and low cost, paper tape was one of the original data storage methods for computers. Information was encoded in the distinct pattern of holes punched in the paper; the paper itself was oiled to facilitate being run through the reading mechanism and to prevent tears due to brittleness. Though the paper was cheap, it had low storage capacity (only a few dozen kilobytes per roll) and the machinery involved in punching the holes was quite expensive. Higher capacity alternatives, such as magnetic tape, has get developped. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-052 2273938	**Item - Computer Data Punch Cards** 1970-1979 Object *Scope and content*: Those card are printed with minimal layout aids for the formatting of FORTRAN programs, plus extra guidelines every ten columns suggesting a generic tabular data layout. A punch card is a piece of stiff paper that can be used to contain digital information represented by the presence or absence of holes in predefined positions. Punched cards were used for specialized unit record machines, organized into semiautomatic data processing systems, used punched cards for data input, output, and storage. Furthermore many new digital computers started to used punched cards. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-053 2273948	**Item - StorageTek T10000 Data Cartridge** Object *Scope and content*: This data cartridge works on several StorageTek systems. The goal is to provide cartridge compatibility across several system. It has been designed for space saving and ultra-high capacity tape. It permit to fulfill high-volume backup, archiving, and disaster recovery. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-054 2273956	**Item - Sun StorageTek T9940 Tape Drive** 2002 Object *Scope and content*: Technology allowed reuse of the same data cartridge at higher capacity with later model of the tape drive hence offering significant savings of the media cost. It has been use by the CERN from 2002 to 2008. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-IT-055 2273963	**Item - SONY SD1-1300L** *Scope and content*: Cartridge used in the SONY DMS-24 automated tape library system installed at CERN in 1995 and still in use by the NA49 experiment. Tape length is 1300 m with 100 GB storage capacity. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-056 2273973	**Item - IBM 3480** *Scope and content*: Introduced at CERN in 1985. It has a storage capacity of 200 MB *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-IT-057 2273977	**Item - DLT 2000 (CompactTape III)** *Scope and content*: It has been introduced at CERN in 1994 and used until recently in the DEC TL820 robot. It has a capacity of 10 GB and 1.25 MB/s. *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-058 2273991	**Item - Power Macintosh 7300/166** *Scope and content*: The Power Macintosh 7300 was released in 1997 and was the same case as the Power Macintosh 7600. Its main evolution is that it was equipped with a faster processor. It also had a bigger hard drive (2 GB) and a faster CD-ROM drive (12x to 8x). In return, Apple chose to remove the audiovisual connections that were present on all its predecessors of the range 7x00. *Restrictions on access*: Public	1997	Object
CERN-OBJ-CERN-OBJ-IT-059 2273994	**Item - 32 Word ROM Memory for a PDP 11 (Circa 1971)** *Scope and content*: It occupies a quad-width, double-height flipchip board you can visually read off its contents (presence or absence of diodes). In its time it represented a giant leap forward since you no longer had to toggle the bootstrap in on the frontpanel switches. *Restrictions on access*: Public	1971	Object
CERN-OBJ-CERN-OBJ-IT-060 2273997	**Item - Intel Quad Core Processor** *Scope and content*:		Object

	Intel quad core processor in its casing and mounted with copper heats sink on a motherboard. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-061 2274072	**Item - Iomega ZIP 250** *Scope and content*: It's a 250 MB External Zip Disk Drive Portable *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-062 2274075	**Item - CDC Cyber Series** *Restrictions on access*: Public	1960-1969	Object
CERN-OBJ-CERN-OBJ-IT-063 2274081	**Item - Quicksilver Power Mac G4** *Scope and content*: A new generation with a reworked motherboard is launched on 2001 with however the same Graphite box. It also included a processor speed-bump, and brought the DVD-R "SuperDrive" to the mid-level model. The Quicksilver PowerMac was available in three configurations: The 733 MHz model, with 128 MB of RAM, a 40 GB hard drive, and a CD-RW drive, was 1,699 dollars, the 867 MHz configuration, with 128 MB of RAM, a 60 GB hard drive and a DVD-R drive, was 2,499 dollars, and the high-end dual-800 MHz model, with 256 MB of RAM, an 80 GB hard drive and a DVD-R drive, was 3,499 dollars. The 733 MHz model is the first personal computer to have a DVD burner, named SuperDrive at Apple. The design was updated on 2002 with 800 MHz, 933 MHz and dual 1 GHz configurations, becoming the first Mac to reach 1 GHz. *Restrictions on access*: Public	2001	Object
CERN-OBJ-CERN-OBJ-IT-064 2274088	**Item - Seagate Medalist ST38641A IDE Hard Drive** *Scope and content*: This hard drive has got a capacity of 8,6 Gb. *Restrictions on access*: Public	1998	Object
CERN-OBJ-CERN-OBJ-IT-065 2274092	**Item - Storagetek 411225803** *Scope and content*: It's a hand gripper assembly with camera for 9310. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-066 2274098	**Item - IBM 3090 TCM CPU**		Object
	Scope and content: This is a Thermal Conduction Module from an IBM 3090. This is a water cooled unit that holds loads of chips. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-067 2274102	**Item - Display Apple M7649Zm**	2001	Object
	Scope and content: It was Designed for the Power Mac G4. This Apple studio display gives you edge-to-edge distortion-free images. With more than 16.7 million colors and 1,280 x 1,024 dpi resolution, you view brilliant and bright images on this Apple 17-inch monitor. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-068 2274118	**Item - IBM 3380 E**	1985	Object
	Scope and content: In 1985 IBM announced a double density version. The Extended Capability Models of the 3380 (3380 E) having 5.04 gigabytes per chassis, that is, two 1.26 gigabyte actuators on two hard disk assemblies in one chassis. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-069 2274385	**Item - Olivetti M6 640**	1993	Object
	Scope and content: The M6-640 is the highest performance personal computer workstation in the Suprema range with multimedia, document imaging and communications capabilities. It has a 90MHz Pentium processor with 256Kb of secondary cache. It can accommodate up to 128Mb RAM and supports hard disks of up to 1Gb through an IDE interface. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-070 2274387	**Item - M-Office DW 500 Typewriter**		Object
	Scope and content: It's the M-Office DW 500 Typewriter. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-071 2274393	**Item - IBM Storage Disk**		Object

	Scope and content: IBM storage disk used in the 70s and 80s. This stack of eight 35 cm disks weighs more than 10 Kg, and can store 320 Megabytes or 34 minutes of music *Restrictions on access*: Public	
CERN-OBJ-CERN-OBJ-IT-072 2274398	**Item - Disk Interface 3380** *Scope and content*: Disk Interface for a disk cabinet. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-073 2274400	**Item - Olivetti OPE XM 5220/2** *Scope and content*: MFM Hard Drive. (Type of hard disk used in XT computers) *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-074 2274411	**Item - Bus and Tag Terminators for IBM system/360** *Scope and content*: Control units were connected to the channels with "Bus and Tag" cable pairs. The bus cables carried the address and data information and the tag cables identified what data was on the bus. There were three general types of bus-and-tag cables produced by IBM. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-075 2274412	**Item - Western Digital Hard Drive** *Scope and content*: MFM Hard Drive with a capacity of 20 Mb. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-076 2274414	**Item - 6250 BPI Magnetic Tape Olivetti** *Scope and content*: BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-077 2274420	**Item - RPS Micro Diskette**	Object

	Scope and content: Small flexible plastic disk covered with a magnetic substance used to record data and computer programs. They can normally contain 1.44 MB of data and they are convenient for moving small amounts of data as they are transportable. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-078 2274422	**Item - Port Switch** *Scope and content*: It's a 48 x 1 Gbit/s port switch with 10 Gbit/s optical uplink connection. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-079 2274589	**Item - Amdahl 470 Chip Package** *Scope and content*: In the late 70s the larger IBM computers were water cooled. Amdahl, an IBM competitor, invented an air cooling technology for it's computers. His company worked hard, developing a computer that was faster and less expensive than the IBM System/360 mainframe computer systems. This object contains an actual Amdahl series 470 computer logic chip with an air cooling device mounted on top. The package leads and cooling tower are gold-plated. *Restrictions on access*: Public	1975	Object
CERN-OBJ-CERN-OBJ-IT-080 2274594	**Item - Multi-Core Itanium Processor** *Scope and content*: First Multi-Core Itanium processor. It has 1,7 billion transistors and 24 MB on die-cache. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-081 2274603	**Item - Dual-core Itanium Processor** *Scope and content*: Intel’s first dual-core Itanium processor, code-named "Montecito" is a major release of Intel's Itanium 2 Processor Family, which implements the Intel Itanium architecture on a dual-core processor with two cores per die (integrated circuit). Itanium 2 is much more powerful than its predecessor. It has lower power consumption and thermal dissipation. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-082 2274619	**Item - CDC 7600 module slice** *Scope and content*:		Object

	Each module contained 8 circuit cards for a total of about 300-500 uncovered transistors packaged with face plates so the Freon plates wouldn't touch the circuits. (cooling plates that surrounded each module). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-083 2274621	**Item - Single Platter of a CDC 7638 Disk Drive** *Scope and content*: This large 7638 disk on the CDC 7600 is primarily used as a sort of « paging store » for tape files and permanent files staged over from the front-end CDC6500. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-IT-084 2274733	**Item - Wafer of Intel Pentium 4 Prescott Chips** *Scope and content*: Silicon wafer with hundreds of Penryn cores (microprocessor). There are around four times as many Prescott chips can be made per wafer than with the previous generation of Northwood-core Pentium 4 processors. It is faster and cheaper. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-085 2274743	**Item - 3M No. 700 Black Watch 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-086 2274745	**Item - Disque PC IDE** *Scope and content*: It's a disque PC IDE 850 Mbytes. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-087 2274753	**Item - SRAM chip** *Scope and content*: It has a capacity of 1 Mb. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-088 2274772	**Item - Fuji Toshiba 360K 5.25 Internal Floppy Drive FDD**		Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-089 2274914	**Item - CDC Cyber Series Electronic Plate** *Restrictions on access*: Public	1965-1970	Object
CERN-OBJ-CERN-OBJ-IT-090 2274921	**Item - Sony 40 MB Vintage Hard Drive** *Restrictions on access*: Public	1990	Object
CERN-OBJ-CERN-OBJ-IT-091 2274939	**Item - Cable 18000 Volt** *Scope and content*: Capacity of this cable : 15 MVA / 13,5 MW / 450 Ampères. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-092 2274946	**Item - Hitachi Travelstar C4K60 Hard Disk Drives** *Scope and content*: Hitachi Travelstar C4K60 with a storage capacity of 60GB, 4200RPM. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-093 2274950	**Item - Quantum Hard Disk** *Scope and content*: It has a storage capacity of 40 Mb. *Restrictions on access*: Public	1987	Object
CERN-OBJ-CERN-OBJ-IT-094 2274951	**Item - Rodime Hard Drive** *Scope and content*: It has a storage capacity of 200 Mb. *Restrictions on access*: Public	1992	Object
CERN-OBJ-CERN-OBJ-IT-095 2274962	**Item - A Diode Matrix model M792** *Scope and content*:		Object

	A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-096 2274963	**Item - Cern DD4424 ROM Diode Matrix** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-097 2274968	**Item - DEC Digital PDP11 H214 8KX16 Planar Core Memory** *Scope and content*: Digital Equipment Corporation (DEC) introduced the PDP 11 line of computers in 1970. *Restrictions on access*: Public	1972	Object
CERN-OBJ-CERN-OBJ-IT-098 2275036	**Item - 6250 BPI IBM reduce version 3.3** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	1988	Object
CERN-OBJ-CERN-OBJ-IT-099 2275044	**Item - Newtronics Co. LTD Floppy Drive 0705449 D359T6** *Scope and content*: There is a floppy disk on it. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-100 2275052	**Item - Intel Core 2 Duo Processor E6600** *Scope and content*: This processor relies on two key points: maximum performance and minimum heat output. 4M Cache ; frequency 2.40 GHz ; 1066 MHz FSB		Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-101 2275057	**Item - IBM 4 Gbyte Hard Disk** *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-102 2275072	**Item - Control Data Floppy Disk** *Scope and content*: 8-inch floppy diskettes of the 70’s and 80’s. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-103 2275078	**Item - Seagate ST-225 Hard Drive** *Scope and content*: This hard drive was developed by Seagate in 1984, and had a capacity of 20 MB. It was the single most common 20MB drive ever to be produced. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-104 2275083	**Item - IBM 3000 Information Recorder I** *Scope and content*: The IBM 3000 is an information recorder which was used for data collection. The data were collected by being punched directly onto IBM cards. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-105 2275167	**Item - HP ProCurve J8694A 3500yl/6200yl Switch Module** *Restrictions on access*: Public	2005	Object
CERN-OBJ-CERN-OBJ-IT-106 2275217	**Item - CDC 3300 Timing Disk** *Scope and content*: It's a timing disc from the CDC 3300 computer. This computer was released in 1965. Moreover CDC means Control Data Corporation. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-107 2275219	**Item - CDC 6600 VAXBARN Logic Board**	1964	Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-108 2277607	**Item - System Software 7 Macintosh**	1991	Object
	Scope and content: System 7 is a single-user graphical user interface-based operating system for Macintosh computers and was part of the classic Mac OS line of operating systems. It was introduced on May 13, 1991, by Apple Computer. It succeeded System 6, and was the main Macintosh operating system until it was succeeded by Mac OS 8 in 1997. Features added with the System 7 release included virtual memory, personal file sharing, QuickTime, QuickDraw 3D, and an improved user interface. This is the first real major evolution of the Macintosh system, bringing a significant improvement in the user interface, improved stability and many new features such as the ability to use multiple applications at the same time. "System 7" is the last operating system name of the Macintosh that contains the word "system". Macintosh operating systems were later called "Mac OS" (for Macintosh Operating System). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-109 2277608	**Item - NextStation Color**		Object
	Scope and content: Steve Jobs created a NeXT generation operating system. The NeXTstation provides functionality that other computers are just providing today.The NS Color I/O cable attaches to the back of the computer on one end and on the other end the cable is split to connect to the display and the Sound Box. The Sound Box also has a keyboard signal port. Like a MAC or SUN of the same vintage, the mouse connects to the keyboard. These boxes run NEXTSTEP, which a full object-oriented OS. It has UNIX as a base and provides a gorgeous graphical interface. NEXTSTEP was also available for other platforms. They tend to run a little slow. But they have great digital sound and full color displays. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-110 2277609	**Item - Vectronic's Power Macintosh G3 (B & W)**	1999	Object
	Scope and content: Apple introduced the Power Macintosh G3 Blue and White (B & W) on January 5, 1999. The Power Macintosh G3 line stayed in production until August 1999, and was replaced by the Power Macintosh G4, which used the same chassis. The Power Macintosh G3 originally cost between $1599 and $2900 depending on options. The three original Power Macintosh G3 models shipped with a 300 MHz, 350 MHz, or 400 MHz PowerPC 750 (G3) processor. Just pull on the small round handle on the side of the tower, and the entire side of the computer opens up. The G3's motherboard is mounted on that surface, giving you easy access for upgrading RAM or installed PCI cards. Apple added new ports (USB and the much-anticipated FireWire) that took the place of historic, and quickly becoming antiquated, Mac serial (printer and modem) ports. The Power Macintosh G3 has two USB (12 Mbps) ports, two FireWire (400 Mbps) ports, one 10/100BaseT Ethernet port, an RJ-11 jack for an optional 56K modem, a sound out and sound in jack, and one ADB (Apple Desktop Bus) port. The maximum RAM for the G3 is 1 GB. *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-IT-111 2277694	**Item - Macintosh Plus** *Scope and content*: Apple introduced the Macintosh Plus on January 16, 1986. The Macintosh Plus has an 8 MHz 68000 processor and an internal 800K floppy disk drive. It supports up to 4 MB of RAM. The Plus is a significant improvement over the previous compact Macs primarily due to the addition of the SCSI bus. Previous Macs did not have SCSI, thus making it more difficult to find a suitable external hard drive able to connect through the drive port, the printer port, or the modem port. These drives are considerably slower (as much as 4 times slower) than external SCSI hard drives. The Macintosh Plus is a very important computer in the history of the Apple Computers. It set up many of the standards that Apple followed for over a decade going forward. *Restrictions on access*: Public	1986	Object
CERN-OBJ-CERN-OBJ-IT-112 2277708	**Item - IMac G4/800 (Flat Panel)** *Scope and content*: Apple introduced the iMac G4/800 on January 7, 2002. The total cost was about $2000 (base price of $1799 plus RAM upgrade). The iMac G4/800 has an 800 MHz G4 processor. The G4/800 has the following ports: three USB 1.1 ports, two Fire Wire 400-Mbps ports, one RJ-45, 10/100BASE-T Ethernet port, one RJ-11 56K V.90 modem port, one Mini-VGA output port, one speaker jack, and one headphone jack. There is a built in microphone set on the front of the monitor in the bottom left corner. There is a single internal SuperDrive capable of reading and writing CDs and DVDs. The disk drive is on the front of the computer. It opens by pushing the disk drive button on the iMac's keyboard. The monitor size is 15 inches. The G4/800 has a NVIDIA GeForce2 MX graphics processor with AGP 2X support that provides 32 MB of dedicated Double Data Rate (DDR) video memory. Native resolution is 1024 x 768, but the built in monitor is also capable of 640 x 480 and 800 x 600. RAM can be changed by removing a panel on the bottom of the chassis. This iMac is AirPort ready but does not have an AirPort Card installed. The internal hard drive is 60 GB. The G4/800 has a small internal speaker. *Restrictions on access*: Public	2002	Object
CERN-OBJ-CERN-OBJ-IT-113 2277709	**Item - Weston Standard battery** *Scope and content*: This is a Weston AOIP standard battery with its calibration certificate (1956). Inside, the glassware forms an "H". Its name comes from the British physicist Edward Weston. A standard is the materialization of a given quantity whose value is known with great accuracy. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-114 2277763	**Item - PM 3655 PHILIPS Logic analyzer** *Scope and content*: A logic analyzer is an electronic instrument that captures and displays multiple signals from a digital system or digital circuit. A logic analyzer may convert the captured data into timing diagrams, protocol decodes, state machine traces, assembly language, or may correlate assembly with source-level software. Logic Analyzers have advanced triggering capabilities, and are useful when a user needs to see the timing relationships between many signals in a digital system.		Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-115 2279933	**Item - Philips LTC 2009/51**	1999	Object
	Scope and content: It was part of a range of high-performance monitors (computers screens) that were associated with other units such as Philip's video surveillance systems, cameras or transmission and control equipment. Included in this range of Philips monitors are LTC 2009 (like this one), LTC 2012, LTC 2017 and LTC 2020 Series monochrome monitors. They offer high-performance images with a resolution of 900 TVL (TV-Lines), or in the case of the LTC 2017 monitor, 700 TVL, making them ideal for remote viewing and video applications. The monitor housing consists of a robust rectangular metal case which minimizes interference from external signals and allows “stacking” of monitors when used in large numbers. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-116 2279959	**Item - CHT, CERN HIPPI Testbox**	1990	Object
	Scope and content: To allow CERN to test and maintain HIPPI equipment (High Performance Parallel Interface), a powerful test falcility is required. A tester has been developed at Los Alamos National Laboratories [9,10]. The CERN HIPPI testbox allows testing of HIPPI equipment both inside and outside the specifications. This includes the possibility of deliberately introducing errors. The main features of this testbox are: Manual set-up Processor controlled set-up Possibilities for remote analysis Checking the HIPPI specifications Checking illegal conditions *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-117 2279960	**Item - IBM model M keyboard**	1985	Object
	Scope and content: In 1985, the IBM Model M keyboard was created. This timeless classic was a hit. IBM came out with several varients of the model M. They had the space saver 104 key which is the one most seen today and many international versions of that as well. The second type, and rarest is the 122 key model M which has 24 extra keys at the very top, dubbed the “programmers keyboard”. IBM manufactured these keyboards until 1991. The model M features “caps” over the actual keys that can be taken off separately one at a time for cleaning or to replace them with colored keys or keys of another language, that was a very cost effective way of shipping out internationally the keyboards. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-118 2280048	**Item - IBM 5150 computer**	1981	Object
	Scope and content: IBM’s first personal computer arrived nearly 10 years after others companies, but instantly legitimized the market. IBM introduced its PC in 1981. IBM equipped the model 5150 with a cassette port for connecting a cassette drive. The first IBM PC ran on a 4.77 MHz Intel 8088 microprocessor. The PC came equipped with 16 kilobytes of memory, expandable to 256k. The PC came with one or two 160k		

	floppy disk drives and an optional color monitor. The price tag started at $1,565, which would be nearly $4,000 (about €3,400) today. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-119 2280057	**Item - HP 2671G GRAPHICS** *Scope and content*: The 2671 was a text-only printer with a maximum print speed of 120 characters per second. The 2671 printers are very robust. For paper, they use normal thermal roll paper sold in most office supply stores for older fax machines. Although thermal printing is a quiet technology, the paper advance mechanism of these printers is plenty loud. *Restrictions on access*: Public	1981	Object
CERN-OBJ-CERN-OBJ-IT-036 2273519	**Item - Verbatim Floppy Disk** *Scope and content*: Introduced under the name "Verbatim", Latin for "literally", these disks that sized more than 5¼ inches have become almost universal on dedicated word processing systems and personal computers. This format was replaced more slowly by the 3½-inch format, introduced for the first time in 1982. Compared to today, these large format disks stored very little data. In reality, they could only contain a few pages of text. *Restrictions on access*: Public	1976	Object
CERN-OBJ-CERN-OBJ-IT-037 2273523	**Item - 8-inch IBM floppy disk** *Scope and content*: The 8-inch floppy disk was a magnetic storage disk for the data introduced commercially by IBM in 1971. It was designed by an IBM team as an inexpensive way to load data into the IBM System / 370. Plus it was a read-only bare disk containing 80 KB of data. The first read-write version was introduced in 1972 by Memorex and could contain 175 KB on 50 tracks (with 8 sectors per track). Other improvements have led to various coatings and increased capacities. Finally, it was surpassed by the mini diskette of 5.25 inches introduced in 1976. *Restrictions on access*: Public	1971	Object
CERN-OBJ-CERN-OBJ-IT-038 2273531	**Item - The Imation 9840 Tape Cartridge** *Scope and content*: It's a 20 GB uncompressed center-load cartridge used in StorageTek T9840 tape drives. The tape is a Metal Particle (MP) tape suitable for use on all Oracle/Sun/StorageTek 9840 A, B, C and D drives. The 9840 tape has an archival life of 15-30 years. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-039 2273541	**Item - Sony D-Eight** *Scope and content*: The 8mm backup format is a format for storing magnetic tape data used in computer systems, launched by Exabyte Corporation. It is also known as Data8, often abbreviated to D8 and writes D-Eight on some Sony brand media. The company was formed in order to take the 8 mm video format and make it suitable for data storage. They did this by building a mechanism and a reliable data format that used the common 8 mm video tape technology that was available at the time. This was the first form of helical scanning used commercially for data storage. The ribbon was made vertically and has a length of 112 meters. It was designed to withstand heat and high temperatures. It has been introduced in at CERN in 1994. *Restrictions on access*: Public	1987	Object
CERN-OBJ-CERN-OBJ-IT-040 2273680	**Item - Western Digital Caviar 31200** *Scope and content*: Western Digital hard drive. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-041 2273691	**Item - StorageTek RedWood SD-3 tape drive** *Scope and content*: A helical scan recording drive, with a high-speed rotating head sweeping across the tape every few micrometers. Based on a professional video recording system, modified to be suitable for digital data recording. These are commonly used with large computer systems, typically in conjunction with a robotic tape library. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-042 2273694	**Item - IBM 3480 tape cartridge** *Scope and content*: The 3480 tape format is a magnetic tape data storage format developed by IBM. The cartridge contains a single reel. IBM’s 3480 cartridge tape system sought to replace the traditional reels of magnetic tape in the computer center. Because of their speed, reliability, durability and low media cost, these tapes and tape drives are still in high demand. A hallmark of the genre is transferability. Tapes recorded with one tape drive are generally readable on another drive, even if the tape drives were built by different manufacturers. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-043 2273698	**Item - Sun Ultra 5** *Scope and content*:	1998	Object

	The Sun Ultra 5 is a 64-bit personal computer based on the UltraSPARC microprocessor line at a low price. The Ultra 5 has been declined in several variants: thus, some models have a processor with less cache memory to further decrease the price of the computer. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-044 2273800	**Item - 6250 BPI Magnetic Tape** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-045 2273804	**Item - IBM WDI-325Q 21MB Hard Drive** *Scope and content*: Size : 20 Mb *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-046 2273838	**Item - Acoustic Coupler Modem** *Scope and content*: It's an acoustic coupler modem 300 bit/s from the 1970s. It is attaches to an ordinary telephone handset. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-047 2273906	**Item - Graham Magnetics EPOCH 480 Magnetic Reel Tape** *Scope and content*: This media disk, used for stored audio and visual information, has a stronger binding system than the tape and can last a million uses. *Restrictions on access*: Public	1970-1979	Object
CERN-OBJ-CERN-OBJ-IT-048 2273915	**Item - Scotch 777 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-049 2273920	**Item - CERNET High Speed Data Link**	1975	Object

	Scope and content: This card, based on a "4 slot DEC module", arbitrated the access priority of 15 datalinks of a CERNET node. Each datalinks could transfer data full duplex at 2.5 Mbit/sec over 1 Km of twisted pair (POD) cable. This was the frontier technology in 1980. The modest amount of integrated circuits was compensated by printing on the board photographs of the hardware designers, whose Belgian, Dutch and French nationality was underlined by the the short poem. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-050 2273923	**Item - Intel 10 Gbit/s Network Card** *Scope and content*: One of the first Intel 10 Gbit/s Network Card (long-range 10 km lasers). *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-051 2273932	**Item - Paper Punch Tape** *Scope and content*: Physicists coded and recorded their programs through series of holes on punch paper tape or on punched cards. It was popular in the 1970s due to its high throughput speed and low cost, paper tape was one of the original data storage methods for computers. Information was encoded in the distinct pattern of holes punched in the paper; the paper itself was oiled to facilitate being run through the reading mechanism and to prevent tears due to brittleness. Though the paper was cheap, it had low storage capacity (only a few dozen kilobytes per roll) and the machinery involved in punching the holes was quite expensive. Higher capacity alternatives, such as magnetic tape, has get developped. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-052 2273938	**Item - Computer Data Punch Cards** *Scope and content*: Those card are printed with minimal layout aids for the formatting of FORTRAN programs, plus extra guidelines every ten columns suggesting a generic tabular data layout. A punch card is a piece of stiff paper that can be used to contain digital information represented by the presence or absence of holes in predefined positions. Punched cards were used for specialized unit record machines, organized into semiautomatic data processing systems, used punched cards for data input, output, and storage. Furthermore many new digital computers started to used punched cards. *Restrictions on access*: Public	1970-1979	Object
CERN-OBJ-CERN-OBJ-IT-053 2273948	**Item - StorageTek T10000 Data Cartridge** *Scope and content*: This data cartridge works on several StorageTek systems. The goal is to provide cartridge compatibility across several system. It has been designed for space saving and ultra-high capacity tape. It permit to fulfill high-volume backup, archiving, and disaster recovery. *Restrictions on access*:		Object

	Public		
CERN-OBJ-CERN-OBJ-IT-054 2273956	**Item - Sun StorageTek T9940 Tape Drive** *Scope and content*: Technology allowed reuse of the same data cartridge at higher capacity with later model of the tape drive hence offering significant savings of the media cost. It has been use by the CERN from 2002 to 2008. *Restrictions on access*: Public	2002	Object
CERN-OBJ-CERN-OBJ-IT-055 2273963	**Item - SONY SD1-1300L** *Scope and content*: Cartridge used in the SONY DMS-24 automated tape library system installed at CERN in 1995 and still in use by the NA49 experiment. Tape length is 1300 m with 100 GB storage capacity. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-056 2273973	**Item - IBM 3480** *Scope and content*: Introduced at CERN in 1985. It has a storage capacity of 200 MB *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-IT-057 2273977	**Item - DLT 2000 (CompactTape III)** *Scope and content*: It has been introduced at CERN in 1994 and used until recently in the DEC TL820 robot. It has a capacity of 10 GB and 1.25 MB/s. *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-058 2273991	**Item - Power Macintosh 7300/166** *Scope and content*: The Power Macintosh 7300 was released in 1997 and was the same case as the Power Macintosh 7600. Its main evolution is that it was equipped with a faster processor. It also had a bigger hard drive (2 GB) and a faster CD-ROM drive (12x to 8x). In return, Apple chose to remove the audiovisual connections that were present on all its predecessors of the range 7x00. *Restrictions on access*: Public	1997	Object
CERN-OBJ-CERN-OBJ-IT-059 2273994	**Item - 32 Word ROM Memory for a PDP 11 (Circa 1971)** *Scope and content*:	1971	Object

	It occupies a quad-width, double-height flipchip board you can visually read off its contents (presence or absence of diodes). In its time it represented a giant leap forward since you no longer had to toggle the bootstrap in on the frontpanel switches. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-060 2273997	**Item - Intel Quad Core Processor** *Scope and content*: Intel quad core processor in its casing and mounted with copper heats sink on a motherboard. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-061 2274072	**Item - Iomega ZIP 250** *Scope and content*: It's a 250 MB External Zip Disk Drive Portable *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-062 2274075	**Item - CDC Cyber Series** *Restrictions on access*: Public	1960-1969	Object
CERN-OBJ-CERN-OBJ-IT-063 2274081	**Item - Quicksilver Power Mac G4** *Scope and content*: A new generation with a reworked motherboard is launched on 2001 with however the same Graphite box. It also included a processor speed-bump, and brought the DVD-R "SuperDrive" to the mid-level model. The Quicksilver PowerMac was available in three configurations: The 733 MHz model, with 128 MB of RAM, a 40 GB hard drive, and a CD-RW drive, was 1,699 dollars, the 867 MHz configuration, with 128 MB of RAM, a 60 GB hard drive and a DVD-R drive, was 2,499 dollars, and the high-end dual-800 MHz model, with 256 MB of RAM, an 80 GB hard drive and a DVD-R drive, was 3,499 dollars. The 733 MHz model is the first personal computer to have a DVD burner, named SuperDrive at Apple. The design was updated on 2002 with 800 MHz, 933 MHz and dual 1 GHz configurations, becoming the first Mac to reach 1 GHz. *Restrictions on access*: Public	2001	Object
CERN-OBJ-CERN-OBJ-IT-064 2274088	**Item - Seagate Medalist ST38641A IDE Hard Drive** *Scope and content*: This hard drive has got a capacity of 8,6 Gb. *Restrictions on access*: Public	1998	Object

CERN-OBJ-CERN-OBJ-IT-065 2274092	**Item - Storagetek 411225803** *Scope and content*: It's a hand gripper assembly with camera for 9310. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-066 2274098	**Item - IBM 3090 TCM CPU** *Scope and content*: This is a Thermal Conduction Module from an IBM 3090. This is a water cooled unit that holds loads of chips. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-067 2274102	**Item - Display Apple M7649Zm** *Scope and content*: It was Designed for the Power Mac G4. This Apple studio display gives you edge-to-edge distortion-free images. With more than 16.7 million colors and 1,280 x 1,024 dpi resolution, you view brilliant and bright images on this Apple 17-inch monitor. *Restrictions on access*: Public	2001	Object
CERN-OBJ-CERN-OBJ-IT-068 2274118	**Item - IBM 3380 E** *Scope and content*: In 1985 IBM announced a double density version. The Extended Capability Models of the 3380 (3380 E) having 5.04 gigabytes per chassis, that is, two 1.26 gigabyte actuators on two hard disk assemblies in one chassis. *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-IT-069 2274385	**Item - Olivetti M6 640** *Scope and content*: The M6-640 is the highest performance personal computer workstation in the Suprema range with multimedia, document imaging and communications capabilities. It has a 90MHz Pentium processor with 256Kb of secondary cache. It can accommodate up to 128Mb RAM and supports hard disks of up to 1Gb through an IDE interface. *Restrictions on access*: Public	1993	Object
CERN-OBJ-CERN-OBJ-IT-070 2274387	**Item - M-Office DW 500 Typewriter**		Object

	Scope and content: It's the M-Office DW 500 Typewriter. *Restrictions on access*: Public	
CERN-OBJ-CERN-OBJ-IT-071 2274393	**Item - IBM Storage Disk** *Scope and content*: IBM storage disk used in the 70s and 80s. This stack of eight 35 cm disks weighs more than 10 Kg, and can store 320 Megabytes or 34 minutes of music *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-072 2274398	**Item - Disk Interface 3380** *Scope and content*: Disk Interface for a disk cabinet. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-073 2274400	**Item - Olivetti OPE XM 5220/2** *Scope and content*: MFM Hard Drive. (Type of hard disk used in XT computers) *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-074 2274411	**Item - Bus and Tag Terminators for IBM system/360** *Scope and content*: Control units were connected to the channels with "Bus and Tag" cable pairs. The bus cables carried the address and data information and the tag cables identified what data was on the bus. There were three general types of bus-and-tag cables produced by IBM. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-075 2274412	**Item - Western Digital Hard Drive** *Scope and content*: MFM Hard Drive with a capacity of 20 Mb. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-076 2274414	**Item - 6250 BPI Magnetic Tape Olivetti**	Object

	Scope and content: BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-077 2274420	**Item - RPS Micro Diskette** *Scope and content*: Small flexible plastic disk covered with a magnetic substance used to record data and computer programs. They can normally contain 1.44 MB of data and they are convenient for moving small amounts of data as they are transportable. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-078 2274422	**Item - Port Switch** *Scope and content*: It's a 48 x 1 Gbit/s port switch with 10 Gbit/s optical uplink connection. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-079 2274589	**Item - Amdahl 470 Chip Package** *Scope and content*: In the late 70s the larger IBM computers were water cooled. Amdahl, an IBM competitor, invented an air cooling technology for it's computers. His company worked hard, developing a computer that was faster and less expensive than the IBM System/360 mainframe computer systems. This object contains an actual Amdahl series 470 computer logic chip with an air cooling device mounted on top. The package leads and cooling tower are gold-plated. *Restrictions on access*: Public	1975	Object
CERN-OBJ-CERN-OBJ-IT-080 2274594	**Item - Multi-Core Itanium Processor** *Scope and content*: First Multi-Core Itanium processor. It has 1,7 billion transistors and 24 MB on die-cache. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-081 2274603	**Item - Dual-core Itanium Processor** *Scope and content*: Intel’s first dual-core Itanium processor, code-named "Montecito" is a major release of Intel's Itanium 2 Processor Family, which implements the Intel Itanium architecture on a dual-core processor with two cores per die (integrated circuit). Itanium 2 is much more powerful than its predecessor. It has lower power consumption and thermal dissipation.	2006	Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-082 2274619	**Item - CDC 7600 module slice** *Scope and content*: Each module contained 8 circuit cards for a total of about 300-500 uncovered transistors packaged with face plates so the Freon plates wouldn't touch the circuits. (cooling plates that surrounded each module). *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-083 2274621	**Item - Single Platter of a CDC 7638 Disk Drive** *Scope and content*: This large 7638 disk on the CDC 7600 is primarily used as a sort of « paging store » for tape files and permanent files staged over from the front-end CDC6500. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-IT-084 2274733	**Item - Wafer of Intel Pentium 4 Prescott Chips** *Scope and content*: Silicon wafer with hundreds of Penryn cores (microprocessor). There are around four times as many Prescott chips can be made per wafer than with the previous generation of Northwood-core Pentium 4 processors. It is faster and cheaper. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-085 2274743	**Item - 3M No. 700 Black Watch 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-086 2274745	**Item - Disque PC IDE** *Scope and content*: It's a disque PC IDE 850 Mbytes. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-087 2274753	**Item - SRAM chip** *Scope and content*:		Object

	It has a capacity of 1 Mb. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-088 2274772	**Item - Fuji Toshiba 360K 5.25 Internal Floppy Drive FDD** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-089 2274914	**Item - CDC Cyber Series Electronic Plate** *Restrictions on access*: Public	1965-1970	Object
CERN-OBJ-CERN-OBJ-IT-090 2274921	**Item - Sony 40 MB Vintage Hard Drive** *Restrictions on access*: Public	1990	Object
CERN-OBJ-CERN-OBJ-IT-091 2274939	**Item - Cable 18000 Volt** *Scope and content*: Capacity of this cable : 15 MVA / 13,5 MW / 450 Ampères. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-092 2274946	**Item - Hitachi Travelstar C4K60 Hard Disk Drives** *Scope and content*: Hitachi Travelstar C4K60 with a storage capacity of 60GB, 4200RPM. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-093 2274950	**Item - Quantum Hard Disk** *Scope and content*: It has a storage capacity of 40 Mb. *Restrictions on access*: Public	1987	Object
CERN-OBJ-CERN-OBJ-IT-094 2274951	**Item - Rodime Hard Drive** *Scope and content*: It has a storage capacity of 200 Mb.	1992	Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-095 2274962	**Item - A Diode Matrix model M792** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-096 2274963	**Item - Cern DD4424 ROM Diode Matrix** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-097 2274968	**Item - DEC Digital PDP11 H214 8KX16 Planar Core Memory** *Scope and content*: Digital Equipment Corporation (DEC) introduced the PDP 11 line of computers in 1970. *Restrictions on access*: Public	1972	Object
CERN-OBJ-CERN-OBJ-IT-098 2275036	**Item - 6250 BPI IBM reduce version 3.3** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	1988	Object
CERN-OBJ-CERN-OBJ-IT-099 2275044	**Item - Newtronics Co. LTD Floppy Drive 0705449 D359T6** *Scope and content*: There is a floppy disk on it. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-100 2275052	**Item - Intel Core 2 Duo Processor E6600** *Scope and content*: This processor relies on two key points: maximum performance and minimum heat output. 4M Cache ; frequency 2.40 GHz ; 1066 MHz FSB *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-101 2275057	**Item - IBM 4 Gbyte Hard Disk** *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-102 2275072	**Item - Control Data Floppy Disk** *Scope and content*: 8-inch floppy diskettes of the 70’s and 80’s. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-103 2275078	**Item - Seagate ST-225 Hard Drive** *Scope and content*: This hard drive was developed by Seagate in 1984, and had a capacity of 20 MB. It was the single most common 20MB drive ever to be produced. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-104 2275083	**Item - IBM 3000 Information Recorder I** *Scope and content*: The IBM 3000 is an information recorder which was used for data collection. The data were collected by being punched directly onto IBM cards. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-105 2275167	**Item - HP ProCurve J8694A 3500yl/6200yl Switch Module** *Restrictions on access*: Public	2005	Object
CERN-OBJ-CERN-OBJ-IT-106 2275217	**Item - CDC 3300 Timing Disk** *Scope and content*:		Object

	It's a timing disc from the CDC 3300 computer. This computer was released in 1965. Moreover CDC means Control Data Corporation. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-107 2275219	**Item - CDC 6600 VAXBARN Logic Board** *Restrictions on access*: Public	1964	Object
CERN-OBJ-CERN-OBJ-IT-108 2277607	**Item - System Software 7 Macintosh** *Scope and content*: System 7 is a single-user graphical user interface-based operating system for Macintosh computers and was part of the classic Mac OS line of operating systems. It was introduced on May 13, 1991, by Apple Computer. It succeeded System 6, and was the main Macintosh operating system until it was succeeded by Mac OS 8 in 1997. Features added with the System 7 release included virtual memory, personal file sharing, QuickTime, QuickDraw 3D, and an improved user interface. This is the first real major evolution of the Macintosh system, bringing a significant improvement in the user interface, improved stability and many new features such as the ability to use multiple applications at the same time. "System 7" is the last operating system name of the Macintosh that contains the word "system". Macintosh operating systems were later called "Mac OS" (for Macintosh Operating System). *Restrictions on access*: Public	1991	Object
CERN-OBJ-CERN-OBJ-IT-109 2277608	**Item - NextStation Color** *Scope and content*: Steve Jobs created a NeXT generation operating system. The NeXTstation provides functionality that other computers are just providing today.The NS Color I/O cable attaches to the back of the computer on one end and on the other end the cable is split to connect to the display and the Sound Box. The Sound Box also has a keyboard signal port. Like a MAC or SUN of the same vintage, the mouse connects to the keyboard. These boxes run NEXTSTEP, which a full object-oriented OS. It has UNIX as a base and provides a gorgeous graphical interface. NEXTSTEP was also available for other platforms. They tend to run a little slow. But they have great digital sound and full color displays. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-110 2277609	**Item - Vectronic's Power Macintosh G3 (B & W)** *Scope and content*: Apple introduced the Power Macintosh G3 Blue and White (B & W) on January 5, 1999. The Power Macintosh G3 line stayed in production until August 1999, and was replaced by the Power Macintosh G4, which used the same chassis. The Power Macintosh G3 originally cost between $1599 and $2900 depending on options. The three original Power Macintosh G3 models shipped with a 300 MHz, 350 MHz, or 400 MHz PowerPC 750 (G3) processor. Just pull on the small round handle on the side of the tower, and the entire side of the computer opens up. The G3's motherboard is mounted on that surface, giving you easy access for upgrading RAM or installed PCI cards. Apple added new ports (USB and the much-anticipated FireWire) that took the place of historic, and quickly becoming antiquated, Mac serial	1999	Object

	(printer and modem) ports. The Power Macintosh G3 has two USB (12 Mbps) ports, two FireWire (400 Mbps) ports, one 10/100BaseT Ethernet port, an RJ-11 jack for an optional 56K modem, a sound out and sound in jack, and one ADB (Apple Desktop Bus) port. The maximum RAM for the G3 is 1 GB. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-111 2277694	**Item - Macintosh Plus** *Scope and content*: Apple introduced the Macintosh Plus on January 16, 1986. The Macintosh Plus has an 8 MHz 68000 processor and an internal 800K floppy disk drive. It supports up to 4 MB of RAM. The Plus is a significant improvement over the previous compact Macs primarily due to the addition of the SCSI bus. Previous Macs did not have SCSI, thus making it more difficult to find a suitable external hard drive able to connect through the drive port, the printer port, or the modem port. These drives are considerably slower (as much as 4 times slower) than external SCSI hard drives. The Macintosh Plus is a very important computer in the history of the Apple Computers. It set up many of the standards that Apple followed for over a decade going forward. *Restrictions on access*: Public	1986	Object
CERN-OBJ-CERN-OBJ-IT-112 2277708	**Item - IMac G4/800 (Flat Panel)** *Scope and content*: Apple introduced the iMac G4/800 on January 7, 2002. The total cost was about $2000 (base price of $1799 plus RAM upgrade). The iMac G4/800 has an 800 MHz G4 processor. The G4/800 has the following ports: three USB 1.1 ports, two Fire Wire 400-Mbps ports, one RJ-45, 10/100BASE-T Ethernet port, one RJ-11 56K V.90 modem port, one Mini-VGA output port, one speaker jack, and one headphone jack. There is a built in microphone set on the front of the monitor in the bottom left corner. There is a single internal SuperDrive capable of reading and writing CDs and DVDs. The disk drive is on the front of the computer. It opens by pushing the disk drive button on the iMac's keyboard. The monitor size is 15 inches. The G4/800 has a NVIDIA GeForce2 MX graphics processor with AGP 2X support that provides 32 MB of dedicated Double Data Rate (DDR) video memory. Native resolution is 1024 x 768, but the built in monitor is also capable of 640 x 480 and 800 x 600. RAM can be changed by removing a panel on the bottom of the chassis. This iMac is AirPort ready but does not have an AirPort Card installed. The internal hard drive is 60 GB. The G4/800 has a small internal speaker. *Restrictions on access*: Public	2002	Object
CERN-OBJ-CERN-OBJ-IT-113 2277709	**Item - Weston Standard battery** *Scope and content*: This is a Weston AOIP standard battery with its calibration certificate (1956). Inside, the glassware forms an "H". Its name comes from the British physicist Edward Weston. A standard is the materialization of a given quantity whose value is known with great accuracy. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-114 2277763	**Item - PM 3655 PHILIPS Logic analyzer**		Object

	Scope and content: A logic analyzer is an electronic instrument that captures and displays multiple signals from a digital system or digital circuit. A logic analyzer may convert the captured data into timing diagrams, protocol decodes, state machine traces, assembly language, or may correlate assembly with source-level software. Logic Analyzers have advanced triggering capabilities, and are useful when a user needs to see the timing relationships between many signals in a digital system. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-115 2279933	**Item - Philips LTC 2009/51**	1999	Object
	Scope and content: It was part of a range of high-performance monitors (computers screens) that were associated with other units such as Philip's video surveillance systems, cameras or transmission and control equipment. Included in this range of Philips monitors are LTC 2009 (like this one), LTC 2012, LTC 2017 and LTC 2020 Series monochrome monitors. They offer high-performance images with a resolution of 900 TVL (TV-Lines), or in the case of the LTC 2017 monitor, 700 TVL, making them ideal for remote viewing and video applications. The monitor housing consists of a robust rectangular metal case which minimizes interference from external signals and allows “stacking” of monitors when used in large numbers. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-116 2279959	**Item - CHT, CERN HIPPI Testbox**	1990	Object
	Scope and content: To allow CERN to test and maintain HIPPI equipment (High Performance Parallel Interface), a powerful test falcility is required. A tester has been developed at Los Alamos National Laboratories [9,10]. The CERN HIPPI testbox allows testing of HIPPI equipment both inside and outside the specifications. This includes the possibility of deliberately introducing errors. The main features of this testbox are: Manual set-up Processor controlled set-up Possibilities for remote analysis Checking the HIPPI specifications Checking illegal conditions *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-117 2279960	**Item - IBM model M keyboard**	1985	Object
	Scope and content: In 1985, the IBM Model M keyboard was created. This timeless classic was a hit. IBM came out with several varients of the model M. They had the space saver 104 key which is the one most seen today and many international versions of that as well. The second type, and rarest is the 122 key model M which has 24 extra keys at the very top, dubbed the “programmers keyboard”. IBM manufactured these keyboards until 1991. The model M features “caps” over the actual keys that can be taken off separately one at a time for cleaning or to replace them with colored keys or keys of another language, that was a very cost effective way of shipping out internationally the keyboards. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-118 2280048	**Item - IBM 5150 computer**	1981	Object

	Scope and content: IBM's first personal computer arrived nearly 10 years after others companies, but instantly legitimized the market. IBM introduced its PC in 1981. IBM equipped the model 5150 with a cassette port for connecting a cassette drive. The first IBM PC ran on a 4.77 MHz Intel 8088 microprocessor. The PC came equipped with 16 kilobytes of memory, expandable to 256k. The PC came with one or two 160k floppy disk drives and an optional color monitor. The price tag started at $1,565, which would be nearly $4,000 (about €3,400) today. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-119 2280057	**Item - HP 2671G GRAPHICS**	1981	Object
	Scope and content: The 2671 was a text-only printer with a maximum print speed of 120 characters per second. The 2671 printers are very robust. For paper, they use normal thermal roll paper sold in most office supply stores for older fax machines. Although thermal printing is a quiet technology, the paper advance mechanism of these printers is plenty loud. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-036 2273519	**Item - Verbatim Floppy Disk**	1976	Object
	Scope and content: Introduced under the name "Verbatim", Latin for "literally", these disks that sized more than 5¼ inches have become almost universal on dedicated word processing systems and personal computers. This format was replaced more slowly by the 3½-inch format, introduced for the first time in 1982. Compared to today, these large format disks stored very little data. In reality, they could only contain a few pages of text. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-037 2273523	**Item - 8-inch IBM floppy disk**	1971	Object
	Scope and content: The 8-inch floppy disk was a magnetic storage disk for the data introduced commercially by IBM in 1971. It was designed by an IBM team as an inexpensive way to load data into the IBM System / 370. Plus it was a read-only bare disk containing 80 KB of data. The first read-write version was introduced in 1972 by Memorex and could contain 175 KB on 50 tracks (with 8 sectors per track). Other improvements have led to various coatings and increased capacities. Finally, it was surpassed by the mini diskette of 5.25 inches introduced in 1976. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-038 2273531	**Item - The Imation 9840 Tape Cartridge**		Object
	Scope and content:		

	It’s a 20 GB uncompressed center-load cartridge used in StorageTek T9840 tape drives. The tape is a Metal Particle (MP) tape suitable for use on all Oracle/Sun/StorageTek 9840 A, B, C and D drives. The 9840 tape has an archival life of 15-30 years. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-039 2273541	**Item - Sony D-Eight** *Scope and content*: The 8mm backup format is a format for storing magnetic tape data used in computer systems, launched by Exabyte Corporation. It is also known as Data8, often abbreviated to D8 and writes D-Eight on some Sony brand media. The company was formed in order to take the 8 mm video format and make it suitable for data storage. They did this by building a mechanism and a reliable data format that used the common 8 mm video tape technology that was available at the time. This was the first form of helical scanning used commercially for data storage. The ribbon was made vertically and has a length of 112 meters. It was designed to withstand heat and high temperatures. It has been introduced in at CERN in 1994. *Restrictions on access*: Public	1987	Object
CERN-OBJ-CERN-OBJ-IT-040 2273680	**Item - Western Digital Caviar 31200** *Scope and content*: Western Digital hard drive. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-041 2273691	**Item - StorageTek RedWood SD-3 tape drive** *Scope and content*: A helical scan recording drive, with a high-speed rotating head sweeping across the tape every few micrometers. Based on a professional video recording system, modified to be suitable for digital data recording. These are commonly used with large computer systems, typically in conjunction with a robotic tape library. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-042 2273694	**Item - IBM 3480 tape cartridge** *Scope and content*: The 3480 tape format is a magnetic tape data storage format developed by IBM. The cartridge contains a single reel. IBM’s 3480 cartridge tape system sought to replace the traditional reels of magnetic tape in the computer center. Because of their speed, reliability, durability and low media cost, these tapes and tape drives are still in high demand. A hallmark of the genre is transferability. Tapes recorded with one tape drive are generally readable on another drive, even if the tape drives were built by different manufacturers. *Restrictions on access*: Public	1984	Object

CERN-OBJ-CERN-OBJ-IT-043 2273698	**Item - Sun Ultra 5** *Scope and content*: The Sun Ultra 5 is a 64-bit personal computer based on the UltraSPARC microprocessor line at a low price. The Ultra 5 has been declined in several variants: thus, some models have a processor with less cache memory to further decrease the price of the computer. *Restrictions on access*: Public	1998	Object
CERN-OBJ-CERN-OBJ-IT-044 2273800	**Item - 6250 BPI Magnetic Tape** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-045 2273804	**Item - IBM WDI-325Q 21MB Hard Drive** *Scope and content*: Size : 20 Mb *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-046 2273838	**Item - Acoustic Coupler Modem** *Scope and content*: It's an acoustic coupler modem 300 bit/s from the 1970s. It is attaches to an ordinary telephone handset. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-047 2273906	**Item - Graham Magnetics EPOCH 480 Magnetic Reel Tape** *Scope and content*: This media disk, used for stored audio and visual information, has a stronger binding system than the tape and can last a million uses. *Restrictions on access*: Public	1970-1979	Object
CERN-OBJ-CERN-OBJ-IT-048 2273915	**Item - Scotch 777 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*:		Object

	Public		
CERN-OBJ-CERN-OBJ-IT-049 2273920	**Item - CERNET High Speed Data Link** *Scope and content*: This card, based on a "4 slot DEC module", arbitrated the access priority of 15 datalinks of a CERNET node. Each datalinks could transfer data full duplex at 2.5 Mbit/sec over 1 Km of twisted pair (POD) cable. This was the frontier technology in 1980. The modest amount of integrated circuits was compensated by printing on the board photographs of the hardware designers, whose Belgian, Dutch and French nationality was underlined by the the short poem. *Restrictions on access*: Public	1975	Object
CERN-OBJ-CERN-OBJ-IT-050 2273923	**Item - Intel 10 Gbit/s Network Card** *Scope and content*: One of the first Intel 10 Gbit/s Network Card (long-range 10 km lasers). *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-051 2273932	**Item - Paper Punch Tape** *Scope and content*: Physicists coded and recorded their programs through series of holes on punch paper tape or on punched cards. It was popular in the 1970s due to its high throughput speed and low cost, paper tape was one of the original data storage methods for computers. Information was encoded in the distinct pattern of holes punched in the paper; the paper itself was oiled to facilitate being run through the reading mechanism and to prevent tears due to brittleness. Though the paper was cheap, it had low storage capacity (only a few dozen kilobytes per roll) and the machinery involved in punching the holes was quite expensive. Higher capacity alternatives, such as magnetic tape, has get developped. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-052 2273938	**Item - Computer Data Punch Cards** *Scope and content*: Those card are printed with minimal layout aids for the formatting of FORTRAN programs, plus extra guidelines every ten columns suggesting a generic tabular data layout. A punch card is a piece of stiff paper that can be used to contain digital information represented by the presence or absence of holes in predefined positions. Punched cards were used for specialized unit record machines, organized into semiautomatic data processing systems, used punched cards for data input, output, and storage. Furthermore many new digital computers started to used punched cards. *Restrictions on access*: Public	1970-1979	Object
CERN-OBJ-CERN-OBJ-IT-053 2273948	**Item - StorageTek T10000 Data Cartridge** *Scope and content*:		Object

	This data cartridge works on several StorageTek systems. The goal is to provide cartridge compatibility across several system. It has been designed for space saving and ultra-high capacity tape. It permit to fulfill high-volume backup, archiving, and disaster recovery. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-054 2273956	**Item - Sun StorageTek T9940 Tape Drive**	2002	Object
	Scope and content: Technology allowed reuse of the same data cartridge at higher capacity with later model of the tape drive hence offering significant savings of the media cost. It has been use by the CERN from 2002 to 2008. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-055 2273963	**Item - SONY SD1-1300L**	1995	Object
	Scope and content: Cartridge used in the SONY DMS-24 automated tape library system installed at CERN in 1995 and still in use by the NA49 experiment. Tape length is 1300 m with 100 GB storage capacity. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-056 2273973	**Item - IBM 3480**	1985	Object
	Scope and content: Introduced at CERN in 1985. It has a storage capacity of 200 MB *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-057 2273977	**Item - DLT 2000 (CompactTape III)**	1994	Object
	Scope and content: It has been introduced at CERN in 1994 and used until recently in the DEC TL820 robot. It has a capacity of 10 GB and 1.25 MB/s. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-058 2273991	**Item - Power Macintosh 7300/166**	1997	Object
	Scope and content: The Power Macintosh 7300 was released in 1997 and was the same case as the Power Macintosh 7600. Its main evolution is that it was equipped with a faster processor. It also had a bigger hard drive (2 GB) and a faster CD-ROM drive (12x to 8x). In return, Apple chose to remove the audiovisual connections that were present on all its predecessors of the range 7x00. *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-IT-059 2273994	**Item - 32 Word ROM Memory for a PDP 11 (Circa 1971)** *Scope and content*: It occupies a quad-width, double-height flipchip board you can visually read off its contents (presence or absence of diodes). In its time it represented a giant leap forward since you no longer had to toggle the bootstrap in on the frontpanel switches. *Restrictions on access*: Public	1971	Object
CERN-OBJ-CERN-OBJ-IT-060 2273997	**Item - Intel Quad Core Processor** *Scope and content*: Intel quad core processor in its casing and mounted with copper heats sink on a motherboard. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-061 2274072	**Item - Iomega ZIP 250** *Scope and content*: It's a 250 MB External Zip Disk Drive Portable *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-062 2274075	**Item - CDC Cyber Series** *Restrictions on access*: Public	1960-1969	Object
CERN-OBJ-CERN-OBJ-IT-063 2274081	**Item - Quicksilver Power Mac G4** *Scope and content*: A new generation with a reworked motherboard is launched on 2001 with however the same Graphite box. It also included a processor speed-bump, and brought the DVD-R "SuperDrive" to the mid-level model. The Quicksilver PowerMac was available in three configurations: The 733 MHz model, with 128 MB of RAM, a 40 GB hard drive, and a CD-RW drive, was 1,699 dollars, the 867 MHz configuration, with 128 MB of RAM, a 60 GB hard drive and a DVD-R drive, was 2,499 dollars, and the high-end dual-800 MHz model, with 256 MB of RAM, an 80 GB hard drive and a DVD-R drive, was 3,499 dollars. The 733 MHz model is the first personal computer to have a DVD burner, named SuperDrive at Apple. The design was updated on 2002 with 800 MHz, 933 MHz and dual 1 GHz configurations, becoming the first Mac to reach 1 GHz. *Restrictions on access*: Public	2001	Object
CERN-OBJ-CERN-OBJ-IT-064 2274088	**Item - Seagate Medalist ST38641A IDE Hard Drive** *Scope and content*:	1998	Object

	This hard drive has got a capacity of 8,6 Gb. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-065 2274092	**Item - Storagetek 411225803** *Scope and content*: It's a hand gripper assembly with camera for 9310. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-066 2274098	**Item - IBM 3090 TCM CPU** *Scope and content*: This is a Thermal Conduction Module from an IBM 3090. This is a water cooled unit that holds loads of chips. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-067 2274102	**Item - Display Apple M7649Zm** *Scope and content*: It was Designed for the Power Mac G4. This Apple studio display gives you edge-to-edge distortion-free images. With more than 16.7 million colors and 1,280 x 1,024 dpi resolution, you view brilliant and bright images on this Apple 17-inch monitor. *Restrictions on access*: Public	2001	Object
CERN-OBJ-CERN-OBJ-IT-068 2274118	**Item - IBM 3380 E** *Scope and content*: In 1985 IBM announced a double density version. The Extended Capability Models of the 3380 (3380 E) having 5.04 gigabytes per chassis, that is, two 1.26 gigabyte actuators on two hard disk assemblies in one chassis. *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-IT-069 2274385	**Item - Olivetti M6 640** *Scope and content*: The M6-640 is the highest performance personal computer workstation in the Suprema range with multimedia, document imaging and communications capabilities. It has a 90MHz Pentium processor with 256Kb of secondary cache. It can accommodate up to 128Mb RAM and supports hard disks of up to 1Gb through an IDE interface. *Restrictions on access*: Public	1993	Object

CERN-OBJ-CERN-OBJ-IT-070 2274387	**Item - M-Office DW 500 Typewriter** *Scope and content*: It's the M-Office DW 500 Typewriter. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-071 2274393	**Item - IBM Storage Disk** *Scope and content*: IBM storage disk used in the 70s and 80s. This stack of eight 35 cm disks weighs more than 10 Kg, and can store 320 Megabytes or 34 minutes of music *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-072 2274398	**Item - Disk Interface 3380** *Scope and content*: Disk Interface for a disk cabinet. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-073 2274400	**Item - Olivetti OPE XM 5220/2** *Scope and content*: MFM Hard Drive. (Type of hard disk used in XT computers) *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-074 2274411	**Item - Bus and Tag Terminators for IBM system/360** *Scope and content*: Control units were connected to the channels with "Bus and Tag" cable pairs. The bus cables carried the address and data information and the tag cables identified what data was on the bus. There were three general types of bus-and-tag cables produced by IBM. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-075 2274412	**Item - Western Digital Hard Drive** *Scope and content*: MFM Hard Drive with a capacity of 20 Mb. *Restrictions on access*: Public	Object

CERN-OBJ-CERN-OBJ-IT-076 2274414	**Item - 6250 BPI Magnetic Tape Olivetti**		Object
	Scope and content: BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-077 2274420	**Item - RPS Micro Diskette**		Object
	Scope and content: Small flexible plastic disk covered with a magnetic substance used to record data and computer programs. They can normally contain 1.44 MB of data and they are convenient for moving small amounts of data as they are transportable. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-078 2274422	**Item - Port Switch**		Object
	Scope and content: It's a 48 x 1 Gbit/s port switch with 10 Gbit/s optical uplink connection. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-079 2274589	**Item - Amdahl 470 Chip Package**	1975	Object
	Scope and content: In the late 70s the larger IBM computers were water cooled. Amdahl, an IBM competitor, invented an air cooling technology for it's computers. His company worked hard, developing a computer that was faster and less expensive than the IBM System/360 mainframe computer systems. This object contains an actual Amdahl series 470 computer logic chip with an air cooling device mounted on top. The package leads and cooling tower are gold-plated. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-080 2274594	**Item - Multi-Core Itanium Processor**	2006	Object
	Scope and content: First Multi-Core Itanium processor. It has 1,7 billion transistors and 24 MB on die-cache. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-081 2274603	**Item - Dual-core Itanium Processor**	2006	Object
	Scope and content:		

	Intel's first dual-core Itanium processor, code-named "Montecito" is a major release of Intel's Itanium 2 Processor Family, which implements the Intel Itanium architecture on a dual-core processor with two cores per die (integrated circuit). Itanium 2 is much more powerful than its predecessor. It has lower power consumption and thermal dissipation. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-082 2274619	**Item - CDC 7600 module slice** *Scope and content*: Each module contained 8 circuit cards for a total of about 300-500 uncovered transistors packaged with face plates so the Freon plates wouldn't touch the circuits. (cooling plates that surrounded each module). *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-083 2274621	**Item - Single Platter of a CDC 7638 Disk Drive** *Scope and content*: This large 7638 disk on the CDC 7600 is primarily used as a sort of « paging store » for tape files and permanent files staged over from the front-end CDC6500. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-IT-084 2274733	**Item - Wafer of Intel Pentium 4 Prescott Chips** *Scope and content*: Silicon wafer with hundreds of Penryn cores (microprocessor). There are around four times as many Prescott chips can be made per wafer than with the previous generation of Northwood-core Pentium 4 processors. It is faster and cheaper. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-085 2274743	**Item - 3M No. 700 Black Watch 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-086 2274745	**Item - Disque PC IDE** *Scope and content*: It's a disque PC IDE 850 Mbytes. *Restrictions on access*: Public	1995	Object

CERN-OBJ-CERN-OBJ-IT-087 2274753	**Item - SRAM chip** *Scope and content*: It has a capacity of 1 Mb. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-088 2274772	**Item - Fuji Toshiba 360K 5.25 Internal Floppy Drive FDD** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-089 2274914	**Item - CDC Cyber Series Electronic Plate** *Restrictions on access*: Public	1965-1970	Object
CERN-OBJ-CERN-OBJ-IT-090 2274921	**Item - Sony 40 MB Vintage Hard Drive** *Restrictions on access*: Public	1990	Object
CERN-OBJ-CERN-OBJ-IT-091 2274939	**Item - Cable 18000 Volt** *Scope and content*: Capacity of this cable : 15 MVA / 13,5 MW / 450 Ampères. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-092 2274946	**Item - Hitachi Travelstar C4K60 Hard Disk Drives** *Scope and content*: Hitachi Travelstar C4K60 with a storage capacity of 60GB, 4200RPM. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-093 2274950	**Item - Quantum Hard Disk** *Scope and content*: It has a storage capacity of 40 Mb. *Restrictions on access*: Public	1987	Object

CERN-OBJ-CERN-OBJ-IT-094 2274951	**Item - Rodime Hard Drive** *Scope and content*: It has a storage capacity of 200 Mb. *Restrictions on access*: Public	1992	Object
CERN-OBJ-CERN-OBJ-IT-095 2274962	**Item - A Diode Matrix model M792** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-096 2274963	**Item - Cern DD4424 ROM Diode Matrix** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-097 2274968	**Item - DEC Digital PDP11 H214 8KX16 Planar Core Memory** *Scope and content*: Digital Equipment Corporation (DEC) introduced the PDP 11 line of computers in 1970. *Restrictions on access*: Public	1972	Object
CERN-OBJ-CERN-OBJ-IT-098 2275036	**Item - 6250 BPI IBM reduce version 3.3** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	1988	Object
CERN-OBJ-CERN-OBJ-IT-099 2275044	**Item - Newtronics Co. LTD Floppy Drive 0705449 D359T6**		Object

	Scope and content: There is a floppy disk on it. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-100 2275052	**Item - Intel Core 2 Duo Processor E6600** *Scope and content*: This processor relies on two key points: maximum performance and minimum heat output. 4M Cache ; frequency 2.40 GHz ; 1066 MHz FSB *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-101 2275057	**Item - IBM 4 Gbyte Hard Disk** *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-102 2275072	**Item - Control Data Floppy Disk** *Scope and content*: 8-inch floppy diskettes of the 70’s and 80’s. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-103 2275078	**Item - Seagate ST-225 Hard Drive** *Scope and content*: This hard drive was developed by Seagate in 1984, and had a capacity of 20 MB. It was the single most common 20MB drive ever to be produced. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-104 2275083	**Item - IBM 3000 Information Recorder I** *Scope and content*: The IBM 3000 is an information recorder which was used for data collection. The data were collected by being punched directly onto IBM cards. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-105 2275167	**Item - HP ProCurve J8694A 3500yl/6200yl Switch Module** *Restrictions on access*:	2005	Object

	Public		
CERN-OBJ-CERN-OBJ-IT-106 2275217	**Item - CDC 3300 Timing Disk** *Scope and content*: It's a timing disc from the CDC 3300 computer. This computer was released in 1965. Moreover CDC means Control Data Corporation. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-107 2275219	**Item - CDC 6600 VAXBARN Logic Board** *Restrictions on access*: Public	1964	Object
CERN-OBJ-CERN-OBJ-IT-108 2277607	**Item - System Software 7 Macintosh** *Scope and content*: System 7 is a single-user graphical user interface-based operating system for Macintosh computers and was part of the classic Mac OS line of operating systems. It was introduced on May 13, 1991, by Apple Computer. It succeeded System 6, and was the main Macintosh operating system until it was succeeded by Mac OS 8 in 1997. Features added with the System 7 release included virtual memory, personal file sharing, QuickTime, QuickDraw 3D, and an improved user interface. This is the first real major evolution of the Macintosh system, bringing a significant improvement in the user interface, improved stability and many new features such as the ability to use multiple applications at the same time. "System 7" is the last operating system name of the Macintosh that contains the word "system". Macintosh operating systems were later called "Mac OS" (for Macintosh Operating System). *Restrictions on access*: Public	1991	Object
CERN-OBJ-CERN-OBJ-IT-109 2277608	**Item - NextStation Color** *Scope and content*: Steve Jobs created a NeXT generation operating system. The NeXTstation provides functionality that other computers are just providing today.The NS Color I/O cable attaches to the back of the computer on one end and on the other end the cable is split to connect to the display and the Sound Box. The Sound Box also has a keyboard signal port. Like a MAC or SUN of the same vintage, the mouse connects to the keyboard. These boxes run NEXTSTEP, which a full object-oriented OS. It has UNIX as a base and provides a gorgeous graphical interface. NEXTSTEP was also available for other platforms. They tend to run a little slow. But they have great digital sound and full color displays. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-110 2277609	**Item - Vectronic's Power Macintosh G3 (B & W)** *Scope and content*: Apple introduced the Power Macintosh G3 Blue and White (B & W) on January 5, 1999. The Power Macintosh G3 line stayed in production until August 1999, and was replaced by the Power Macintosh	1999	Object

<table>
<tr><td></td><td>G4, which used the same chassis. The Power Macintosh G3 originally cost between $1599 and $2900 depending on options. The three original Power Macintosh G3 models shipped with a 300 MHz, 350 MHz, or 400 MHz PowerPC 750 (G3) processor. Just pull on the small round handle on the side of the tower, and the entire side of the computer opens up. The G3's motherboard is mounted on that surface, giving you easy access for upgrading RAM or installed PCI cards. Apple added new ports (USB and the much-anticipated FireWire) that took the place of historic, and quickly becoming antiquated, Mac serial (printer and modem) ports. The Power Macintosh G3 has two USB (12 Mbps) ports, two FireWire (400 Mbps) ports, one 10/100BaseT Ethernet port, an RJ-11 jack for an optional 56K modem, a sound out and sound in jack, and one ADB (Apple Desktop Bus) port. The maximum RAM for the G3 is 1 GB.
Restrictions on access:
Public</td></tr>
<tr><td>CERN-OBJ-CERN-OBJ-IT-111 2277694</td><td>Item - Macintosh Plus 1986 Object
Scope and content:
Apple introduced the Macintosh Plus on January 16, 1986. The Macintosh Plus has an 8 MHz 68000 processor and an internal 800K floppy disk drive. It supports up to 4 MB of RAM. The Plus is a significant improvement over the previous compact Macs primarily due to the addition of the SCSI bus. Previous Macs did not have SCSI, thus making it more difficult to find a suitable external hard drive able to connect through the drive port, the printer port, or the modem port. These drives are considerably slower (as much as 4 times slower) than external SCSI hard drives. The Macintosh Plus is a very important computer in the history of the Apple Computers. It set up many of the standards that Apple followed for over a decade going forward.
Restrictions on access:
Public</td></tr>
<tr><td>CERN-OBJ-CERN-OBJ-IT-112 2277708</td><td>Item - IMac G4/800 (Flat Panel) 2002 Object
Scope and content:
Apple introduced the iMac G4/800 on January 7, 2002. The total cost was about $2000 (base price of $1799 plus RAM upgrade). The iMac G4/800 has an 800 MHz G4 processor. The G4/800 has the following ports: three USB 1.1 ports, two Fire Wire 400-Mbps ports, one RJ-45, 10/100BASE-T Ethernet port, one RJ-11 56K V.90 modem port, one Mini-VGA output port, one speaker jack, and one headphone jack. There is a built in microphone set on the front of the monitor in the bottom left corner. There is a single internal SuperDrive capable of reading and writing CDs and DVDs. The disk drive is on the front of the computer. It opens by pushing the disk drive button on the iMac's keyboard. The monitor size is 15 inches. The G4/800 has a NVIDIA GeForce2 MX graphics processor with AGP 2X support that provides 32 MB of dedicated Double Data Rate (DDR) video memory. Native resolution is 1024 x 768, but the built in monitor is also capable of 640 x 480 and 800 x 600. RAM can be changed by removing a panel on the bottom of the chassis. This iMac is AirPort ready but does not have an AirPort Card installed. The internal hard drive is 60 GB. The G4/800 has a small internal speaker.
Restrictions on access:
Public</td></tr>
<tr><td>CERN-OBJ-CERN-OBJ-IT-113 2277709</td><td>Item - Weston Standard battery Object
Scope and content:
This is a Weston AOIP standard battery with its calibration certificate (1956). Inside, the glassware forms an "H". Its name comes from the British physicist Edward Weston. A standard is the materialization of a given quantity whose value is known with great accuracy.</td></tr>
</table>

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-114 2277763	**Item - PM 3655 PHILIPS Logic analyzer**		Object
	Scope and content: A logic analyzer is an electronic instrument that captures and displays multiple signals from a digital system or digital circuit. A logic analyzer may convert the captured data into timing diagrams, protocol decodes, state machine traces, assembly language, or may correlate assembly with source-level software. Logic Analyzers have advanced triggering capabilities, and are useful when a user needs to see the timing relationships between many signals in a digital system. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-115 2279933	**Item - Philips LTC 2009/51**	1999	Object
	Scope and content: It was part of a range of high-performance monitors (computers screens) that were associated with other units such as Philip's video surveillance systems, cameras or transmission and control equipment. Included in this range of Philips monitors are LTC 2009 (like this one), LTC 2012, LTC 2017 and LTC 2020 Series monochrome monitors. They offer high-performance images with a resolution of 900 TVL (TV-Lines), or in the case of the LTC 2017 monitor, 700 TVL, making them ideal for remote viewing and video applications. The monitor housing consists of a robust rectangular metal case which minimizes interference from external signals and allows “stacking” of monitors when used in large numbers. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-116 2279959	**Item - CHT, CERN HIPPI Testbox**	1990	Object
	Scope and content: To allow CERN to test and maintain HIPPI equipment (High Performance Parallel Interface), a powerful test falcility is required. A tester has been developed at Los Alamos National Laboratories [9,10]. The CERN HIPPI testbox allows testing of HIPPI equipment both inside and outside the specifications. This includes the possibility of deliberately introducing errors. The main features of this testbox are: Manual set-up Processor controlled set-up Possibilities for remote analysis Checking the HIPPI specifications Checking illegal conditions *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-117 2279960	**Item - IBM model M keyboard**	1985	Object
	Scope and content: In 1985, the IBM Model M keyboard was created. This timeless classic was a hit. IBM came out with several varients of the model M. They had the space saver 104 key which is the one most seen today and many international versions of that as well. The second type, and rarest is the 122 key model M which has 24 extra keys at the very top, dubbed the “programmers keyboard”. IBM manufactured these keyboards until 1991. The model M features “caps” over the actual keys that can be taken off separately one at a time for cleaning or to replace them with colored keys or keys of another language, that was a very cost effective way of shipping out internationally the keyboards.		

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-118 2280048	**Item - IBM 5150 computer** *Scope and content*: IBM’s first personal computer arrived nearly 10 years after others companies, but instantly legitimized the market. IBM introduced its PC in 1981. IBM equipped the model 5150 with a cassette port for connecting a cassette drive. The first IBM PC ran on a 4.77 MHz Intel 8088 microprocessor. The PC came equipped with 16 kilobytes of memory, expandable to 256k. The PC came with one or two 160k floppy disk drives and an optional color monitor. The price tag started at $1,565, which would be nearly $4,000 (about €3,400) today. *Restrictions on access*: Public	1981	Object
CERN-OBJ-CERN-OBJ-IT-119 2280057	**Item - HP 2671G GRAPHICS** *Scope and content*: The 2671 was a text-only printer with a maximum print speed of 120 characters per second. The 2671 printers are very robust. For paper, they use normal thermal roll paper sold in most office supply stores for older fax machines. Although thermal printing is a quiet technology, the paper advance mechanism of these printers is plenty loud. *Restrictions on access*: Public	1981	Object
CERN-OBJ-CERN-OBJ-IT-120 2280093	**Item - HP 9816** *Scope and content*: The 9816 was introduced in late 1982. This was the low-cost model in the 200 Series range. It only had two expansion slots and featured a monitor integrated with the system unit and modular keyboard and mass storage (usually a 9121 dual 3.5 inch floppy drive). The monitor was nine inches diagonally with a 400 by 300 dot resolution. The HP 9816 was also designated as the HP 9000 216. It did not include any disk drives but it had a built-in 9 inch monochrome monitor, built-in HP-IB and RS-232 ports and 2 expansion slots. The standard keyboard for the 9816 is a itty-bitty number. The 9816 A came with 128K bytes of memory. The 9816 S included all of the above plus disk based BASIC and a card containing an additional 256K of memory bringing the total memory to 512K but only leaving only one expansion slot open. *Restrictions on access*: Public	1982	Object
CERN-OBJ-CERN-OBJ-IT-120 2280093	**Item - HP 9816** *Scope and content*: The 9816 was introduced in late 1982. This was the low-cost model in the 200 Series range. It only had two expansion slots and featured a monitor integrated with the system unit and modular keyboard and mass storage (usually a 9121 dual 3.5 inch floppy drive). The monitor was nine inches diagonally with a 400 by 300 dot resolution. The HP 9816 was also designated as the HP 9000 216. It did not include any disk drives but it had a built-in 9 inch monochrome monitor, built-in HP-IB and RS-232 ports and 2 expansion slots. The standard keyboard for the 9816 is a itty-bitty number. The 9816 A came with 128K	1982	Object

	bytes of memory. The 9816 S included all of the above plus disk based BASIC and a card containing an additional 256K of memory bringing the total memory to 512K but only leaving only one expansion slot open. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-121 2280104	**Item - TDV-2215** *Scope and content*: The Tandberg TDV 2215 terminal was produced by Tandberg Data as a model of the TDV 2200 series terminals, and sold by Norsk Data (ND) as product number ND 242, Display Terminal Tandberg TDV 2215. It can be run in a TDV 2115 compatible mode, or in its native mode. The terminal has eight PUSH-keys, providing (by use of SHIFT) sixteen functions. PUSH, Programmable Utility for String Handling, allows the user (or the host computer) to program often used words or code sequences that can be transitted by pushing the appropriate PUSH-key. The strings associated with PUSH-keys are stored in non-volatile memory and are not lost when power is turned off. *Restrictions on access*: Public	1980-1989	Object
CERN-OBJ-CERN-OBJ-IT-122 2280139	**Item - SONY trinitron KX-14CP1** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-123 2280147	**Item - Data transfer switch** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-124 2280148	**Item - Macintosh Floppy Disk box** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-125 2280150	**Item - JMR CHCO-001** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-126 2280151	**Item - iTECH by INTEL** *Scope and content*: A PC by INTEL with an EIZO T560i-T screen. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-127 2280160	**Item - CPI Hard Disk System** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-128 2280162	**Item - IOSC HIPPI 8x8 switch** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-129 2280163	**Item - VICI Repeater** *Scope and content*: This is for HIPPI cable connections betzeen 25 Metres and 50 Metres. This repeater was developped at Los Alamos National Laboratories. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-130 2280472	**Item - NEDDI** *Scope and content*: NEDDI (Never Ending Destination Interface). It was used for test purposes. It handles the HIPPI hardware handshake regardless of Data. The NEDDI was developed at CERN and manufactured at CES in Geneva. *Restrictions on access*: Public	1990-1999	Object
CERN-OBJ-CERN-OBJ-IT-131 2280479	**Item - Multimeter** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-132 2280480	**Item - Phone terminal** *Scope and content*: Telephone modem, note add there are swiss 4-pin telephone plugs. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-133 2280693	**Item - Digital RMO3P** *Scope and content*: Digital Equipment Corporation RMO3P is a disk pack data cartridge removed from 1980's VAX-11. It measures 15" wide and 4" high. *Restrictions on access*:	1980-1989	Object

	Public		
CERN-OBJ-CERN-OBJ-IT-134 2280696	**Item - OKI optoelectronic devices** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-135 2280795	**Item - No title** *Scope and content*: The first joystick, used for the ERASME experiment. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-136 2280800	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-014 2284288	**Item - LEP beampipe section** *Scope and content*: Short section of beampipe from the Large Electron Positron collider (LEP, for short). With its 27-kilometre circumference, LEP was the largest electron-positron accelerator ever built and ran from 1989 to 2000 at CERN. During 11 years of research, LEP's experiments provided a detailed study of the electroweak interaction. Measurements performed at LEP also proved that there are three – and only three – generations of particles of matter. LEP was closed down on 2 November 2000 to make way for the construction of the Large Hadron Collider in the same tunnel. *Restrictions on access*: Public	1989	Object
CERN-OBJ-CERN-OBJ-AC-041 2284290	**Item - Slice through an LHC bending magnet** *Scope and content*: Slice through an LHC superconducting dipole (bending) magnet. The slice includes a cut through the magnet wiring (niobium titanium), the beampipe and the steel magnet yokes. Particle beams in the Large Hadron Collider (LHC) have the same energy as a high-speed train, squeezed ready for collision into a space narrower than a human hair. Huge forces are needed to control them. Dipole magnets (2 poles) are used to bend the paths of the protons around the 27 km ring. Quadrupole magnets (4 poles) focus the proton beams and squeeze them so that more particles collide when the beams’ paths cross. There are 1232 15m long dipole magnets in the LHC. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-042 2284291	**Item - Slice through an LHC focusing magnet** *Scope and content*:		Object

	Slice through an LHC superconducting quadrupole (focusing) magnet. The slice includes a cut through the magnet wiring (niobium titanium), the beampipe and the steel magnet yokes. Particle beams in the Large Hadron Collider (LHC) have the same energy as a high-speed train, squeezed ready for collision into a space narrower than a human hair. Huge forces are needed to control them. Dipole magnets (2 poles) are used to bend the paths of the protons around the 27 km ring. Quadrupole magnets (4 poles) focus the proton beams and squeeze them so that more particles collide when the beams' paths cross. Bringing beams into collision requires a precision comparable to making two knitting needles collide, launched from either side of the Atlantic Ocean. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-043 2284292	**Item - LHC bending magnet coil** *Scope and content*: A short test version of coil of wire used for the LHC dipole magnets. The high magnetic fields needed for guiding particles around the Large Hadron Collider (LHC) ring are created by passing 12'500 amps of current through coils of superconducting wiring. At very low temperatures, superconductors have no electrical resistance and therefore no power loss. The LHC is the largest superconducting installation ever built. The magnetic field must also be extremely uniform. This means the current flowing in the coils has to be very precisely controlled. Indeed, nowhere before has such precision been achieved at such high currents. Magnet coils are made of copper-clad niobium–titanium cables — each wire in the cable consists of 9'000 niobium–titanium filaments ten times finer than a hair. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-045 2284293	**Item - Slice of LHC dipole wiring** *Scope and content*: Dipole model slice made in 1994 by Ansaldo. The high magnetic fields needed for guiding particles around the Large Hadron Collider (LHC) ring are created by passing 12'500 amps of current through coils of superconducting wiring. At very low temperatures, superconductors have no electrical resistance and therefore no power loss. The LHC is the largest superconducting installation ever built. The magnetic field must also be extremely uniform. This means the current flowing in the coils has to be very precisely controlled. Indeed, nowhere before has such precision been achieved at such high currents. 50'000 tonnes of steel sheets are used to make the magnet yokes that keep the wiring firmly in place. The yokes constitute approximately 80% of the accelerator's weight and, placed side by side, stretch over 20 km! *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-037 2284723	**Item - LEP superconducting accelerating cavity module** *Creator*: Marco Silari *Scope and content*: With its 27-kilometre circumference, the Large Electron-Positron (LEP) collider was the largest electron-positron accelerator ever built. The excavation of the LEP tunnel was Europe's largest civil-engineering project prior to the Channel Tunnel. Three tunnel-boring machines started excavating the tunnel in February 1985 and the ring was completed three years later. In its first phase of operation, LEP consisted of 5176 magnets and 128 accelerating cavities. CERN's accelerator complex provided the particles and four enormous detectors, ALEPH, DELPHI, L3 and OPAL, observed the collisions. LEP was	1995	Object

	commissioned in July 1989 and the first beam circulated in the collider on 14 July. The collider's initial energy was chosen to be around 91 GeV, so that Z bosons could be produced. The Z boson and its charged partner the W boson, both discovered at CERN in 1983, are responsible for the weak force, which drives the Sun, for example. Observing the creation and decay of the short-lived Z boson was a critical test of the Standard Model. In the seven years that LEP operated at around 100 GeV it produced around 17 million Z particles. In 1995 LEP was upgraded for a second operation phase, with as many as 288 superconducting accelerating cavities added to double the energy so that the collisions could produce pairs of W bosons. The collider's energy eventually topped 209 GeV in 2000. This object is one of the superconducting cavities from this epoch. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-049 2285237	**Item - Sample of superconducting wiring from the LHC** Object *Scope and content*: The high magnetic fields needed for guiding particles around the Large Hadron Collider (LHC) ring are created by passing 12’500 amps of current through coils of superconducting wiring. At very low temperatures, superconductors have no electrical resistance and therefore no power loss. The LHC is the largest superconducting installation ever built. The magnetic field must also be extremely uniform. This means the current flowing in the coils has to be very precisely controlled. Indeed, nowhere before has such precision been achieved at such high currents. Magnet coils are made of copper-clad niobium–titanium cables — each wire in the cable consists of 9’000 niobium–titanium filaments ten times finer than a hair. The cables carry up to 12’500 amps and must withstand enormous electromagnetic forces. At full field, the force on one metre of magnet is comparable to the weight of a jumbo jet. Coil winding requires great care to prevent movements as the field changes. Friction can create hot spots which “quench” the magnet and ruin its superconductivity. A quench in any of the LHC superconducting magnets would stop machine operation. 50’000 tonnes of steel sheets are used to make the magnet yokes that keep the wiring firmly in place. The yokes constitute approximately 80% of the accelerator's weight and, placed side by side, stretch over 20 km! *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-018 2285797	**Item - Laboratory Handbook Electronics** 1966 Object *Creator*: Roland Rey-Mermier *Scope and content*: Laboratory manual 1966 format A3 with the list of equipment cables, electronic tubes, chassis, diodes transistors etc. One of CERN's first material catalogue for construction components for mechanical and electronic chassis. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-050 2287667	**Item - Sample of superconducting wiring (Niobium Titanium)** Object *Scope and content*: About NbTi cable: The cable consists of 36 strands of superconducting wire, each strand has a diameter of 0.825 mm and houses 6300 superconducting filaments of niobium-titanium (Nb-Ti, a superconducting alloy). Each filament has a diameter of about 0.006 mm, i.e. 10 times smaller than a typical human hair. The filaments are embedded in a high-purity copper matrix. Copper is a normal conducting material.

	The filaments are in the superconductive state when the temperature is below about -263ºC (10.15 K). When the filaments leave the superconductive state, the copper acts as conductor transports the electrical current. Each strand of The NbTi cable (at superconducting state) has a current density of up to above 2000 A/mm2 at 9 T and -271ºC (2.15 K). A cable transport a current of about 13000 A at 10 T and -271ºC (2.15 K). About LHC superconducting wiring: The high magnetic fields needed for the LHC can only be reached using superconductors. At very low temperatures, superconductors have no electrical resistance and therefore no power loss. The LHC will be the largest superconducting installation ever built and, at 1.9 degrees above absolute zero (300 degrees below room temperature), one of the the coldest objects in the universe! Magnet coils are made of copper-clad niobium–titanium cables — each wire in the cable consists of 9000 niobium–titanium filaments ten times finer than a hair. The cables carry up to 12 500 amps and must withstand enormous electromagnetic forces. At full field, the force on one metre of magnet is comparable to the weight of a jumbo jet. Coil winding requires great care to prevent movements as the field changes. Friction can create hot spots which "quench" the magnet and ruin its superconductivity. A quench in any of the LHC superconducting magnets would stop machine operation. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-051 2287776	**Item - Sample of superconducting wiring (Niobium Titanium)** *Scope and content*: About NbTi cable: The cable consists of 36 strands of superconducting wire, each strand has a diameter of 0.825 mm and houses 6300 superconducting filaments of niobium-titanium (Nb-Ti, a superconducting alloy). Each filament has a diameter of about 0.006 mm, i.e. 10 times smaller than a typical human hair. The filaments are embedded in a high-purity copper matrix. Copper is a normal conducting material. The filaments are in the superconductive state when the temperature is below about -263ºC (10.15 K). When the filaments leave the superconductive state, the copper acts as conductor transports the electrical current. Each strand of The NbTi cable (at superconducting state) has a current density of up to above 2000 A/mm2 at 9 T and -271ºC (2.15 K). A cable transport a current of about 13000 A at 10 T and -271ºC (2.15 K). About LHC superconducting wiring: The high magnetic fields needed for the LHC can only be reached using superconductors. At very low temperatures, superconductors have no electrical resistance and therefore no power loss. The LHC will be the largest superconducting installation ever built and, at 1.9 degrees above absolute zero (300 degrees below room temperature), one of the the coldest objects in the universe! Magnet coils are made of copper-clad niobium–titanium cables — each wire in the cable consists of 9000 niobium–titanium filaments ten times finer than a hair. The cables carry up to 12 500 amps and must withstand enormous electromagnetic forces. At full field, the force on one metre of magnet is comparable to the weight of a jumbo jet. Coil winding requires great care to prevent movements as the field changes. Friction can create hot spots which "quench" the magnet and ruin its superconductivity. A quench in any of the LHC superconducting magnets would stop machine operation. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-062 2289517	**Item - Accelerating cavities** *Scope and content*: 3 accelerating cavities. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-063 2289741	**Item - Rock samples from LEP/LHC tunnel excavation**	1985	Object

	Scope and content: Rock samples taken from 0 to 170 m below ground on the CERN site when the LEP (Large Electron Positron collider) pit number 6 was drilled in Bois-chatton (Versonnex). The challenges of LHC civil engineering: A mosaic of works, structures and workers of differents crafts and origins. Three consulting consortia for the engineering and the follow-up of the works. Four industrial consortia for doing the job. A young team of 25 CERN staff, 30 surface buildings, 32 caverns of all sizes, 170 000 m3 of concrete, 420 000 m3 excavated. 1998-2004 : six years of work and 340 millions Swiss Francs. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-064 2289743	**Item - LHC accelerating cavity prototype** Object *Creator*: Pierre Maesen *Scope and content*: Particles are accelerated using radio-frequency cavities. These contain an electric field which oscillates at just the right frequency to give a kick to the charged particles passing through. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-065 2289744	**Item - LHC beampipe interconnection** Object *Creator*: Emma Sanders *Scope and content*: Particle beams circulate for around 10 hours in the Large Hadron Collider (LHC). During this time, the particles make four hundred million revolutions of the machine, travelling a distance equivalent to the diameter of the solar system. The beams must travel in a pipe which is emptied of air, to avoid collisions between the particles and air molecules (which are considerably bigger than protons). The beam pipes are pumped down to an air pressure similar to that on the surface of the moon. Much of the LHC runs at 1.9 degrees above absolute zero. When material is cooled, it contracts. The interconnections must absorb this contraction whilst maintaining electrical connectivity. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-061 2289922	**Item - ALICE Time of Flight Module** Object *Creator*: despoina.hatzifotiadou@cern.ch Despoina Hatzifotiadou *Scope and content*: The Time-Of-Flight system of ALICE consists of 90 such modules, each containing 15 or 19 Multigap Resistive Plate Chamber (MRPC) strips. This detector is used for identification of charged particles. It measures with high precision (50 ps) the time of flight of charged particles and therefore their velocity. The curvature of the particle trajectory inside the magnetic field gives the momentum, thus the particle mass is calculated and the particle is identified The MRPC is a stack of resistive glass plates, separated from each other by nylon fishing line. The mass production of the chambers (~1600, covering a surface of 150 m2) was done at INFN Bologna, while the first prototypes were bult at CERN. *Restrictions on access*:

	Public		
CERN-OBJ-CERN-OBJ-AC-066 2290375	**Item - LHC beampipe section**		Object
	Scope and content: A short section of the LHC beam-pipe including beam screen. In the LHC, particles circulate under vacuum. The vacuum chamber can be at room temperature (for example, in the experimental areas), or at cryogenic temperature, in the superconductive magnets. This piece is located in the superconductive magnets. The outer pipe is the vacuum chamber, which is in contact with the magnets, at cryogenic temperature (1.9K). It is called the “cold bore”. The inner tube is the beam screen. Its main goal is to protect the magnets from the heat load coming from the synchrotron radiation. Indeed, when high energy protons’ trajectory is bent, photons are emitted by the beam. They are intercepted by the beam screen. The temperature of the beam screen is kept between 5 and 20K by a circulation of gaseous helium in the small pipes on both sides of the beam screen. As those surfaces are at cryogenic temperature. The residual gas present in the accelerator is sticking on the surfaces. This phenomenon called “adsorption” is used to maintain a very low pressure in the vacuum chamber of the accelerator. About materials: The cold bore is in stainless steel. The beam screen is in stainless steel with colaminated copper. Both those material have a low outgassing rates, which means that they release few molecules in the vacuum chamber. About beam and impedance: The goal of the copper, which has a good electrical conductivity, is to facilitate the circulation of the image current. The beam is composed of charged particules circulating: it is an electric current. When it is circulating, an image current is produced. It is called induction. If the image current cannot circulate properly, the beam is slowed down. About adsorption process: When the beam circulates, photons from synchrotron radiation are emitted and hit the beam screen. By doing so, they desorb molecules from the walls. The molecules are then pumped down on the outer pipe (where they cannot be reached by the photons anymore), through the small holes in the beam screen. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-093 2298904	**Item - ALEPH model**	1989	Object
	Scope and content: A wooden model of the ALEPH experiment and its cavern. ALEPH was one of 4 experiments at CERN's 27km Large Electron Positron collider (LEP) that ran from 1989 to 2000. During 11 years of research, LEP's experiments provided a detailed study of the electroweak interaction. Measurements performed at LEP also proved that there are three – and only three – generations of particles of matter. LEP was closed down on 2 November 2000 to make way for the construction of the Large Hadron Collider in the same tunnel. The cavern and detector are in separate locations - the cavern is stored at CERN and the detector is temporarily on display in Glasgow physics department. Both are available for loan. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-094 2298948	**Item - ATLAS Transition Radiation Tracker - large piece**	2006	Object
	Scope and content: The ATLAS transition radiation tracker is made of 300'000 straw tubes, up to 144cm long. Filled with a gas mixture and threaded with a wire, each straw is a complete mini-detector in its own right. An electric field is applied between the wire and the outside wall of the straw. As particles pass through, they collide with atoms in the gas, knocking out electrons. The avalanche of electrons is detected as an electrical signal on the wire in the centre. The tracker plays two important roles. Firstly, it makes more position measurements, giving more dots for the computers to join up to recreate the particle tracks. Also, together		

	with the ATLAS calorimeters, it distinguishes between different types of particles depending on whether they emit radiation as they make the transition from the surrounding foil into the straws. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-095 2700067	**Item - Tracker Outer Barrel (TOB) Rod from CMS** Object *Scope and content*: One of the building blocks of the CMS Silicon Tracker: a part of the detector that reconstructs the trajectories of charged particles emerging from the proton-proton collisions. A lightweight structure, made mostly of carbon fibre, supports silicon detectors and their readout electronics. These detectors generate an electrical pulse when they are traversed by a charged particle, and they are segmented into fine strips (in this case the strips are 180 microns wide, about the size of a human hair) that collect those pulses, such that the position of the strip provides a coordinate on the particle trajectory. In this “rod” silicon detectors are arranged in back-to-back pairs, where the two detectors of each pair have the strips oriented at an angle, such that the crossing point of the strips provides a two-dimensional coordinate in the rod plane. Three pairs of detectors are mounted on each side of the rod structure, to fully cover its surface. In the Tracker, rods are arranged to form cylindrical layers in the central “barrel” region. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-096 2700072	**Item - Tracker outer barrel (TOB) module from the CMS tracker** Object *Scope and content*: One of the building blocks of the CMS Silicon Tracker: a part of the detector that reconstructs the trajectories of charge particles emerging from the proton-proton collisions. A lightweight structure, made mostly of carbon fibre, supports silicon detectors and their readout electronics. These detectors generate an electrical pulse when they are traversed by a charged particle, and they are segmented into fine strips (in this case the strips are 180 microns wide, about the size of a human hair) that collect those pulses, such that the position of the strip provides a coordinate on the particle trajectory. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-067 2700141	**Item - Focusing Horn** Object *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-068 2713242	**Item - Hydrogen Bottle** Object *Scope and content*: If all molecules in this bottle could be used, this hydrogen bottle contains enough protons to feed the Large Hadron Collider for 200’000 years of continuous operation! But since there are losses inside the source, in and between the accelerators, such a bottle only lasted for 4 to 6 months of operations and needed then to be replaced. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-AC-069 2713243	**Item - Large Hadron Collider (LHC) magnet interconnection** *Scope and content*: Connection between two superconducting magnets Cryostat - Keeping the magnets cold The Large Hadron Collider superconducting magnets are cooled by liquid helium to 1.9 degrees above absolute zero, or around 300 degrees below the ambient temperature in the tunnel. To keep them cold, each 30 000 kg magnet sits inside a cryostat that isolates it from the tunnel. Inside the cryostat, air is pumped out to reduce heat in-flow. Bellows - Allowing expansion and contraction When the magnets are cooled, they contract: normally 15 metres long, each magnet shrinks by 4.5 cm on its way down to 1.9 degrees above absolute zero. One side of each 30 000 kg magnet is held stationary, while the other is left free to move. Stainless steel bellows such as these absorb the contraction. Notice that every single join needs to allow for such movement, even the electrical connections. Helium Pipe - The cooling supply This pipe carries superfluid helium at 1.9 degrees above absolute zero, around 300 degrees below room temperature. As helium is cooled and put under pressure, it becomes a superfluid, with excellent thermal conductivity, ensuring the temperature is the same everywhere in the circuit. However this gives engineers an extra challenge as superfluids have unusual quantum properties. They can even creep upwards – if there are leaks in the circuit a superfluid will find them! The Large Hadron Collider is cooled by sector, of which there are eight in total. Cool down of one sector takes around 6 weeks. When the accelerator is brought back to room temperature for maintenance works, CERN recuperates the helium and stores it, so it can be reused. Niobium Titanium Cable - Bringing current to the magnets This cable carries the 13 000 amps to the Large Hadron Collider magnets. It is made from a Niobium-Titanium superconductor which is embedded in copper, to ensure an electrical connection is maintained even if the superconductor warms up and stops conducting. This happens at around 10 degrees above absolute zero. The LHC is cooled to 1.9 degrees above absolute zero, to keep the current perfectly stable. Look at the joins in the cable, called splices. They allow the wires to move over each other and retain an electrical connection, when the magnet contracts during cooling. Beam-Pipe Fingers - Keeping the electrical connection Fingers of copper slide over the beam-pipe in every connection between magnets in the Large Hadron Collider. These fingers retain an electrical contact whilst the magnets contract during cooling. The beam-pipe has double layers. The outer layer is slightly colder than the inner one so that any residual gas molecules, left behind in the tube after pumping, are drawn outwards through small holes so they cannot be disturbed by the passing proton beam. Diode - Removing the current There are many mechanisms in place to prevent friction between cable windings that might generate heat and stop the superconductor from conducting. In the eventuality the magnets do stop working, around 13 000 amps of current needs to be taken out of the system. This happens via diodes situated at the extremity of every magnet. The diode conducts a current pulse ramping in less than a second up to 13 000 amps and then slowly decaying down to zero. This process raises their temperature by several hundred degrees, so the diodes are cooled by the LHC Helium circuit. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-071 2713245	**Item - Iron yoke and other elements of the Large Hadron Collider magnets** *Scope and content*: The magnetic field must be extremely uniform. This means the current flowing in the coils has to be very precisely controlled. 50’000 tonnes of steel sheets are used to make the magnet yokes that keep the wiring firmly in place. The yokes constitute approximately 80% of the accelerator's weight and, placed side by side, stretch over 20 km. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-072 2713248	**Item - Cryogenic Valve**	Object

	Scope and content: 120 tonnes of liquid helium in use at the Large Hadron Collider, cooling 36'000 tonnes of superconducting magnets to just 1.9 degrees above absolute zero. The cryogenic valves were designed for the needs of CERN to develop valves for use with the very low temperature of liquid helium. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-097 2717474	**Item - The ALICE silicon pixel detectors** Object *Scope and content*: Under the microscope you can see a pixel of silicon from a new generation of high-precision detectors under development for ALICE. The ALICE detector is designed for the periods when the LHC collides the nuclei of lead atoms rather than protons. These lead collisions produce extremely dense tangles of particle tracks and many short-lived particles. Precision is key! The new silicon detectors are extremely thin and can measure the passage of particles with a precision of 5 thousandth’s of a millimetre. The connections to the electronics are integrated into the silicon. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-098 2717670	**Item - The LHCb Vertex Locator (VELO) - 2 half disks** Object *Scope and content*: 42 modules like this one surround the collision point inside the LHCb detector. Their role is to measure the tracks of short-lived particles spraying out from the collision and to pinpoint the exact spots where they decay into secondary particles. Some exist for just trillionths of a second before decaying! The silicon modules operate so close to the collision point, they can only be moved into position once the circling particle beams are at their most focused. Otherwise, peripheral particles on the outside of the finer-than-a-hair beam would bore a hole right through them. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-100 2717672	**Item - The ATLAS Solenoid Magnet** Object *Scope and content*: A magnet surrounding the detectors bends the paths of charged particles. This shows if they are positively - or negatively- charged and also allows their momentum to be measured. Inside ATLAS, the solenoid magnet surrounding the tracking detectors must be as thin as possible, so as not to affect their measurements. 9 km of superconducting wires, support casing, cooling fluids and insulation is squeezed into the 4.5 cm gap between the tracking detectors and the calorimeters. ATLAS is one of the 4 large experiments surrounding collision points at the Large Hadron Collider. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-101 2717673	**Item - CMS Crystals** Object *Scope and content*: The crystals used in CMS’s electromagnetic calorimeter may look like simple bricks of glass, but they are in fact mostly metal and are heavier than steel! Lead tungstate crystal with a touch of oxygen in this

	crystalline form is highly transparent and scintillates when electrons and photons pass through it. This means it produces light in proportion to the particle's energy. CMS contains nearly 80'000 such crystals, each of which took two days to grow. This technology developed at CERN has applications in medical imaging, for example improving cancer diagnosis. The Compact Muon Solenoid (CMS) is a general-purpose detector at the Large Hadron Collider (LHC). *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-102 2717674	**Item - CMS Brass Absorber** Object *Scope and content*: This brass block was part of the CMS experiment. Its role was to slow down particles before their energy was measured. The Compact Muon Solenoid (CMS) experiment is one of two large general-purpose particle physics detectors built on the Large Hadron Collider (LHC). *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-103 2717675	**Item - The ATLAS Accordion Calorimeter** Object *Scope and content*: The first layer of the ATLAS detector's calorimeter is made of 8'200 lead plates and electrodes folded into an accordion shape and immersed in liquid argon. ATLAS (A Toroidal LHC ApparatuS) is the largest, general-purpose particle detector experiment at the Large Hadron Collider (LHC). As particles cross the folds and interact with the lead atoms, electrons and photons are ejected. There is a knock-on effect and as they continue on into the argon, a whole shower of secondary particles is produced. The electrodes register a signal that gives a measurement of the energy of the initial particle. As with most of the LHC detectors, the structural design challenge is to hold the heavy elements in place without affecting the measurements of the particles. Here, the layers of honeycomb spacer are designed to do just that. They separate the copper electrode layer from the lead and stainless steel absorber, allowing the liquid argon to flow freely in between. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-104 2717676	**Item - LHCb scintillating tiles** Object *Scope and content*: The electromagnetic calorimeter used in LHCb is a sandwich of lead plates and scintillating tiles. Incoming particles interact with the lead, creating a shower of new particles. This shower goes on to interact with the plastic tiles where its energy is transformed into tiny flashes of light, called scintillations. All this light is then collected in optical fibres which transport it to a photomultiplier tube that converts the light signal into a pulse of electrical current. The resulting signal reveals the energy of the original particle. 3300 such modules combine to make up the first layer of LHCb calorimeters. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-105 2740930	**Item - The ATLAS straw-tube tracker** Object *Scope and content*:

	Each of these straws is a complete mini–detector in its own right. Every one is filled with a gas mixture and threaded with a wire. Imagine assembling 300’000 fragile drinking straws up to 144 cm long, with no bends or kinks allowed! This layer of tracker plays two important roles. Firstly, it makes more position measurements, giving more dots for the computers to join up to recreate the particle tracks. Then it also helps distinguish between different types of particles depending on whether they emit radiation as they make the transition from the surrounding foil into the straws. An electric field is applied between the wire and the outside wall of the straw. As particles pass through, they collide with atoms in the gas, knocking out electrons. The avalanche of electrons is detected as an electrical signal on the wire in the centre. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-106 2740931	**Item - The LHCb wire chamber** Object *Scope and content*: LHCb measures muons using gold plated tungsten wires stretched over read-out pads. A high voltage is applied across the wires and pads and the set-up is bathed in a gas mixture. Passing muons interact with the gas, knocking out electrons from its atoms in a process called ionization. Both the ionized atoms and the electrons then drift in the electric field. This movement creates an electric signal in the wires and pads that is used to identify where the muon has passed. In total, the LHCb muon detectors contain about 2 million wires and are capable of making measurements 40 million times a second – every time the particle beams collide. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-107 2741107	**Item - The ALICE Time Projection Chamber** Object *Scope and content*: This detector is part of the ALICE experiment's Time Projection Chamber (TPC). With incredible precision, the TPC records the thousands of tracks of charged particles spraying out from the collision, allowing each particle to be identified. In such a dense, electronics-filled environment, it is rare to find a relatively empty space - yet most of the TPC's 88m3 volume is filled with just gas, with read-out detectors, like this one located on the outer surface. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-108 2741407	**Item - The ATLAS silicon strip detectors** Object *Scope and content*: The innermost layers of all four LHC detectors are made of silicon. This piece comes from the ATLAS detector where its job is to record the paths of the particles close to the collision. Here, hundreds of particles spray outwards and the silicon detectors must identify the exact points from which the particles originate and make an accurate measurement of the curvature of every particle track. Inside ATLAS, the first layer is made of 80 million silicon pixels, each smaller than a grain of sand. Surrounding the pixels are six million silicon strips, each about the thickness of a hair. The object on display here contains 1536 such silicon strips. Together, the layers of tracking detectors are like a giant 92 mega pixel camera taking a photo 40 million times every second. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-AC-073 2745901	**Item - Sextupole Spool Piece Correctors MCS** *Scope and content*: Each MCS magnet consists of six coils, a laminated iron yoke, an aluminium shrinking cylinder, an end plate that houses the electrical connections and an iron magnetic shield. The coils are made by counter-winding a single, rectangular cross-section, NbTi wire around a G11 central post. The superconductor has a rectangular cross-section and is enamel insulated. The coils are wet wound. After winding G11 end spacers are fitted to the ends of the coils which are then cured. The cured coils are assembled on a precise mandrel together with the connection plate, wrapped with a glass-fibre/epoxy pre-preg bandage and cured to make an MCS coil assembly. The MCS magnet module is built by stacking the eccentric yoke laminations [1] around the MCS coil assembly in 6 different azimuthal orientations and shrink fitting the aluminium shrinking cylinder. The radial interference between the inner diameter of the shrinking cylinder and the outer diameter of the yoke lamination stack is chosen such that the correct pre-stress is produced at operating temperature. This interference is obtained by precise machining of the cured coil assembly outer diameter. Precise dowel holes in the end plate allow accurate placement of the magnet module within the magnetic shield. The magnets are mounted on their support plate in the dipole cold mass by means of a bolted flange, this flange contains a pair of accurately drilled 6H7 holes for doweling to the support plate. Coil inter-connections are made by ultrasonic welding. Quench protection resistors are connected in parallel with each magnet and mounted in the gap between the shrinking cylinder and magnetic shield. [1] A. Ijspeert, J. Salminen, “Superconducting coil compression by scissor laminations”, EPAC-96, Sitges, Spain, June 1996. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-109 2749310	**Item - Champagne bottle - The Higgs Boson** *Scope and content*: The discovery of the Higgs boson by the ATLAS and CMS experiments was announced in CERN’s main auditorium in July 2012. Here, finally, was the missing piece in the standard model describing our universe. For some, it was the culmination of over 40 years’ work. This champagne bottle was drunk by members of CERN’s Theoretical physics group on the occasion. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-118 2759094	**Item - ISOLDE target prototype** *Scope and content*: Radioactive nuclei are produced at the ISOLDE facility by shooting a high-energy beam of protons on a thick target. By studying some of these nuclei, physicists are improving the knowledge of nucleosynthesis, the process through which stars produce chemical elements. This is a prototype that was developed for the CERN Open Days, in 2019. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-117 2759095	**Item - Antimatter Trap / Penning Trap** *Scope and content*: This antimatter trap is used at the Antimatter decelerator to study atoms of antimatter. Electrically-charged antimatter can be trapped in this device, also called a Penning trap. The Penning trap requires	Object

	an ultrahigh vacuum. Inside the trap, magnetic fields force the charged antiparticles to spiral around the magnetic field lines, and electric fields confine them along the magnetic axis. Even though at the beginning of the universe, antimatter has been produced in equal quantity with matter, it now seems to have completely disappeared. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-120 2759096	**Item - CELESTA Cubesat mini satellite** *Scope and content*: CELESTA (CERN Latch-up Experiment Student Satellite) will be the first CERN-driven microsatellite, developed in collaboration with the University of Montpellier in the framework of a collaboration agreement defined and signed in 2015. The project, supported through the KT Fund, has two main objectives: one is developing and flying a space version of CERN radiation monitor (RadMon) coupled with a latch-up experiment; the second is showing that the space radiation environment of Low Earth Orbit can be reproduced in the CERN High energy AcceleRator Mixed field facility (CHARM). This would open the use for space system qualification activities, and provide a radiation monitor module for future missions. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-119 2759098	**Item - Fast Ionization Chamber and MicroMegas detector from the n_TOF experiment** *Scope and content*: An ionization chamber with fast timing properties was built at CERN for measuring fission cross-sections of minor actinides at the n_TOF neutron beam. The design of this chamber and of the front-end electronics was optimized to match the innovative features of the n_TOF facility, in particular the high instantaneous neutron flux and low background. Micromegas (Micro-MEsh Gaseous Structure) detectors are gas detectors consisting of a stack of one ionization and one proportional chamber. A micromesh separates the two communicating regions, where two different electric fields establish respectively a charge drift and a charge multiplication regime. The n_TOF facility at CERN provides a white neutron beam (from thermal up to GeV neutrons) for neutron induced cross section measurements. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-116 2759099	**Item - Silicon tracker from the CMS experiment** *Scope and content*: A half shell of the barrel CMS Pixel Phase-0 that was installed at the start-up of the Large Hadron Collider (2009-2016 in operation) and has been involved in the discovery of the Higgs boson. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-113 2764622	**Item - Scintillating Fibres** *Scope and content*: An alternative method of detecting particles spraying out of collisions in the inner regions of experiments uses scintillating fibres.	2017	Object

	Restrictions on access: Public
CERN-OBJ-CERN-OBJ-AC-074 2764842	**Item - Large Hadron Collider (LHC) Dipole Magnet Cutaway** Object
	Scope and content: Dipole Magnet - Guiding the protons around the ring This is a cut-through of the coil of a dipole magnet, that generates the magnetic field used to bend the paths of circulating protons. Looking closely, you can distinguish insulated cables made of individual wires. High and extremely stable magnetic fields are needed for guiding the proton beams, so a superconducting material called Niobium-Titanium was chosen for the wires. At very low temperatures, superconductors have no electrical resistance and therefore no power loss. They carry a very stable current of 13.000 amps, about 20.000 times that used to power this screen. In addition to dipole magnets, the Large Hadron Collider contains quadrupoles and other higher order magnets, used to prepare the proton beams for collision. Dipoles are two pole magnets used for bending the beams of protons around the ring. Quadrupoles have four magnetic poles and are used for focusing the beam, squeezing protons closer together to increase the chance of collision when the beams cross inside the experiments. In total, the LHC uses more than 50 different types of magnet to adjust the particle beams even more finely. The Beam-Pipe - Where the beams of protons circulate Proton beams can circulate for over 10 hours in the Large Hadron Collider. Over this time, protons make four hundred million revolutions of the 27 km machine, traveling a distance equivalent to the diameter of the solar system. They must travel in a pipe that is emptied of air, to avoid collisions with molecules of gas. The beam-pipes are therefore pumped down to an air pressure similar to that on the surface of the moon. There are two pipes, one for each direction of the circulating beams. The two beams only meet inside the four experiments where collisions take place. Liquid Helium - Bringing in the cooling fluid This pipe carries liquid helium through the Large Hadron Collider magnets to keep them at 1.9 degrees above absolute zero - about 300 degrees below room temperature. 800'000 litres of superfluid helium are used to cool down the 36'000 tonnes of equipment. This is the world's biggest cryogenic installation and its reliability and efficiency is essential for the magnets. The pipe connects to the main cryogenic line that you can see running along behind the blue magnets via "jumper connections" like the one to your right. Support Post - Insulating and extremely tough The magnet supports bridge a difference in temperature of nearly 300 degrees! Electrical connections, instrumentation and the posts on which the magnets stand are the only points where heat transfer can happen through conduction. They are all carefully designed to draw off heat progressively. The posts are made of 4 mm thick glass-fibre - epoxy composite material. Each post supports 10'000 kg of magnet and leaks just 0.1 W of heat. There are three per magnet. Magnet Collars - Preventing the wires from moving The LHC accelerates two proton beams moving in opposite directions, so it is really two accelerators in one. To keep the machine as compact and economical as possible, two magnets are built into a single housing that must withstand enormous electromagnetic forces. These forces tend to open-up the coils, and squeeze them. At full field, the force on one metre of coil is comparable to the weight of a jumbo jet. Great care must be taken to prevent movements as the field changes - any friction could create hot spots that would cause the wire to lost its superconducting stage. Magnet collars made from reinforced steel keep the coils firmly in place. Insulation - Preventing heat from leaking In The LHC, beam-tube and magnets are inside a vacuum tank to reduce to a minimum the heat flowing in through convection. To prevent heat inflow through radiation, they are surrounded by a super insulator - multi-layer, reflective, aluminized Mylar. Then to prevent heat flow via conduction, ingenious solutions had to be found for the electrical connections and the support posts. Iron Yoke - Shielding the magnetic field The LHC magnet cables are surrounded by a layered iron yoke that shields the powerful magnetic field - 100'000 times stronger than the Earth's - so that stray fields outside the magnet are negligible. This action also helps enhance the magnetic field within the beam-pipe, where it is needed for control of the proton beams. In addition, the layers of iron yoke, called laminations, play a role together with the magnet collars in keeping cables from moving when the magnet powers up. The technical challenge of manufacturing the laminations centred on ensuring both strength and magnetic homogeneity across a large-scale production. Over 6 million laminations are needed for the 1232 dipole magnets installed around the LHC's 27km ring. *Restrictions on access*:

	Public	
CERN-OBJ-CERN-OBJ-DE-121 2765069	**Item - ISOLDE target** *Scope and content*: A good dozen different targets are available for ISOLDE, made of different materials and equipped with different kinds of ion-sources, according to the needs of the experiments. Each separator (GPS: general purpose; HRS: high resolution) has its own target. Because of the high radiation levels, robots effect the target changes, about 80 times per year. In the standard unit shown in picture _01, the target is the cylindrical object in the front. It contains uranium-carbide kept at a temperature of 2200 deg C, necessary for the isotopes to be able to escape. At either end, one sees the heater current leads, carrying 700 A. The Booster beam, some 3E13 protons per pulse, enters the target from left. The evaporated isotope atoms enter a hot-plasma ion source (the black object behind the target). The whole unit sits at 60 kV potential (pulsed in synchronism with the arrival of the Booster beam) which accelerates the ions (away from the viewer) towards one of the 2 separators. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-122 2773285	**Item - ATLAS Transition Radiation Tracker - straw tube** *Scope and content*: The ATLAS transition radiation tracker is made of 300'000 straw tubes, up to 144cm long. Filled with a gas mixture and threaded with a wire, each straw is a complete mini-detector in its own right. An electric field is applied between the wire and the outside wall of the straw. As particles pass through, they collide with atoms in the gas, knocking out electrons. The avalanche of electrons is detected as an electrical signal on the wire in the centre. The tracker plays two important roles. Firstly, it makes more position measurements, giving more dots for the computers to join up to recreate the particle tracks. Also, together with the ATLAS calorimeters, it distinguishes between different types of particles depending on whether they emit radiation as they make the transition from the surrounding foil into the straws. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-075 2773286	**Item - Slice through an LHC focusing magnet** *Scope and content*: Slice through an LHC superconducting quadrupole (focusing) magnet. The slice includes a cut through the magnet wiring (niobium titanium), the beampipe and the steel magnet yokes. Particle beams in the Large Hadron Collider (LHC) have the same energy as a high-speed train, squeezed ready for collision into a space narrower than a human hair. Huge forces are needed to control them. Dipole magnets (2 poles) are used to bend the paths of the protons around the 27 km ring. Quadrupole magnets (4 poles) focus the proton beams and squeeze them so that more particles collide when the beams' paths cross. Bringing beams into collision requires a precision comparable to making two knitting needles collide, launched from either side of the Atlantic Ocean. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-076 2773288	**Item - Slice through an LHC bending magnet** *Scope and content*:	Object

	Slice through an LHC superconducting dipole (bending) magnet. The slice includes a cut through the magnet wiring (niobium titanium), the beampipe and the steel magnet yokes. Particle beams in the Large Hadron Collider (LHC) have the same energy as a high-speed train, squeezed ready for collision into a space narrower than a human hair. Huge forces are needed to control them. Dipole magnets (2 poles) are used to bend the paths of the protons around the 27 km ring. Quadrupole magnets (4 poles) focus the proton beams and squeeze them so that more particles collide when the beams' paths cross. There are 1232 15m long dipole magnets in the LHC. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-111 2773289	**Item - CMS Endcap Silicon Tracker** Object *Scope and content*: A beautiful module of tracker from the CMS experiment, made up of silicon. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-077 2773868	**Item - Soufflet** Object *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-078 2773869	**Item - Niobium Treatment** Object *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-137 2800480	**Item - StorageTek T10000T2 Tape Cartridge (used at CERN until 2019)** Object *Scope and content*: The cartridges had a total capacity of up to 8.5 TB. They were actually manufactured by the Fujifilm company, used Barium Ferrite (BaFe) magnetic particle technology to store the user data and were equipped with a Radio-Frequency IDentification (RFID) chip (for quick access to the cartridge metadata). \ The tape length inside of each cartridge is 1147 meters while it is only 5.2 microns thick. Once mounted in a tape drive, the media moves over the drive head at the speeds of up to 4.7 meters/second when reading or writing, but up to 13 meters/second when locating to a file. Since 2019, all data that had been stored on such cartridges have been copied onto more modern supports. As of 2022, CERN uses similar tapes produced by other suppliers and having a capacity of up to 20 TB. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-115 2800481	**Item - Medipix Chip** Object *Scope and content*: Medipix is a family of read-out chips for particle imaging and detection developed by the Medipix Collaborations. The original concept is that it works like a camera, detecting and counting each individual particle hitting the pixels when its electronic shutter is open. This enables high-resolution, high-contrast, noise hit free images – making it unique for imaging applications. Hybrid pixel detector

	technology was initially developed to address the needs of particle tracking at the CERN LHC. The Medipix1 chip, which uses identical front-end circuitry to the Omega3 particle tracking chip, demonstrated the great potential for the technology outside of high-energy physics. To further develop this novel technology and take it into new scientific fields the Medipix2 Collaboration was started in 1999, the Medipix3 collaboration in 2005 and finally the Medipix4 collaboration in 2016. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-123 2800482	**Item - Particle Tracks from Cloud Chambers** *Scope and content*: Particles coming from the universe are crossing the earth all the time – they are harmless but invisible to us. Cloud Chambers are detectors which make the tracks of the particles visible. Some decades ago these detectors were used at CERN in the first particle physics experiments. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-079 2866197	**Item - LEP accelerating radio frequency cavity (copper)** *Scope and content*: The pulse of a particle accelerator. 128 of these radio frequency cavities were positioned around CERN's 27-kilometre LEP ring to accelerate electrons and positrons. The acceleration was produced by microwave electric oscillations at 352 MHz. The electrons and positrons were grouped into bunches, like beads on a string, and the copper sphere at the top stored the microwave energy between the passage of individual bunches. This made for valuable energy savings as it reduced the heat generated in the cavity. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-110 2867273	**Item - Atlas Muon Drift Tube Chamber** *Scope and content*: The ATLAS Muon Drift Tube Chamber is a precision tracking detector used to identify and track muons in the ATLAS experiment at CERN. It's crucial for the study of the Higgs boson and other fundamental particles, helping researchers understand the basic forces and constituents of the universe. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-112 2867275	**Item - Gas Electron Multiplier (GEM) - CMS** *Scope and content*: The Gas Electron Multiplier (GEM) is a state-of-the-art particle detection technology utilized in the CMS experiment at CERN. It enhances the accuracy and resolution of muon measurements, playing a pivotal role in advancing our understanding of fundamental particle physics. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-114 2883900	**Item - CAVIAR Physics Microcomputer**	1980	Object

	Scope and content: CAVIAR (CAMAC Video Autonomous Read-out), developed about 1980 at CERN in Geneva, was a multi-purpose microcomputer for the interactive development, in-line control and monitoring of experiments in high-energy physics. The CAVIAR machine was used in conjunction with a CAMAC system, consisting of a set of I/O modules assembled in a 19" crate. Some of the CAMAC-modules (for instance, analog-to-digital converters) would directly be connected to measuring devices, while another module would give access to a host (mainframe) computer through a high-speed link. The CAVIAR uses a Motorola 6800 microprocessor with 32 kB of solid-state RAM. In 29 kB EPROM the BAMBI (BASIC-like) interpreter is stored. Using the BAMBI graphics commands, graphs and histograms can be shown on the built-in miniature monitor screen. An alphanumeric terminal is connected to CAVIAR for programming and entering commands. The Super-CAVIAR (shown in the picture) is an enhanced version of CAVIAR with 64 kB RAM, 84 kB EPROM and other improvements. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-124 2888738	**Item - Crystal Detectors** Object *Scope and content*: The crystals used in CMS’s electromagnetic calorimeter may look like simple bricks of glass, but they are in fact mostly metal and are heavier than steel! Lead tungstate crystal with a touch of oxygen in this crystalline form is highly transparent and scintillates when electrons and photons pass through it. This means it produces light in proportion to the particle’s energy. CMS contains nearly 80’000 such crystals, each of which took two days to grow. This technology developed at CERN has applications in medical imaging, for example improving cancer diagnosis. The Compact Muon Solenoid (CMS) is a general-purpose detector at the Large Hadron Collider (LHC). *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-125 2888740	**Item - Tile Calorimeter** Object *Scope and content*: The CMS (Compact Muon Solenoid) Tile Calorimeter is a pivotal component of the CMS detector, which is one of the major experiments at the Large Hadron Collider (LHC) at CERN. Designed to measure the energy of particles, the calorimeter plays an essential role in the study of high-energy physics. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-080 2897140	**Item - Quadrupole Magnet of the Intersecting Storage Ring** Object *Scope and content*: The Intersecting Storage Rings (ISR) was the world's first hadron collider. It operated from 1971 to 1984 and held the record luminosity for hadron colliders till 2004. The ISR hosted the first superconducting quadrupole magnets. The ISR low-β quadrupole magnets were part of a luminosity upgrade program. The coils were wound using a rectangular Cu/Nb-Ti wire, enamel insulated, and were epoxy impregnated. Glass-epoxy bands kept the coils together in the quadrupole configuration and withstood the electromagnetic forces. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-AC-081 2897143	**Item - Quadrupole Magnet of the Large Electron Positron Collider** *Scope and content*: The Large Electron-Positron Collider (LEP) was the largest lepton collider ever built, and gave high precision measurements of the W and Z particles. LEP was commissioned in 1989 and shut down in 2000, to leave room for the LHC. In conjunction with an energy upgrade, new, superconducting, final-focus (low-β) quadrupole magnets were built. The new magnets resembled much those built for the ISR luminosity upgrade, i.e., the coils were wound with a single rectangular wire. They operated at 4.5 K in a cryostat especially developed to fit into the limited space available in the shield placed in front of the experiment. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-082 2897168	**Item - Tevatron dipole magnet** *Scope and content*: The Tevatron was the first synchrotron built with superconducting magnets and paved the way for large scale applications of superconductivity. It was installed in the tunnel at Fermi National Accelerator Laboratory, Batavia, Illinois (USA). It operated reliably from 1983 to 2011, producing protons and anti-protons with energies up to 980 GeV. Besides the technology prowess, the Tevatron enabled the discovery of the top quark in 1995, the last fermion of the Standard Model to be observed. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-083 2897169	**Item - Dipole magnet of the P0 complex** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-084 2897175	**Item - HERA dipole magnet (DESY)** *Scope and content*: The Hadron-Elektron-Ringanlage (HERA) collided protons with energies up to 920 GeV with electrons or positrons with energies up to 27.5 GeV. It operated from 1992 to 2007, probing the internal structure of the proton. Many of the features of the HERA superconducting magnets became standards for later projects. The HERA ring was installed in a 6.3 km tunnel at Deutsches Elektronen-Synchrotron (DESY) Laboratory, Hamburg (Germany). *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-085 2897177	**Item - FCM dipole magnet** *Scope and content*: In an effort to develop economical magnets for an upgrade of the LHC injector complex, CERN started in 2009 an R&D program on superconducting fast cycled magnets (FCM). The program has achieved its objective with the tests of the FCM dipole demonstrator, for which the construction was completed in	Object

	March 2012. When compared to other magnets for similar application, the CERN FCM has a number of novel features. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-001 43830 OBJOBJ 0000104	**Item - UA1 prototype detector** 1980 Object *Creator*: Jean Collombet *Note [General]* : Needs some repairs *Scope and content*: Prototype of UA1 central detector inside a plexi tube. The UA1 experiment ran at CERN's Super Proton Synchrotron and made the Nobel Prize winning discovery of W and Z particles in 1983. The UA1 central detector was crucial to understanding the complex topology of proton-antiproton events. It played a most important role in identifying a handful of Ws and Zs among billions of collisions. The detector was essentially a wire chamber - a 6-chamber cylindrical assembly 5.8 m long and 2.3 m in diameter, the largest imaging drift chamber of its day. It recorded the tracks of charged particles curving in a 0.7 Tesla magnetic field, measuring their momentum, the sign of their electric charge and their rate of energy loss (dE/dx). Atoms in the argon-ethane gas mixture filling the chambers were ionised by the passage of charged particles. The electrons which were released drifted along an electric field shaped by field wires and were collected on sense wires. The geometrical arrangement of the 17000 field wires and 6125 sense wires allowed a spectacular 3-D interactive display of reconstructed physics events to be produced. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-008 43832 OBJOBJ 0000106	**Item - LHC prototype beam tubes** 1995 Object *Creator*: M. eysselein *Note [General]* : A <2> pages publication from CERN for general public *Scope and content*: Slice of the Large Hadron Collider (LHC) prototype beam tubes in dipole magnet The LHC is the world’s largest and most powerful particle accelerator that accelerates and collides two beams of protons or ions to near the speed of light in opposite directions. It first started up in 2008, and is the latest addition to CERN’s accelerator complex (2025). The LHC consists of a 27-km ring of superconducting magnets with a number of accelerating structures to boost the energy of the particles along the way. Thousands of magnets of different varieties and sizes are used to direct the beams around the accelerator. The high bending and accelerating fields needed can only be reached using superconductor magnets at very low temperature (#271.3°C). There are 1232 dipole magnets like this prototype in the LHC, used to guide the particles around the 27 km ring. Dipole magnets must have an extremely uniform field, which means the current flowing in the coils that produce the magnetic field has to be very precisely controlled. Nowhere before has such precision been achieved at such high currents. The temperature is measured to five thousandths of a degree, the current to one part in a million. The current creating the magnetic field pass through superconducting wires at up to 12 500 amps, about 30 000 times the current flowing in a 100 W light bulb. Since the LHC accelerate two particle beams moving in opposite directions, it is really

	two accelerators in one. To keep the machine as compact and economical as possible, two dipole magnets are built into a single housing. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-009 43833 OBJOBJ 0000107	**Item - LEP tunnel monorail**	1985	Object
	Scope and content: A monorail from CERN's Large Electron Positron collider (LEP, for short). It ran around the 27km tunnel, transporting equipment and personnel. With its 27-kilometre circumference, LEP was the largest electron-positron accelerator ever built and ran from 1989 to 2000. During 11 years of research, LEP's experiments provided a detailed study of the electroweak interaction. Measurements performed at LEP also proved that there are three – and only three – generations of particles of matter. LEP was closed down on 2 November 2000 to make way for the construction of the Large Hadron Collider in the same tunnel. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-002 43834 OBJOBJ 0000108	**Item - Gargamelle flash tube**	1970	Object
	Scope and content: Flash tube used in Gargamelle. Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. It was designed principally for the detection at CERN of the elusive particles called neutrinos.Gargamelle is on display at CERN in the Microcosm garden. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-003 43835 OBJOBJ 0000109	**Item - lead glass brick**		Object
	Creator: Maria Fidecaro *Note [General]* : Many of these lead glass bricks are available for donation to museums. *Scope and content*: When you look through the glass at a picture behind, the picture appears raised up because light is slowed down in the dense glass. It is this density (4.06 gcm-3) that makes lead glass attractive to physicists. The refractive index of the glass is 1.708 at 400nm (violet light), meaning that light travels in the glass at about 58% its normal speed. At CERN, the OPAL detector uses some 12000 blocks of glass like this to measure particle energies. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-004 43836 OBJOBJ 0000110	**Item - wire chamber**		Object

	Scope and content: Was used in ISR (Intersecting Storage Ring) split field magnet experiment. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-005 43837 OBJOBJ 0000111	**Item - Bubble chamber film** *Scope and content*: Boxes of bubble chamber film showing photographs of particle collisions. The particle tracks were then analysed on scanning tables (see object CERN-OBJ-DE-029). We have a selection of bubble chamber film available for loan, including some from the Big European Bubble Chamber (BEBC). *Restrictions on access*: Public	1960-1970	Object
CERN-OBJ-CERN-OBJ-DE-006 43838 OBJOBJ 0000112	**Item - lens** *Creator*: Malcom Dykes *Scope and content*: RCVD lens n°4 *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-007 43839 OBJOBJ 0000113	**Item - light guide** *Note [General]* : Some small light guides are available to give. Please, contact us for further information. *Scope and content*: A full box of small light guides A full box of small light guides.Light guides like this are used to carry signals to the electronics for recording. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-008 43840 OBJOBJ 0000114	**Item - light guide** *Note [General]* :		Object

	Some light guides are available to give. Please, contact us for further information. *Scope and content*: <2> full boxes of light guides. Light guides like this are used to carry signals to the electronics for recording. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-009 43841 OBJOBJ 0000115	**Item - micro strip gas chamber** *Note [General]* : broken *Scope and content*: About 16 000 Micro Strip Gas Chambers like this one will be used in the CMS tracking detector. They will measure the tracks of charged particles to a hundredth of a millimetre precision in the region near the collision point where the density of particles is very high. Each chamber is filled with a gas mixture of argon and dimethyl ether. Charged particles passing through ionise the gas, knocking out electrons which are collected on the aluminium strips visible under the microscope. Such detectors are being used in radiography. They give higher resolution imaging and reduce the required dose of radiation. *Restrictions on access*: Public	1998	Object
CERN-OBJ-CERN-OBJ-DE-010 43842 OBJOBJ 0000116	**Item - NA48 prototype calorimeter** *Scope and content*: This is a calorimeter, a detector which measures the energy of particles. When in use, it is filled with liquid krypton at -152°C. Electrons and photons passing through interact with the krypton, creating a shower of charged particles which are collected on the copper ribbons. The ribbons are aligned to an accuracy of a tenth of a millimetre. The folding at each end allows them to be kept absolutely flat. Each shower of particles also creates a signal in scintillating material embedded in the support disks. These flashes of light are transmitted to electronics by the optical fibres along the side of the detector. They give the time at which the interaction occurred. The photo shows the calorimeter at NA48, a CERN experiment which is trying to understand the lack of anti-matter in the Universe today. *Restrictions on access*: Public	1990	Object
CERN-OBJ-CERN-OBJ-DE-011 43843 OBJOBJ 0000117	**Item - bubble chamber lens** *Note [General]* : <2> technical papers The dimensions include the support. *Scope and content*: Before the days of electronic detectors, visual techniques were used to detect particles, using detectors such as spark chambers and bubble chambers. This plexiglass lens was used to focus the image of tracks so they could be photographed. *Restrictions on access*:		Object

	Public		
CERN-OBJ-CERN-OBJ-IT-001 43844 OBJOBJ 0000118	**Item - part of an IBM computer**	1985	Object
	Scope and content: Part of the IBM computer that was used for physics simulations in preparation for experiments at LEP. When installed in 1985, it was considered to be very powerful. Nowadays, a PC can outperform it by a factor of ten. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-001 43845 OBJOBJ 0000119	**Item - gaussmetre**		Object
	Scope and content: Empire scientific corporation. U.S.A. Série 3432 *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-002 43846 OBJOBJ 0000121	**Item - potentiometre**		Object
	Scope and content: AOIP Paris. Type P12 *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-003 43847 OBJOBJ 0000122	**Item - DC voltmeter**		Object
	Scope and content: Hewlett Packard. 419A *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-001 43848 OBJOBJ 0000123	**Item - simulation of synchro-cyclotron oscillator**	1957	Object
	Note [General] : Article / SC technical notebook n*3 *Scope and content*: The SC (synchro-cyclotron) was the first accelerator built at CERN. It operated from August 1957 until it was closed down at the end of 1990. *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-IM-004 43849 OBJOBJ 0000124	**Item - Power amplifier** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-005 43850 OBJOBJ 0000125	**Item - scaler** *Scope and content*: Old. Made at CERN. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-006 43851 OBJOBJ 0000126	**Item - dosimeter** *Note [General]* : users guide, technical description. In a wooden box. *Scope and content*: Farmer sub-standard X-ray dosemeter Mk2. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-002 43852 OBJOBJ 0000127	**Item - central region of the SC ion source** *Note [General]* : Technical notebook n*3: "Synchro-cyclotron of 600 Mev" / "Synchro-cyclotron Machine Division"(short text) *Scope and content*: central region of the ion source for the synchro-cyclotron *Restrictions on access*: Public	1970	Object
CERN-OBJ-CERN-OBJ-AC-003 43853 OBJOBJ 0000128	**Item - PS target support** *Note [General]* : <2> pieces.Mesures are of the largest one. *Scope and content*: Target support for the proton synchrotron. The Proton Synchrotron (PS) is the oldest and most versatile of CERN's accelerators. The PS was commissioned in 1959 and has been running continuously ever since. With a diameter of 200 metres and reaching a energy of 28 mev, it was for a while the most powerful accelerator in the world.		Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-AC-004 43854 OBJOBJ 0000129	**Item - drift tube for linear accelerator**		Object
	Creator: Resegotti *Scope and content*: A drift tube from the Linac 1. This was the first tank of the linear accelerator Linac1, the injection system for the Proton Synchrotron, It ran for 34 years (1958 - 1992). Protons entered at the far end and were accelerated between the copper drift tubes by an oscillating electromagnetic field. The field flipped 200 million times a second (200 MHz) so the protons spent 5 nanoseconds crossing a drift tube and a gap. Moving down the tank, the tubes and gaps had to get longer as the protons gained speed. The tank accelerated protons from 500 KeV to 10 MeV. Linac1 was also used to accelerate deutrons and alpha particles for the Intersecting Storage Rings and oxygen and sulpher ions for the Super Proton Synchrotron heavy ion programme. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-005 43855 OBJOBJ 0000130	**Item - PS proton source**	1959	Object
	Note [General] : diagram / "Synchrotron a protons" (extrait du rapport annuel1957 du CERN) The object was part of CERN 40th anniversary exhibition. *Scope and content*: First proton source used at CERN's Proton Synchrotron (PS) which started operation in 1959. The PS was CERN’s first synchrotron. Activated in 1959, it was initially CERN's flagship accelerator, but when the laboratory built new accelerators in the 1970s, the PS’s principal role became to supply particles to the new machines. In the course of its history, it has juggled many different kinds of particles, feeding them directly to experiments or to more powerful accelerators. It is CERN's oldest accelerator still functioning today (2025). It is part of the accelerator chain that supplies proton beams to the Large Hadron Collider. With a circumference of 628 metres, the PS has 277 conventional (room-temperature) electromagnets, including 100 dipoles to bend the beams round the ring. The accelerator operates at up to 26 GeV. In addition to protons, it has accelerated alpha particles (helium nuclei), oxygen, sulphur, argon, xenon and lead nuclei, electrons, positrons and antiprotons. The source is a Thonemann type. In order to extract and accelerate the protons at high energy, a high frequency electrical field is used (140Mhz). The field is transmitted by a coil around a discharge tube in order to maintain the gas hydrogen in a ionised state. An electrical field pulse, in the order of 15kV, is then applied via an impulse transformer between anode and cathode of the discharge tube. The electrons and protons of the plasma formed in the ionised gas in the tube, are then separated. Currents in the order of 200mA during 100 microseconds have been obtained with this type of source. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-CE-001 43856 OBJOBJ 0000131	**Item - boxe of resistors**		Object
	Scope and content:		

	<2> boxes of resistors. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-002 43857 OBJOBJ 0000132	**Item - attenuator** Object *Scope and content*: Rhodes Schwarz variable attenuator.Controls the strength of the current produced. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-003 43858 OBJOBJ 0000133	**Item - photomultiplier tubes** Object *Scope and content*: <10>photomultiplier tubes. A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-006 43864 OBJOBJ 0000139	**Item - accelerating cavity** Object *Scope and content*: On the inside of the cavity there is a layer of niobium. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-013 43865 OBJOBJ 0000140	**Item - OPAL model** Object *Scope and content*: Engineering model used for the construction of the OPAL detector at the LEP accelerator.Scale=1/10 *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-	**Item - light guide** Object

DE-014 43869 OBJOBJ 0000144	*Note [General]* : Mesures include holder. *Scope and content*: In detectors, light guides like this one are used to carry signals to the electronics for recording. *Restrictions on access*: Public	
CERN-OBJ- CERN-OBJ- DE-015 43870 OBJOBJ 0000145	**Item - Bubble chamber film** *Scope and content*: 3 bubble chamber film rolls from the 2m bubble chamber. *Restrictions on access*: Public	Object
CERN-OBJ- CERN-OBJ- DE-016 43871 OBJOBJ 0000146	**Item - UA2 central calorimeter** *Scope and content*: The UA2 central calorimeter measured the energy of individual particles created in proton-antiproton collisions. Accurate calibration allowed the W and Z masses to be measured with a precision of about 1%. The calorimeter had 24 slices like this one, each weighing 4 tons. The slices were arranged like orange segments around the collision point. Incoming particles produced showers of secondary particles in the layers of heavy material. These showers passed through the layers of plastic scintillator, generating light which was taken by light guides (green) to the data collection electronics. The amount of light was proportional to the energy of the original particle. The inner 23 cm of lead and plastic sandwiches measured electrons and photons; the outer 80 cm of iron and plastic sandwiches measured strongly interacting hadrons. The detector was calibrated by injecting light through optical fibres or by placing a radioactive source in the tube on the bottom edge. *Restrictions on access*: Public	Object
CERN-OBJ- CERN-OBJ- AC-007 43872 OBJOBJ 0000147	**Item - LEP tunnel** *Note [General]* : Model built with SIMA structure. Lighting included. *Scope and content*: Model of the LEP tunnel as it is in the 1990's. LEP(Large Electron Positron collider) was the world biggest accelerator. *Restrictions on access*: Public	Object
CERN-OBJ- CERN-OBJ-	**Item - capacitor**	Object

CE-004 43873 OBJOBJ 0000148	*Scope and content*: 100KV capacitor *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-017 43874 OBJOBJ 0000149	**Item - Wire chamber** *Scope and content*: Wire chamber *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- IM-007 43877 OBJOBJ 0000152	**Item - tracer of coordonates** *Note [General]* : In a wooden box. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- AC-010 43878 OBJOBJ 0000153	**Item - Collision region of the ISR** *Note [General]* : <2> short texts about the ISR. *Scope and content*: This is a collision region from the world#s first proton collider, the Intersecting Storage Rings. The ISR was used at CERN from 1971-84 to study proton-proton collisions at the highest energy then available (60GeV). When operational, ISR collision regions were surrounded by detectors as shown in the photo. In 1972, the surprising discovery of fragments flying out sideways from head-on proton-proton collisions was the first evidence of quark-quark scattering inside the colliding protons . This was similar to Rutherford#s observation in 1911 of alpha particles scattering off the tiny nucleus inside atoms of gold. The ISR beamtubes had to be as empty as outer space, a vacuum 100 000 times better than other CERN machines at the time. *Restrictions on access*: Public	1970	Object
CERN-OBJ- CERN-OBJ- AC-011 43879 OBJOBJ 0000154	**Item - Slice of a LEP bending magnet** *Scope and content*: This is a slice of a Large Electron Positron collider (LEP, for short) dipole bending magnet, made as a concrete and iron sandwich The bending field needed in LEP is small (about 1000 Gauss), equivalent to two of the magnets people stick on fridge doors. Because it is very difficult to keep a low field steady,	1989	Object

	a high field was used in iron plates embedded in concrete. A CERN breakthrough in magnet design, LEP dipoles can be tuned easily and are cheaper than conventional magnets. With its 27-kilometre circumference, LEP was the largest electron-positron accelerator ever built and ran from 1989 to 2000 at CERN. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-012 43880 OBJOBJ 0000155	**Item - section of an accelerating cavity from LEP** *Note [General]* : The dimension includes the support structure. *Scope and content*: This is a section of an accelerating cavity from LEP, cut in half to show the layer of niobium on the inside. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. These challenging requirements pushed European industry to new achievements. 256 of these cavities are now used in LEP to double the energy of the particle beams. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-018 43881 OBJOBJ 0000156	**Item - piston of BEBC** *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public	1973	Object
CERN-OBJ-CERN-OBJ-IM-008 43882 OBJOBJ 0000157	**Item - graphic recorder** *Note [General]* : Comes in a wooden box. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-003 43883 OBJOBJ 0000158	**Item - GNT 4604 Punching Machine** *Note [General]* : instruction manual *Scope and content*:		Object

	Mostly used with scanning tables to record data coded on 6 holes. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-013 43884 OBJOBJ 0000159	**Item - first tank of Linac 1**		Object
	Scope and content: This was the first tank of the linear accelerator Linac1, the injection system for the Proton Synchrotron, It ran for 34 years (1958 - 1992). Protons entered at the far end and were accelerated between the copper drift tubes by an oscillating electromagnetic field. The field flipped 200 million times a second (200 MHz) so the protons spent 5 nanoseconds crossing a drift tube and a gap. Moving down the tank, the tubes and gaps had to get longer as the protons gained speed. The tank accelerated protons from 500 KeV to 10 MeV. Linac1 was also used to accelerate deutrons and alpha particles for the Intersecting Storage Rings and oxygen and sulpher ions for the Super Proton Synchrotron heavy ion programme. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-015 43886 OBJOBJ 0000161	**Item - first cyclotron model**	1930	Object
	Note [General] : "Lawrence and his laboratory:Nuclear science at Berkeley 1931-1961" *Scope and content*: The first ever circular particle accelerator, a cyclotron, was just a few centimetres in diameter. Invented in 1930 by Ernest Lawrence, it was the fore-runner of today's huge machines. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-016 43887 OBJOBJ 0000162	**Item - slice of LEP beamtube with getter strip**	1989	Object
	Scope and content: A section of the LEP beam pipe. This is the chamber in which LEP's counter-rotating electron and positron beams travel. It is made of lead-clad aluminium. The beams circulate in the oval cross-section part of the chamber. In the rectangular cross-section part, LEP's innovative getter-strip vacuum pump is installed. After heating to purify the surface of the getter, the strip acts like molecular sticky tape, trapping any stray molecules left behind after the accelerator's traditional vacuum pumps have done their job. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-017 43888 OBJOBJ 0000163	**Item - Antiproton Focusing Horn**	1980	Object
	Note [General] : figure		

	Scope and content: Was used for the AA (antiproton accumulator). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-018 43889 OBJOBJ 0000164	**Item - Cockcroft-Walton high voltage generator** *Scope and content*: Cockcroft-Walton generator (or voltage doubler)(600kV) built by Philips and used in the Linac experimental area of the proton synclotron south hall (1964).Served as high voltage supply for the pre-injector of the 3Mev experimental Linac. *Restrictions on access*: Public	1964	Object
CERN-OBJ-CERN-OBJ-AC-019 43890 OBJOBJ 0000165	**Item - AA quadrupole magnet** *Scope and content*: Focusing magnet used for the AA (antiproton accumulator).Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 - three hundred thousand million - antiprotons. About focusing magnets (quadrupoles): Quadrupole magnets are needed to focus the particle beams and squeeze them so that more particles collide when the beams cross. Particle beams are stored for about 10 hours in the LHC. During this time, the particles make four hundred million revolutions around the machine, travelling a distance equivalent to the diameter of the solar system. *Restrictions on access*: Public	1980	Object
CERN-OBJ-CERN-OBJ-AC-020 43891 OBJOBJ 0000166	**Item - antiproton target** *Note [General]* : Target and focusing horn fixed onto the same holder. *Scope and content*: Antiproton target used for the AA (antiproton accumulator). Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 - three hundred thousand million - antiprotons. *Restrictions on access*: Public	1980	Object
CERN-OBJ-CERN-OBJ-	**Item - Antiproton focusing horn**	1992	Object

AC-021 43892 OBJOBJ 0000167			
	Creator: Remo Maccaferri *Note [General]* : Focusing horn and antiproton target fixed onto the same holder. *Scope and content*: This focusing horn was developed in 1992 by Remo Maccaferri, Jean Claude Schnuriger and Lubrano di Scampamorte and is still operating in the AD complex at CERN (as of 2017). This device could pulse at 400 KA (160 KA for the previous version). This enabled an antiproton collection ten times better than the old one. Firstly, protons were accelerated to an energy of 26 GeV/c and ejected onto a metal target. From the spray of emerging particles, the magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, ten antiprotons were captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 - three hundred thousand million - antiprotons. Originally magnetic focusing horns were developed by Simon van der Meer - see for example object AC-022 in this database. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-019 43893 OBJOBJ 0000168	**Item - BEBC**	1973	Object
	Scope and content: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-020 43894 OBJOBJ 0000169	**Item - Gargamelle**	1971	Object
	Scope and content: Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. It was designed principally for the detection at CERN of the elusive particles called neutrinos.In 1973, André Lagarrigue and his colleagues found evidence for neutral currents in Gargamelle bubble chamber pictures. Gargamelle is on display at CERN in the Microcosm garden. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-021 43895 OBJOBJ 0000170	**Item - bubble chamber lens**		Object
	Scope and content: Lens from the RCBC (rapid cycling bubble chamber). Quantity: 2 lenses *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-DE-022 43896 OBJOBJ 0000171	**Item - model of CERN second bubble chamber** *Scope and content*: 30cm diameter hydrogen bubble chamber for the SC (synchro-cyclotron) *Restrictions on access*: Public	1959	Object
CERN-OBJ-CERN-OBJ-DE-023 43897 OBJOBJ 0000172	**Item - film holder** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-024 43898 OBJOBJ 0000173	**Item - chamber** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-025 43899 OBJOBJ 0000174	**Item - Gargamelle flash control system** *Scope and content*: Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. It was designed principally for the detection at CERN of the elusive particles called neutrinos. Gargamelle is on display at CERN in the Microcosm garden. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-026 43900 OBJOBJ 0000175	**Item - Charpak hemispherical wire chamber** *Scope and content*: <3> pieces. Mesures are of the largest one. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public	1970	Object
CERN-OBJ-CERN-OBJ-IM-009 43901 OBJOBJ 0000176	**Item - oscilloscope**		Object

	Scope and content: oldest CERN oscilloscope. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-010 43902 OBJOBJ 0000177	**Item - voltmeter** *Scope and content*: Volts and millivolts. *Restrictions on access*: Public	1955	Object
CERN-OBJ-CERN-OBJ-IM-011 43903 OBJOBJ 0000178	**Item - voltmeter** *Scope and content*: Volts only. *Restrictions on access*: Public	1955	Object
CERN-OBJ-CERN-OBJ-IM-012 43904 OBJOBJ 0000179	**Item - fluxmeter** *Scope and content*: Used to mesure magnetic fields. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-013 43905 OBJOBJ 0000180	**Item - ammeter** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-014 43906 OBJOBJ 0000181	**Item - fluxmeter** *Scope and content*: Used to mesure the magnetic field. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IM-015 43907 OBJOBJ 0000182	**Item - multimetre**		Object

	Restrictions on access: Public	
CERN-OBJ-CERN-OBJ-IM-016 43908 OBJOBJ 0000183	**Item - BEBC hydrolic apparatus** *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IM-017 43909 OBJOBJ 0000184	**Item - power signal generator** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-005 43910 OBJOBJ 0000185	**Item - thyristor** *Scope and content*: Siemens. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-006 43911 OBJOBJ 0000186	**Item - FERMI multi-chip module** *Scope and content*: This FERMI multi-chip module contains five million transistors. 25 000 of these modules will handle the flood of information through parts of the ATLAS and CMS detectors at the LHC. To select interesting events for recording, crucial decisions are taken before the data leaves the detector. FERMI modules are being developed at CERN in partnership with European industry. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-007 43912 OBJOBJ 0000187	**Item - raw of small thyristors** *Scope and content*: Johnson 124-0111-001 *Restrictions on access*: Public	Object

CERN-OBJ-CERN-OBJ-CE-008 43913 OBJOBJ 0000188	**Item - variable resistor** *Scope and content*: <3> variable resistors. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-009 43914 OBJOBJ 0000189	**Item - flash tube** *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-010 43915 OBJOBJ 0000190	**Item - resistor** *Scope and content*: Rhodes and Schwarz type RGN. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-011 43916 OBJOBJ 0000191	**Item - photomultiplier tube** *Scope and content*: Philips. 150AVP. A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-CE-012 43917 OBJOBJ 0000192	**Item - photomultiplier tube** *Scope and content*: <2> photomultiplier tubes. A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public	Object

CERN-OBJ-CERN-OBJ-CE-013 43918 OBJOBJ 0000193	**Item - photomultiplier tube** *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-027 43919 OBJOBJ 0000194	**Item - <2> rolls of film with results from BEBC** *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IM-018 43920 OBJOBJ 0000195	**Item - BEBC control system** *Scope and content*: The 3.70 metre Big European Bubble Chamber (BEBC) was dismantled on 9 August 1984. One of the biggest detectors in the world, it produced direct visual recording of particle tracks. 6.3 million photos of interactions were taken with the chamber in the course of its existence. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IM-019 43921 OBJOBJ 0000196	**Item - scanning table parts** *Note [General]* : Mesures are of te box containing the 5 parts. Weight is of the 5 parts together. *Scope and content*: Includes notably an ERASME system for displacing the image and a mirror. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IM-020 43922 OBJOBJ 0000197	**Item - fluxmeter** *Scope and content*:	Object

	Model F-8A. Used to mesure magnetic fields. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-028 43923 OBJOBJ 0000198	**Item - PS wire chamber**	1970	Object
	Note [General] : Light and display box included. *Scope and content*: A wire chamber used at CERN's Proton Synchrotron accelerator in the 1970s. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-029 43924 OBJOBJ 0000199	**Item - Scanning table**	1960	Object
	Scope and content: Before the invention of wire chambers, particles tracks were analysed on scanning tables like this one. Today, the process is electronic and much faster. Bubble chamber film - currently available - (links can be found below) was used for this analysis of the particle tracks. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-022 43925 OBJOBJ 0000200	**Item - magnetic horn**		Object
	Scope and content: Neutrinos and antineutrinos are ideal for probing the weak force because it is effectively the only force they feel. How were they made? Protons fired into a metal target produce a tangle of secondary particles. A magnetic horn like this one, invented by Simon Van der Meer, selected pions and focused them into a sharp beam. Pions decay into muons and neutrinos or antineutrinos. The muons were stopped in a wall of 3000 tons of iron and 1000 tons of concrete, leaving the neutrinos or antineutrinos to reach the Gargamelle bubble chamber. A simple change of magnetic field direction on the horn flipped between focusing positively- or negatively-charged pion beams, and so between neutrinos and antineutrinos. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-CE-014 43926 OBJOBJ 0000201	**Item - electronic tube**		Object
	Scope and content:		

	In copper. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IM-021 43927 OBJOBJ 0000203	**Item - PS proton beam electronic counter**	1980	Object
	Scope and content: PS= proton synchrotron. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-030 43928 OBJOBJ 0000204	**Item - optics from the LSD**	1968	Object
	Scope and content: LSD= spiral digital reader *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-031 43930 OBJOBJ 0000206	**Item - bubble chamber lens**		Object
	Creator: Maria Fidecaro *Note [General]* : <2> technical papers The support is included in the dimensions. *Scope and content*: Was used in a PS experiment. Before the days of electronic detectors, visual techniques were used to detect particles, using detectors such as spark chambers and bubble chambers. This plexiglass lens was used to focus the image of tracks so they could be photographed. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-032 43931 OBJOBJ 0000207	**Item - CERN first bubble chamber**	1957	Object
	Scope and content: The 10cm diameter chamber made by Charles Peyrou was the first liquid hydrogen bubble chamber built at CERN. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-033 43932 OBJOBJ 0000208	**Item - Gargamelle optical tube**	1970	Object

	Scope and content: Gargamelle was the name given to a big bubble chamber built at the Saclay Laboratory in France during the late 1960s. The experiment ran at CERN from 1970 - 1976 and in 1973 found the first experimental evidence of the particles responsible for transmitting the weak force. The weak force, one of the 4 fundamental interactions at work in the universe, has long been the subject of research at CERN. The force is responsible for radioactivity and is the reason why the sun shines. Gargamelle observed what is known as neutral currents, the process of a neutrino and electron transforming into a muon and a neutrino by exchanging an electrically neutral force carrier. The interaction was triggered by a beam of neutrinos and recorded by photographing the trail of bubbles left behind in the freon that filled the experiment's main chamber. Gargamelle has been conserved and is now displayed in the Microcosm garden. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-023 43934 OBJOBJ 0000210	**Item - video beam observation panel from the ISR**	1970	Object
	Scope and content: The ISR (intersecting strorage rings) was used at CERN from 1971 to 1984 to study proton-proton collisions (see AC-010) *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-024 43935 OBJOBJ 0000211	**Item - collision zone of an ISR**		Object
	Scope and content: This is a collision region from the world#s first proton collider, the Intersecting Storage Rings. The ISR was used at CERN from 1971-84 to study proton-proton collisions at the highest energy then available (60GeV). When operational, ISR collision regions were surrounded by detectors as shown in the photo. In 1972, the surprising discovery of fragments flying out sideways from head-on proton-proton collisions was the first evidence of quark-quark scattering inside the colliding protons . This was similar to Rutherford#s observation in 1911 of alpha particles scattering off the tiny nucleus inside atoms of gold. The ISR beamtubes had to be as empty as outer space, a vacuum 100 000 times better than other CERN machines at the time. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-025 43936 OBJOBJ 0000212	**Item - SC tuning fork**		Object
	Scope and content: The tuning fork used to modulate the radiofrequency system of the synchro cyclotron (SC) from 1957 to 1973. This piece is an unused spare part. The SC was the 1st accelerator built at CERN. It operated from August 1957 until it was closed down at the end of 1990. In the SC the magnetic field did not change with time, and the particles were accelerated in successive pulses by a radiofrequency voltage of some 20kV which varied in frequency as they spiraled outwards towards the extraction radius. The frequency varied from 30MHz to about 17Mz in each pulse. The tuning fork vibrated at 55MHz in vacuum in an enclosure which formed a variable capacitor in the tuning circuit of the RF system, allowing the RF to vary over the appropriate range to accelerate protons from the centre of the macine up to 600Mev at extraction radius. In operation the tips of the tuning fork blade had an amplitude of movement of over 1		

	cm. The SC accelerator underwent extensive improvements from 1973 to 1975, including the installation of a rotating condenser instead of the tuning fork as the modulating element of the radiofrequency system (see object AC-027). *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-026 43937 OBJOBJ 0000213	**Item - LINAC 2 prototype** Object *Scope and content*: Prototype of Linac 2, a Linear proton accelerator used in the PS (proton synchrotron accelerator injection system). A Linearaccelerator is a particle accelerator which accelerates charged particles - electrons, protons or heavy ions - in a straight line. Charged particles enter at one end and are accelerated towards the first drift tube by an electric field. Once inside the drift tube, they are shielded from the field and drift through at a constant velocity. When they arrive at the next gap, the field accelerates them again until they reach the next drift tube. This continues, with the particles picking up more and more energy in each gap, until they shoot out of the accelerator at the other end. Linac 2,also called Alvarez Proton Linac, was first run in 1978 and is still running today. It provides pulsed (1 Hz) beams of up to 170 mA at 50 MeV with pulse lengths varying between 20 and 150 ms depending on the number of protons required. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-034 43938 OBJOBJ 0000214	**Item - spark chamber** Object *Scope and content*: for parts *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-015 43940 OBJOBJ 0000216	**Item - photomultiplier tube** Object *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-CE-016 43941 OBJOBJ 0000217	**Item - photomultiplier tube** Object *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which

	produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-CE-017 43942 OBJOBJ 0000218	**Item - photomultiplier tube** *Scope and content*: A device to convert light into an electric signal (the name is often abbreviated to PM). Photomultipliers are used in all detectors based on scintillating material (i.e. based on large numbers of fibres which produce scintillation light at the passage of a charged particle). A photomultiplier consists of 3 main parts: firstly, a photocathode where photons are converted into electrons by the photoelectric effect; secondly, a multiplier chain consisting of a serie of dynodes which multiply the number of electron; finally, an anode, which collects the resulting current. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-002 43943 OBJOBJ 0000219	**Item - IBM data storage disk** *Creator*: Dave Underhill *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-004 43945 OBJOBJ 0000221	**Item - Computer** *Scope and content*: Special terminals for the first computer ever used by CERN library. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-005 43948 OBJOBJ 0000224	**Item - ordinateur** *Scope and content*: One of the first PC used at CERN.4 pieces. Dimensions are of the largest piece. Weight is of the 4 pieces together. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-035 43949 OBJOBJ 0000225	**Item - Breskin wire chamber**	1970	Object

	Creator: Bouclier *Note [General]* : <!--HTML--><U>Previous exhibition venues:</U> - Center for Art and Media ZKM - Karlsruhe, Germany (4 May - 1 Sept. 2002) *Scope and content*: Prototype made by Breskin.Has never been used. Breskin was a ph.d student working under Charpak supervision. The dimensions include the support. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-036 43950 OBJOBJ 0000226	**Item - scintillator** Object *Scope and content*: <2> scintillators with their support. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-006 43951 OBJOBJ 0000227	**Item - emulator** Object *Note [General]* : <2> pieces. Dimensions are of the largest one. *Scope and content*: Emulator 370/E used to analyse data from the UA1 detector. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-047 43952 OBJOBJ 0000228	**Item - Prototype muon chamber CMS** Object *Creator*: Jose Lamas Valver *Scope and content*: prototype of the endcap of CMS (compact muon solenoid), a detector for the LHC. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-027 43953 OBJOBJ 0000229	**Item - rotor of the SC rotating condenser** 1974 Object *Scope and content*: The rotor of the rotating condenser was installed instead of the tuning fork as the modulating element of the radiofrequency system, when the SC accelerator underwent extensive improvements between 1973 to

	1975 (see object AC-025). The SC was the first accelerator built at CERN. It operated from August 1957 until it was closed down at the end of 1990. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-037 43954 OBJOBJ 0000230	**Item - PS wire chamber**	1970	Object
	Creator: Maria Fidecaro *Scope and content*: A wire chamber used at CERN's Proton Synchrotron accelerator in the 1970s. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-038 43955 OBJOBJ 0000231	**Item - PS wire chamber**	1970	Object
	Creator: Maria Fidecaro *Note [General]* : <!--HTML--><U>Previous exhibition venues</U>: - University of Paris (October 1999) *Scope and content*: Three pieces. Wire chambers used for the beams at CERN's Proton Synchrotron accelerator in the 1970s. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-039 43956 OBJOBJ 0000232	**Item - wire chamber**		Object
	Note [General] : Needs some repairing. *Scope and content*: Proportional multi-wire chamber. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks		

	negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. Proportional wire chambers allow a much quicker reading than the optical or magnetoscriptive readout wire chambers. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-040 43957 OBJOBJ 0000233	**Item - Wire chamber** *Scope and content*: Magnetoscriptive readout wire chamber.Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public	1967	Object
CERN-OBJ-CERN-OBJ-DE-041 43958 OBJOBJ 0000234	**Item - Wire Chamber** *Scope and content*: Magnetoscriptive readout wire chamber. Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-042 43959 OBJOBJ 0000235	**Item - experimental instrument for wire chambers** *Creator*: Maria Fidecaro *Scope and content*: Instrument used to test the wires of small chambers before closing them. The chambers were 50cm long, 0.45cm wide and 0.06cm thick. They were meant to be used in a calorimeter for a PS experiment. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-	**Item - study of a wire chamber split up into sectors**		Object

DE-043 43960 OBJOBJ 0000236	*Scope and content*: This object was a prototype for a wire chamber with a cylindrical symetry. It was never used in an experiment. *Restrictions on access*: Public		
CERN-OBJ- CERN-OBJ- DE-044 43961 OBJOBJ 0000237	**Item - double counter** *Creator*: Jean Marc Gaillard *Scope and content*: A double counter made of a scintillation counter with 8 photomultiplier tubes and a cherenkov counter. Was used to identify particles.The dimensions include the support. *Restrictions on access*: Public	1970	Object
CERN-OBJ- CERN-OBJ- DE-045 43962 OBJOBJ 0000238	**Item - needs to be identify** *Scope and content*: wire chamber or spark chamber? *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- DE-046 43963 OBJOBJ 0000239	**Item - bubble chamber camera** *Scope and content*: <4> pieces.The dimensions are of the camera body. *Restrictions on access*: Public		Object
CERN-OBJ- CERN-OBJ- DE-048 43964 OBJOBJ 0000240	**Item - wire chamber** *Note [General]* : <!--HTML--><U>Previous exhibition venues</U>: - "Science en fête", University of Paris, 18-20.10. 2000 - "Lepfest", CERN *Scope and content*: Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement		Object

	of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-028 43965 OBJOBJ 0000241	**Item - radiofrequency cavity** *Scope and content*: The pulse of a particle accelerator. 128 of these radio frequency cavities were positioned around CERN's 27-kilometre LEP ring to accelerate electrons and positrons. The acceleration was produced by microwave electric oscillations at 352 MHz. The electrons and positrons were grouped into bunches, like beads on a string, and the copper sphere at the top stored the microwave energy between the passage of individual bunches. This made for valuable energy savings as it reduced the heat generated in the cavity. *Restrictions on access*: Public	1988	Object
CERN-OBJ-CERN-OBJ-DE-049 43966 OBJOBJ 0000242	**Item - fish eye** *Note [General]* : The dimensions are of the box. *Scope and content*: Camera lens for bubble chamber. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-029 43967 OBJOBJ 0000243	**Item - accelerating cavity from LEP** *Scope and content*: This is an accelerating cavity from LEP, with a layer of niobium on the inside. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. These challenging requirements pushed European industry to new achievements. 256 of these cavities are now used in LEP to double the energy of the particle beams. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-050 43968 OBJOBJ 0000245	**Item - Wire chamber** *Scope and content*: Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires.		Object

	They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-051 43969 OBJOBJ 0000246	**Item - wire chamber** *Scope and content*: Multi-wire detectors contain layers of positively and negatively charged wires enclosed in a chamber full of gas. A charged particle passing through the chamber knocks negatively charged electrons out of atoms in the gas, leaving behind positive ions. The electrons are pulled towards the positively charged wires. They collide with other atoms on the way, producing an avalanche of electrons and ions. The movement of these electrons and ions induces an electric pulse in the wires which is collected by fast electronics. The size of the pulse is proportional to the energy loss of the original particle. *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-AC-030 43970 OBJOBJ 0000249	**Item - Vacuum Valve** *Scope and content*: This valve was used in the Intersecting Storage Rings (ISR) to protect against the shock waves that would be caused if air were to enter the vacuum tube. Some of the ISR chambers were very fragile, with very thin walls - a design required by physicists on the lookout for new particles. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-AC-031 43971 OBJOBJ 0000250	**Item - Magnetic Focusing Horn** *Note [General]* : Focusing horn and antiproton target fixed onto the same holder. *Scope and content*: This magnetic focusing horn was used for the AA (antiproton accumulator). Its development was an important step towards using CERN's Super Proton Synchrotron as a proton - antiproton collider. This eventually led to the discovery of the W and Z particles in 1983. Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 -, three hundred thousand million - antiprotons. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-DE-052 43973 OBJOBJ 0000252	**Item - DELPHI Silicon Tracker**		Object

	Scope and content: DELPHI was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. The silicon tracking detector was nearest to the collision point in the centre of the detector. It was used to pinpoint the collision and catch short-lived particles. *Restrictions on access*: Public	
CERN-OBJ-CERN-OBJ-DE-053 43974 OBJOBJ 0000253	**Item - DELPHI Barrel Ring Imaging Cherenkov Detector** *Scope and content*: DELPHI was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. This is a piece of the Barrel Ring Imaging Cherenkov detector which was used to identify particles in DELPHI.It measured the Cherenkov light emitted when particles travelled faster than the speed of light through the material of the detector. The photo shows the complete Cherenkov detector. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-056 43977 OBJOBJ 0000256	**Item - OPAL Central Detector (Including vertex, jet and Z chambers)** *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. OPAL's central tracking system consists of (in order of increasing radius) a silicon microvertex detector, a vertex detector, a jet chamber, and z-chambers. All the tracking detectors work by observing the ionization of atoms by charged particles passing by: when the atoms are ionized, electrons are knocked out of their atomic orbitals, and are then able to move freely in the detector. These ionization electrons are detected in the different parts of the tracking system. (This piece includes the vertex, jet and Z chambers) In the picture above, the central detector is the piece being removed to the right. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-057 43978 OBJOBJ 0000257	**Item - Array of lead-glass blocks from OPAL** *Scope and content*: OPAL was one of the 4 experiments at CERN's Large Electron Positron collider (LEP) which ran from 1989 - 2000. This array of 96 lead glass bricks formed part of the OPAL electromagnetic calorimeter. In total, there were 9440 lead glass counters in the OPAL electromagnetic calorimeter, made of Schott type SF57 glass and each block weighs about 25 kg and consists of 76% PbO by weight. Each block has a Hamamatsu R2238 photomultiplier glued on to it. The complete detector was in the form of a cylinder 7m long and 6m in diameter. It was used to measure the energy of electrons and photons produced in LEP electron positron collisions. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-058 43985 OBJOBJ 0000264	**Item - OPAL Various Lead Glass Blocks**	Object

	Scope and content: These lead glass blocks were part of a CERN detector called OPAL (one of the four experiments at the LEP particle detector). OPAL uses some 12 000 blocks of glass like this to measure particle energies in the electromagnetic calorimeter. This detector measured the energy deposited when electrons and photons were slowed down and stopped. *Restrictions on access*: Public	
CERN-OBJ-CERN-OBJ-DE-059 43986 OBJOBJ 0000265	**Item - OPAL Silicon Tungsten Luminometer** *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. The Silicon Tungsten Luminometer was part of OPAL's calorimeter which was used to measure the energy of particles. Most particles end their journey in calorimeters. These detectors measure the energy deposited when particles are slowed down and stopped. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-DE-060 43987 OBJOBJ 0000266	**Item - OPAL Example Segment of Silicon Tungsten Luminometer** *Note [General]* : Awaiting intervention of Dick Kellogg to open up detector and reveal insides. *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. The Silicon Tungsten Luminometer was part of OPAL's calorimeter which was used to measure the energy of particles. Most particles end their journey in calorimeters. These detectors measure the energy deposited when particles are slowed down and stopped. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-AC-032 43988 OBJOBJ 0000268	**Item - Niobium LEP 2 accelerating cavities** *Scope and content*: An accelerating cavity from LEP. This could be cut open to show the layer of niobium on the inside. Operating at 4.2 degrees above absolute zero, the niobium is superconducting and carries an accelerating field of 6 million volts per metre with negligible losses. Each cavity has a surface of 6 m2. The niobium layer is only 1.2 microns thick, ten times thinner than a hair. Such a large area had never been coated to such a high accuracy. A speck of dust could ruin the performance of the whole cavity so the work had to be done in an extremely clean environment. These challenging requirements pushed European industry to new achievements. 256 of these cavities were used in an upgrade of the LEP accelerator to double the energy of the particle beams. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-	**Item - LEP Machine**	Object

AC-033 43989 OBJOBJ 0000269	*Restrictions on access*: Public	
CERN-OBJ- CERN-OBJ- AC-034 43990 OBJOBJ 0000270	**Item - LEP Machine 2 half Cells** *Note [General]* : Gone to Delphi for exhibition. (Contact person: Philippe Charpentier) *Restrictions on access*: Public	Object
CERN-OBJ- CERN-OBJ- DE-062 43991 OBJOBJ 0000271	**Item - OPAL Forward Calorimeter (half cylinder with lead scintillator)** *Note [General]* : <!--HTML-->The forward detector can have its upper panel removed to show the lead - scintillator sandwich construction. <P> <U>Previous exhibition venues</U>: - Technisches Museum Wien "When Energy Becomes Matter" (May-October 2001)</P> *Scope and content*: 1 half cylinder piece is available for loan. The OPAL forward Detector Calorimeter was made in 4 half cylindrical pieces. Two full cylinders were placed round the LEP beam pipe about 3m downstream of the interaction point. The detector was used primarily to measure the luminosity of LEP (rate of interactions) and also to trigger on 2-photon events. In addition it formed an essential part of the detector coverage which OPAL needed to carry out searches for new particles such as the Higgs boson. The detector is made of scintillators sandwiched between lead sheets. The light from the scintillators passes via bars of wavelength shifter and light guides on its way to be measured by photomultipliers. There is a layer of gas filled tube chambers within the calorimeter. These provide a measure of the position of the particles interacting in the calorimeter. *Restrictions on access*: Public	Object
CERN-OBJ- CERN-OBJ- AC-035 43992 OBJOBJ 0000272	**Item - LEP: Supra Conducting Magnet + quadrupole** *Restrictions on access*: Public	Object
CERN-OBJ- CERN-OBJ- AC-036 43993 OBJOBJ 0000273	**Item - LEP Radio Frequency Copper Cavity** *Note [General]* : <!--HTML--><BLINK>Some cavities are available to give.</BLINK> Please, contact us for further information. *Scope and content*: The pulse of a particle accelerator. 128 of these radio frequency cavities were positioned around CERN's 27-kilometre LEP ring to accelerate electrons and positrons. The acceleration was produced by	Object

	microwave electric oscillations at 352 MHz. The electrons and positrons were grouped into bunches, like beads on a string, and the copper sphere at the top stored the microwave energy between the passage of individual bunches. This made for valuable energy savings as it reduced the heat generated in the cavity. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-065 43995 OBJOBJ 0000277	**Item - OPAL Jet Chamber Prototype** 1984-86 Object *Creator*: Alasdair Smith *Note [General]* : lighting, mobile support structure and plexi-glass cover included. (Photos: Exhibition "TESLA - Licht der Zukunft" VW-Forum, Berlin (Germany). *Scope and content*: OPAL was one of the four experiments installed at the LEP particle accelerator from 1989 - 2000. OPAL's central tracking system consists of (in order of increasing radius) a silicon microvertex detector, a vertex detector, a jet chamber, and z-chambers. All the tracking detectors work by observing the ionization of atoms by charged particles passing by: when the atoms are ionized, electrons are knocked out of their atomic orbitals, and are then able to move freely in the detector. These ionization electrons are detected in the dirfferent parts of the tracking system. This piece is a prototype of the jet chambers *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-066 43996 OBJOBJ 0000278	**Item - DELPHI Forward Muon Chamber** Object *Creator*: Catherine De Clercq *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-067 43997 OBJOBJ 0000279	**Item - DELPHI Barrel Muon Chamber Module** 1989 Object *Creator*: Alan Segar *Note [General]* : This module is a special short module, used to cover the region close to the support legs of DELPHI. *Scope and content*: The module was used as part of the muon identification system on the barrel of the DELPHI detector at LEP, and was in active use from 1989 to 2000. The module consists of 7 individual muons chambers arranged in 2 layers. Chambers in the upper layer are staggered by half a chamber width with respect to the lower layer. Each individual chamber is a drift chamber consisting of an anode wire, 47 microns in diameter, and a wrapped copper delay line. Each chamber provided 3 signal for each muon passing through the chamber, from which a 3D space-point could be reconstructed. *Restrictions on access*:

	Public
CERN-OBJ-CERN-OBJ-DE-068 43998 OBJOBJ 0000280	**Item - CMS Tracker Model** Object *Creator*: Antti Onnela *Scope and content*: Model of the tracking detector for the CMS experiment at the LHC. This object is a mock-up of an early design of the CMS Tracker mechanics. It is a segment of a "Wheel" to support Micro-Strip Gas Chamber (MSGC) detector modules on the outer layers and silicon-strip detector modules in the innermost layers. The particularity of that design is that modules are organised in spirals, along which power and optical cables and cooling pipes were planned to be routed. Some of such spirals are illustrated in the mock-up by the colors of the modules. With the detector development it became, however, evident that the silicon detectors would need to be operated in LHC experiments in cold temperatures, while the MSGC could stay in normal room-temperature. That split in two temperatures lead to separating those two detector types by a thermal barrier and therefore jeopardizing the idea of using common, vertical Wheels with services arranged along spirals. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-069 43999 OBJOBJ 0000281	**Item - OPAL Muon Chamber** 1989-2000 Object *Note [General]* : - *Scope and content*: OPAL was one of the 4 experiments installed at the LEP particle accelerator from 1989 to 2000. This is a slice of the outermost layer of OPAL : the muon chambers. This outside layer detects particles which are not stopped by the previous layers. These are mostly muons. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-071 44001 OBJOBJ 0000283	**Item - Obelix Wire Chamber** 1986 Object *Note [General]* : These 2 wire chambers are spectacular. Holes can be cut to reveal the wires behind the layers of electronics. *Scope and content*: Two wire chambers made originally for the R807 Experiment at CERN's Intersecting Storage Rings. In 1986 they were used for the PS 201 experiment (Obelix Experiment) at LEAR, the Low Energy Antiproton Ring. The group of researchers from Turin, using the chambers at that time, changed the acquisition system using for the first time 8 bit (10 bit non linear) analog to digital conversion for incoming signals from the chambers. The acquisition system was controlled by 54 CPU and 80 digital signal processors. The power required for all the electronics was 40 kW. For the period, this system was one of the most powerful on-line apparatus in the world. The Obelix Experiment was closed in 1996. To find more about how a wire chamber works, see the description for object CERN-OBJ-DE-038. *Restrictions on access*:

	Public
CERN-OBJ- CERN-OBJ- IT-007 44002 OBJOBJ 0000284	**Item - Cisco ASM Router** 2001 Object *Scope and content*: One of the two "ASM/2-32EM" boxes installed in 1988, from "Cisco Systems Inc." - then an unknown 20-employee company in Menlo Park, California (USA). This is one of the first two Cisco boxes to appear in Switzerland, and possibly Europe. The 220v power supply was a special modification made for use at CERN. They supported IP address filtering, which seemed just what CERN needed to help protect the new Cray XMP-48 super computer from network hackers. The two ASM boxes were both routers and terminal servers. They protected a secure private Ethernet segment used by the Cray project, as well as providing secure terminal connections to that segment, including CERN's first dialback terminal service, which allowed Cray and CERN system analysts to work on the machine from home, using another Cisco feature called TACACS. (Kindly offered by B. Segal who discovered this company while at a Usenix Conference in Phoenix, Arizona in June 1987.) *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- AC-038 44003 OBJOBJ 0000285	**Item - Slice of a LEP bending magnet** Object *Scope and content*: This is a slice of a LEP dipole bending magnet, made as a concrete and iron sandwich. The bending field needed in LEP is small (about 1000 Gauss), equivalent to two of the magnets people stick on fridge doors. Because it is very difficult to keep a low field steady, a high field was used in iron plates embedded in concrete. A CERN breakthrough in magnet design, LEP dipoles can be tuned easily and are cheaper than conventional magnets. *Restrictions on access*: Public
CERN-OBJ- CERN-OBJ- AC-039 44005 OBJOBJ 0000287	**Item - Antiproton Target** 1980 Object *Note [General]* : Targets designed and made by C. Johnson and M. Frauchiger, CERN *Scope and content*: <!--HTML-->Antiproton target used for the AA (antiproton accumulator). The first type of antiproton production target used from 1980 to 1982 comprised a rod of copper 3mm diameter and 120mm long embedded in a graphite cylinder that was itself pressed into a finned aluminium container. This assembly was air-cooled and it was used in conjunction with the Van der Meer magnetic horn. In 1983 Fermilab provided us with lithium lenses to replace the horn with a view to increasing the antiproton yield by about 30%. These lenses needed a much shorter target made of heavy metal - iridium was chosen for this purpose. The 50 mm iridium rod was housed in an extension to the original finned target container so that it could be brought very close to the entrance to the lithium lens. Picture 1 shows this target assembly and Picture 2 shows it mounted together with the lithium lens. These target containers had a short lifetime due to a combination of beam heating and radiation damage. This led to the design of the water-cooled target in a titanium alloy body <A href="http://weblib.cern.ch/format/showfull?uid=519512&base=OBJOBJ&sysnb=0000166"> (see object AC-020).</A> *Restrictions on access*:

	Public		
CERN-OBJ-CERN-OBJ-AC-040 44007 OBJOBJ 0000289	**Item - Klystron**	1990	Object
	Scope and content: <!--HTML--> This klystron has been specially designed to be used as an RF source in particle accelertators. It is a five-cavity, high-gain, sealed-off klystron amplifier, able to deliver 17.5 kW of minimum average power and 35 MW minimum peak power at 2998.5 MHz. The maximum RF pulse duration available from this high-power klystron is 4.5 µsec. This klystron includes an ion pump, which ensures a continuous high vacuum. Used in the LEP injector LP1. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-012 710588 OBJOBJ 0000120	**Item - CHORUS light guide**		Object
	Scope and content: Chorus light guide and a selection of fibres in wooden box. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-074 2235799	**Item - ATLAS Transition Radiation Tracker - small piece**	2006	Object
	Scope and content: The ATLAS transition radiation tracker is made of 300'000 straw tubes, up to 144cm long. Filled with a gas mixture and threaded with a wire, each straw is a complete mini-detector in its own right. An electric field is applied between the wire and the outside wall of the straw. As particles pass through, they collide with atoms in the gas, knocking out electrons. The avalanche of electrons is detected as an electrical signal on the wire in the centre. The tracker plays two important roles. Firstly, it makes more position measurements, giving more dots for the computers to join up to recreate the particle tracks. Also, together with the ATLAS calorimeters, it distinguishes between different types of particles depending on whether they emit radiation as they make the transition from the surrounding foil into the straws. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-AC-048 2253655	**Item - Niobium Titanium and Copper wire samples**	2009	Object
	Scope and content: Two wire samples, both for carrying 13'000Amperes. I sample is copper. The other is the Niobium Titanium wiring used in the LHC magnets. The high magnetic fields needed for guiding particles around the Large Hadron Collider (LHC) ring are created by passing 12’500 amps of current through coils of superconducting wiring. At very low temperatures, superconductors have no electrical resistance and therefore no power loss. The LHC is the largest superconducting installation ever built. The magnetic field must also be extremely uniform. This means the current flowing in the coils has to be very precisely controlled. Indeed, nowhere before has such precision been achieved at such high currents. Magnet coils are made of copper-clad niobium–titanium cables — each wire in the cable consists of 9’000 niobium–titanium filaments ten times finer than a hair. The cables carry up to 12’500 amps and must withstand enormous electromagnetic forces. At full field, the force on one metre of magnet is comparable to the		

	weight of a jumbo jet. Coil winding requires great care to prevent movements as the field changes. Friction can create hot spots which “quench” the magnet and ruin its superconductivity. A quench in any of the LHC superconducting magnets would stop machine operation. 50’000 tonnes of steel sheets are used to make the magnet yokes that keep the wiring firmly in place. The yokes constitute approximately 80% of the accelerator's weight and, placed side by side, stretch over 20 km! *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-AC-060 2253707	**Item - Section of LHC beampipe** 2009 Object *Scope and content*: A short section of the LHC beampipe including beam screen. Particle beams circulate for around 10 hours in the Large Hadron Collider (LHC). During this time, the particles make four hundred million revolutions of the machine, travelling a distance equivalent to the diameter of the solar system. The beams must travel in a pipe which is emptied of air, to avoid collisions between the particles and air molecules (which are considerably bigger than protons). The beam pipes are pumped down to an air pressure similar to that on the surface of the moon. Emptying the air from the two 27 km long Large Hadron Collider beam-pipes is equivalent in volume to emptying the nave of the Notre Dame cathedral in Paris. Initially, the air pressure is reduced by pumping. Then, cold sections of the beam-pipe are further emptied using the temperature gradient across special beam-screens inside the tube where particles travel. The warm sections are emptied using a coating called a getter that works like molecular fly-paper. This vacuum technology has applications in high performance solar panels. More technical information: In the LHC, particles circulate under vacuum. The vacuum chamber can be at room temperature (for example, in the experimental areas), or at cryogenic temperature, in the superconductive magnets. This piece is located in the superconductive magnets. The outer pipe is the vacuum chamber, which is in contact with the magnets, at cryogenic temperature (1.9K). It is called the “cold bore”. The inner tube is the beam screen. Its main goal is to protect the magnets from the heat load coming from the synchrotron radiation. Indeed, when high energy protons’ trajectory is bent, photons are emitted by the beam. They are intercepted by the beam screen. The temperature of the beam screen is kept between 5 and 20K by a circulation of gaseous helium in the small pipes on both sides of the beam screen. As those surfaces are at cryogenic temperature. The residual gas present in the accelerator is sticking on the surfaces. This phenomenon called “adsorption” is used to maintain a very low pressure in the vacuum chamber of the accelerator. About materials: The cold bore is in stainless steel. The beam screen is in stainless steel with colaminated copper. Both those material have a low outgassing rates, which means that they release few molecules in the vacuum chamber. About beam and impedance: The goal of the copper, which has a good electrical conductivity, is to facilitate the circulation of the image current. The beam is composed of charged particules circulating: it is an electric current. When it is circulating, an image current is produced. It is called induction. If the image current cannot circulate properly, the beam is slowed down. About adsorption process: When the beam circulates, photons from synchrotron radiation are emitted and hit the beam screen. By doing so, they desorb molecules from the walls. The molecules are then pumped down on the outer pipe (where they cannot be reached by the photons anymore), through the small holes in the beam screen. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-079 2254084	**Item - ATLAS Liquid Argon Calorimeter 2m prototype** 1990 Object *Creator*: Claire Bouradrios *Scope and content*: This module was built and tested with beam to validate the ATLAS electromagnetic calorimeter design. One original design feature is the folding. 10 000 lead plates and electrodes are folded into an accordion

	shape and immersed in liquid argon. As they cross the folds, particles are slowed down by the lead. As they collide with the lead atoms, electrons and photons are ejected. There is a knock-on effect and as they continue on into the argon, a whole shower is produced. The electrodes collect up all the electrons and this signal gives a measurement of the energy of the initial particle. This 2 m long module dates back to the first detector studies for the LHC in the 1990's. It was built by the R&D collaboration RD-3 to evaluate the performances of liquid argon calorimetry for the physics programme - the search for the Higgs boson decays into two photons, in particular. After the choice of that technology by the ATLAS collaboration, the design of its elements were reassessed in view of production and a new module was tested in the CERN beam lines, leading to the Technical Design Report in 1996. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-072 2264547	**Item - Silicon detector** Object *Scope and content*: Used in LEP experiment. It is a element of the first OPAL silicon strip vertex detector. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-073 2264550	**Item - ATLAS muon detector** Object *Scope and content*: Muon detectors from the outer layer of the ATLAS experiment at the Large Hadron Collider. Over a million individual detectors combine to make up the outer layer of ATLAS. All of this is exclusively to track the muons, the only detectable particles to make it out so far from the collision point. How the muon's path curves in the magnetic field depends on how fast it is travelling. A fast muon curves only a very little, a slower one curves a lot. Together with the calorimeters, the muon detectors play an essential role in deciding which collisions to store and which to ignore. Certain signals from muons are a sure sign of exciting discoveries. To make sure the data from these collisions is not lost, some of the muon detectors react very quickly and trigger the electronics to record. The other detectors take a little longer, but are much more precise. Their job is to measure exactly where the muons have passed, calculating the curvature of their tracks in the magnetic field to the nearest five hundredths of a millimetre. Even these precision detectors are not exactly sluggish – they react within a millionth of a second. Such a fast response is essential when new collisions are occurring in the centre of ATLAS 40 million times every second! This muon detector is a drift tube - an aluminium tube with a wall thickness of some 1/10 mm that is filled with a special gas mixture. Inside the tube there is a wire that is tightened all over the length of the tube and fixed at the end caps. Particles (or ionizing radiation) that enter the tube ionize the gas molecules and liberate electrons. Since there is a high voltage between the wire and the tube wall, the released negatively charged electrons move towards the wire in the centre of the tube. On their way to the central wire, the moving electrons induce an electric signal that can be amplified and registered by further electronics. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-DE-075 2264554	**Item - DELPHI prototype lead glass brick** Object *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-DE-076 2264617	**Item - DUMAND detector** *Creator*: dominique.bertola@cern.ch Dominique Bertola *Scope and content*: This object is one of the 256 other detectors of the DUMAND (Deep Underwater Muon And Neutrino Detection) experiment. The goal of the experiment was the construction of the first deep ocean high energy neutrino detector, to be placed at 4800 m depth in the Pacific Ocean off Keahole Point on the Big Island of Hawaii. A few years ago, a European conference with Cosmic experiments was organized at CERN as they were projects like DUMAND in Hawaii. Along with the conference, a temporary exhibition was organised as well. It was a collaboration of institutions from Germany, Japan, Switzerland and the U.S.A. CERN had borrowed equipment and objects from different institutes around the world, including this detector of the DUMAND experiment. Most of the equipment were sent back to the institutes, however this detector sphere was offered to a CERN member of the personnel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-077 2264663	**Item - Equipment from UA1** *Scope and content*: Donated by B. Chaddaz. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-078 2264664	**Item - unknown** *Scope and content*: Various pieces. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-AC-047 2266136	**Item - LHC magnet support post** *Scope and content*: A prototype magnet support for the Large Hadron Collider (LHC). The magnet supports have to bridge a difference in temperature of 300 degrees. Electrical connections, instrumentation and the posts on which the magnets stand are the only points where heat transfer can happen through conduction. They are all carefully designed to draw off heat progressively. The posts are made of 4 mm thick glass-fibre– epoxy composite material. Each post supports 10 000 kg of magnet and leaks just 0.1 W of heat. This piece required a long development period which started in the early ’90s and continued until the end of the decade. The wires next to the support post are wires from strain gauges, which are employed to measure the stress level in the material when the support is mechanically loaded. These supports are mechanically optimized to withstand a weight of up to 100Kn (10 tons) while being as thin as possible to minimize conduction heat to magnets. This is the reason why the stress measurement was extensively done in the prototyping phase. *Restrictions on access*: Public	1995	Object

CERN-OBJ-CERN-OBJ-AC-044 2266150	**Item - Focusing horn** *Scope and content*: This was the first magnetic horn developed by Simon Van der Meer to collect antiprotons in the AD complex. It was used for the AA (antiproton accumulator). Making an antiproton beam took a lot of time and effort. Firstly, protons were accelerated to an energy of 26 GeV/c (protons at 26GeV/c, antiprotons at 3.6GeV/c) in the PS and ejected onto a metal target. From the spray of emerging particles, a magnetic horn picked out 3.6 GeV antiprotons for injection into the AA through a wide-aperture focusing quadrupole magnet. For a million protons hitting the target, just one antiproton was captured, 'cooled' and accumulated. It took 3 days to make a beam of 3 x 10^11 -, three hundred thousand million - antiprotons. The development of this technology was a key step to the functioning of CERN's Super Proton Synchrotron as a proton - antiproton collider. *Restrictions on access*: Public	1980	Object
CERN-OBJ-CERN-OBJ-IT-008 2266312	**Item - 140Mb 9-track tape** *Scope and content*: With arrival of CDC 6600 at CERN in January 1965, there came the first half-inch wide 7-tracks tape units with magnetic tapes at recording densities of 200, 556 and 800 bpi (bytes per inch). *Restrictions on access*: Public	1965	Object
CERN-OBJ-CERN-OBJ-IT-009 2266313	**Item - 10 MB disk platter from CDC 7638** *Scope and content*: This magnetic disk was one of three which interfaced with various Control Data machines. This single platter came from a Control Data 7638 Disk Storage Subsystem and could contain up to 10MB - about the size of a few MP4's on your iPod. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-IT-010 2266314	**Item - IBM 3851 Mass Storage Cartridges** *Scope and content*: These cartridges represent the first step in technologies to automate the reading, writing and retrieval of data. Previous to this, all data had to be retrieved, loaded and dismounted by hand. *Restrictions on access*: Public	1978	Object
CERN-OBJ-CERN-OBJ-IT-011 2266316	**Item - StorageTek T10000 Tape Cartridge** *Scope and content*: Oracle StorageTek T10000T2 cartridge has total capacity of 5 TB. It is actually manufactured by Fuji Film, uses Barium Ferrite (BaFe) particles technology data store, but is also equipped with RFID chip. There is over 1 km of tape inside of the cartridge with 3584 data tracks and it supports over 25000 load/unload cycles. The archival life is estimated to be around 30 years and uncorrected bit error rate is 10-19.	1985	Object

	CERN however usually migrates data to newer technologies roughly every 5 years in order to keep the footprint under control. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-012 2266317	**Item - IBM 3390 Hard Disk Platter**	1991	Object
	Scope and content: The 3390 disks rotated faster than those in the previous model 3380. Faster disk rotation reduced rotational delay (ie. the time required for the correct area of the disk surface to move to the point where data could be read or written). In the 3390's initial models, the average rotational delay was reduced to 7.1 milliseconds from 8.3 milliseconds for the 3380 family. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-013 2266318	**Item - 2TB hard disk drive**		Object
	Scope and content: This particular object was used up until 2012 in the Data Centre. It slots into one of the Disk Server trays. Hard disks were invented in the 1950s. They started as large disks up to 20 inches in diameter holding just a few megabytes (link is external). They were originally called "fixed disks" or "Winchesters" (a code name used for a popular IBM product). They later became known as "hard disks" to distinguish them from "floppy disks (link is external)." Hard disks have a hard platter that holds the magnetic medium, as opposed to the flexible plastic film found in tapes and floppies. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-014 2266319	**Item - Disk Storage Server**		Object
	Scope and content: This model was a disk storage server used in the Data Centre up until 2012. Each tray contains a hard disk drive (see the 5TB hard disk drive on the main disk display section - this actually fits into one of the trays). There are 16 trays in all per server. There are hundreds of these servers mounted on racks in the Data Centre, as can be seen. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-015 2266320	**Item - CERNET Interface Card**	1978	Object
	Scope and content: Homegrown networking technology pre-dating the internet. This is a CERNnet card developed and built at CERN. There was a lot of space on the card between the components, so the engineers decided to put their portraits on it. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-016 2266321	**Item - 10BASE5 Ethernet Cable & Vampire Tap**	1983	Object

	Scope and content: 10BASE5 Thick Ethernet Cable, 10Mbit/sec. In the 1980s and early 1990's, Ethernet became more popular and provided a much faster data transmission rate. This cable is one of the first ethernet cables from 1983, a thick, bulky affair. Computers were attached via "Vampire Taps" which were connectors screwed straight through the shielding of the cable. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-017 2266322	**Item - NExT server** *Scope and content*: The first website at CERN - and in the world - was dedicated to the World Wide Web project itself and was hosted on Berners-Lee's NeXT computer. The website described the basic features of the web; how to access other people's documents and how to set up your own server. This NeXT machine - the original web server - is still at CERN. As part of the project to restore the first website, in 2013 CERN reinstated the world's first website to its original address. *Restrictions on access*: Public	1989	Object
CERN-OBJ-CERN-OBJ-IT-018 2266323	**Item - Brocade router** *Scope and content*: A modern 2.8TB/s router, the backbone of our internet connectivity. This model was in service at CERN from 2008 until 2012. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-019 2266325	**Item - Optical Fibre Bundle** *Scope and content*: These are sample fibre optic cables which are used for networking. Optical fibers are widely used in fiber-optic communications, where they permit transmission over longer distances and at higher bandwidths (data rates) than wire cables. Fibers are used instead of metal wires because signals travel along them with less loss and are also immune to electromagnetic interference. This is useful for somewhere like CERN where magnets with their highly powerful magnetic fields could pose a problem. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-020 2266326	**Item - CDC 6600 Magnetic Core Memory** *Scope and content*: A plan of magnetic core memory with 64x64 bits (4Kb) as used in a CDC 6600. The very first CDC 6600 was delivered to CERN in 1965 and was the fastest supercomputer of its time. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-021 2266327	**Item - IBM 3090 CPU chips** *Scope and content*: The most powerful IBM computer system of its time, the IBM 3090 high-end processor of the IBM 308X computer series incorporated one-million-bit memory chips. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-022 2266328	**Item - CPU Server** *Scope and content*: The CERN computer centre has hundreds of racks like these. They are over a million times more powerful than our first computer in the 1960's. This tray is a 'dual-core' server. This means it effectively has two CPUs in it (eg. two of your home computers minimised to fit into a single box). Also note the copper cooling fins, to help dissipate the heat. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-080 2266338	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-081 2266342	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-082 2266343	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-083 2266344	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-085 2266346	**Item - Prototype for the ALEPH Time Projection Chamber** *Scope and content*: This is a prototype endplate piece constructed during R&D for the ALEPH Time Projection Chamber (TPC). ALEPH was one of 4 experiments at CERN's 27km Large Electron Positron collider (LEP) that ran from 1989 to 2000. ALEPH's TPC was a large-volume tracking chamber, 4.4 metres long and 3.6 metres in diameter - the largest TPC in existance at the time. This object is one of the endplates of a “Kind” sector, the smallest of the three types of sectors. The patterns etched into the copper form the	1980	Object

	cathode pads that measured particle track coordinates in the r-phi direction. It included a laser calibration system, a gating system to prevent space charge buildup, and a new radial pad geometry to improve resolution. the ALEPH TPC allowed for precise momentum measurements of the high-momentum particles from W and Z decays. The following institutes participated: CERN, Athens, Glasgow, Mainz, MPI Munich, INFN-Pisa, INFN-Trieste, Wisconsin. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-086 2266347	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-087 2266348	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-088 2266443	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-089 2266444	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-090 2266445	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-DE-091 2266446	**Item - Detector Unit** *Creator*: Erik Bracke *Scope and content*: Original detector unit of the Instituut voor Kernfysisch Onderzoek (IKO) BOL project. This detector unit shows that silicon detectors for nuclear physics particle detection were already developed and in use in the 1960's in Amsterdam. Also the idea of putting 'strips' onto the silicon for high spatial resolution of a particle's impact on the detector were implemented in the BOL project which used 64 of these detector units. The IKO BOL project with its silicon particle detectors was designed, built and operated from 1965 to roughly 1977. Detector Unit of the BOL project: These detectors, notably the ‘checkerboard detector’, were developed during the years 1964-1968 in Amsterdam, The Netherlands, by the Natuurkundig Laboratorium of the N.V. Philips Gloeilampen Fabrieken. This was done in close collaboration with	1960	Object

	the Instituut voor Kernfysisch Onderzoek (IKO) where the read-out electronics for their use in the BOL Project was developed and produced. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-DE-092 2266447	**Item - unknown** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-023 2272997	**Item - CDC 7600 Module** *Scope and content*: The CDC 7600 has been created by Seymour Cray. It was designed to be compatible with the 6600, which allows for a substantial increase in performance. Furthermore the rise of new technologies has enabled this performance by reducing the minor cycle clock period from 100 ns to 27.5 ns (4 time faster). A very large machine, the 7600 had over 120 miles of hand-wired interconnections. It was the most powerful computer of its time. However, this speed caused a ground-loop problem causing intermittent faults, and eventually requiring all modules to be fitted with sheathed rubber bands. The CDC 7600 was replaced in 1983 by CRAY-1A. *Restrictions on access*: Public	1970	Object
CERN-OBJ-CERN-OBJ-IT-024 2273012	**Item - CDC 6600 Cordwood Module** *Scope and content*: The CDC 6600 cordwood module containing 64 silicon transistors. The module was mounted between two plates that were cooled conductive by a refrigeration unit via the front panel. The construction of this module uses the cord method, so called because the resistors seem to be stacked like cord between the two circuit boards in order to obtain a high density. The 6600 model contained nearly 6,000 such modules. *Restrictions on access*: Public	1964	Object
CERN-OBJ-CERN-OBJ-IT-025 2273210	**Item - Model of the VAX-11/780** *Scope and content*: It was the first member of the VAX family of computers, the first commercially available 32-bit computer and the first MIPS (one million instructions per second). It is a family of abandoned mini-computers developed and manufactured by Digital Equipment Corporation (DEC). The name "VAX" comes from an acronym for "Virtual address eXtension" as the successor to the PDP-11. The computer and its operating system (VMS) were designed from scratch. The result was a truly reliable, powerful and user-friendly system. In addition its affordable price has enabled many institutions and universities to acquire it. *Restrictions on access*: Public	1977	Object

CERN-OBJ-CERN-OBJ-IT-026 2273230	**Item - SecurID**		Object
	Scope and content: Now called RSA SecurID, SecurID is a mechanism developed by Security Dynamics that allows two-factor authentication for a user on a network resource. It works on the principle of the unique password mode, based on a shared secret. Every sixty seconds, the component generates a new six-digit token on the screen. The latter comes from the current time (internal clock) and the seed (SecurID private key that is available on the component, and is also from the SecurID server). During an authentication request, the SecurID server will check the entered token by performing exactly the same calculation as that performed by your component. The server knows the two information required for this calculation: the current time and the seed of your component. Access is allowed if the token calculated by the server matches the token you specified. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-027 2273234	**Item - IBM 3705 Communications Controller**	1972	Object
	Scope and content: The IBM 3705 Communications Controller is a simple computer which attaches to an IBM System/360 or System/370. Its purpose is to connect communication lines to the mainframe channel. It was a first communications controller of the popular IBM 37xx series. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-028 2273243	**Item - AMD AM29116**	1982	Object
	Scope and content: The AM29116 is a microprogrammed 16-bit processor. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-029 2273249	**Item - Gandalf LDS 105**	1990-1999	Object
	Scope and content: It was essentially a folded sheet metal box with an internal circuit board, but Gandalf Box was a form of modem, a terminal host selector that allowed computer terminals to connect to a number of computers, Host computers via a single interface. Gandalf Technologies was a Canadian data communications company based in Ottawa. It was best known for their modems and terminal adapters. The rapid development of ethernet, remote access and subsequent high-speed connections killed technology and the company went bankrupt in 1997. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-030 2273253	**Item - One of the First Portable Macs**	1989	Object
	Scope and content:		

	It was one of the first portable macs released. The Portable had many new advances in mobile computing : The display was crispy clear, and looked beautiful when used in daylight ; The Portable came with a Lead-acid gel/cell battery that could run a anywhere from 6 -12 hours ; It supported to internal hard drives, and an external one. The reaction to the laptop was weak because it was slow, it had no capacity for expansion, it weighed heavily, its price was expensive. It has been stayed 1 year and half on the market. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-031 2273273	**Item - Olivetti M10**	1983	Object
	Scope and content: The Olivetti M10 is a small Italian computer, it is a first attempt to create a real laptop with its screen tilting offering a good legibility. Its success was mainly due to the good quality keyboard with its accented keys that allows a fast typing as well as has its long battery life. It can operate several hours on four standard batteries. Otherwise, in terms of software, the machine has Basic in ROM, as well as various small office programs such as spreadsheet, word processor, calendar and address book. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-032 2273289	**Item - DEC VT220**	1983	Object
	Scope and content: The DEC (Digital Equipment Corporation) VT220 is a text terminal which uses an redesigned keyboard(LK201). The VT220 improved on the earlier VT100 series of terminals with much smaller physical packaging and and a much faster microprocessor. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-033 2273362	**Item - Osborne 1**	1981	Object
	Scope and content: The Osborne 1 Released by the Osborne Computer Corporation is considered to be the first true portable, full-featured computer intended for a larger audience than companies. It includes all the components required to be a completely useful and operational computer system. Indeed the Osborne 1 was cost $ 1,795which is now $ 4,773. Another attractive point was that it was sold with several software, which, sold separately, cost almost the same price as the machine. However this computer has some disadvantages like its weight (11 kg) or its tiny screen that could display only a little character per lines and sized the average size of a phone screen . Another problem was that the computer was a bit prone to overheating. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-034 2273364	**Item - Mitsubishi LSA820W LCD Display**		Object
	Scope and content: This is a LCD Screen with a 1280x1024 resolution. *Restrictions on access*:		

	Public		
CERN-OBJ-CERN-OBJ-IT-035 2273368	**Item - iMac G3 Blueberry 350MHz**	2000	Object
	Scope and content: The iMac G3 is an all-in-one personal computer, encompassing both the monitor and the computer in one package. It allowed to revitalize the Apple brand that was in decline and close to financial ruin. Originally released in striking bondi blue and later a range of other translucent plastic envelopes in bright colors. The iMac comes with a keyboard and mouse matching the color of the case. The iMac G3 was sold from 1998 to 2003 and has been updated many times. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-036 2273519	**Item - Verbatim Floppy Disk**	1976	Object
	Scope and content: Introduced under the name "Verbatim", Latin for "literally", these disks that sized more than 5¼ inches have become almost universal on dedicated word processing systems and personal computers. This format was replaced more slowly by the 3½-inch format, introduced for the first time in 1982. Compared to today, these large format disks stored very little data. In reality, they could only contain a few pages of text. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-037 2273523	**Item - 8-inch IBM floppy disk**	1971	Object
	Scope and content: The 8-inch floppy disk was a magnetic storage disk for the data introduced commercially by IBM in 1971. It was designed by an IBM team as an inexpensive way to load data into the IBM System / 370. Plus it was a read-only bare disk containing 80 KB of data. The first read-write version was introduced in 1972 by Memorex and could contain 175 KB on 50 tracks (with 8 sectors per track). Other improvements have led to various coatings and increased capacities. Finally, it was surpassed by the mini diskette of 5.25 inches introduced in 1976. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-038 2273531	**Item - The Imation 9840 Tape Cartridge**		Object
	Scope and content: It’s a 20 GB uncompressed center-load cartridge used in StorageTek T9840 tape drives. The tape is a Metal Particle (MP) tape suitable for use on all Oracle/Sun/StorageTek 9840 A, B, C and D drives. The 9840 tape has an archival life of 15-30 years. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-039 2273541	**Item - Sony D-Eight**	1987	Object
	Scope and content:		

	The 8mm backup format is a format for storing magnetic tape data used in computer systems, launched by Exabyte Corporation. It is also known as Data8, often abbreviated to D8 and writes D-Eight on some Sony brand media. The company was formed in order to take the 8 mm video format and make it suitable for data storage. They did this by building a mechanism and a reliable data format that used the common 8 mm video tape technology that was available at the time. This was the first form of helical scanning used commercially for data storage. The ribbon was made vertically and has a length of 112 meters. It was designed to withstand heat and high temperatures. It has been introduced in at CERN in 1994. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-040 2273680	**Item - Western Digital Caviar 31200** *Scope and content*: Western Digital hard drive. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-041 2273691	**Item - StorageTek RedWood SD-3 tape drive** *Scope and content*: A helical scan recording drive, with a high-speed rotating head sweeping across the tape every few micrometers. Based on a professional video recording system, modified to be suitable for digital data recording. These are commonly used with large computer systems, typically in conjunction with a robotic tape library. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-042 2273694	**Item - IBM 3480 tape cartridge** *Scope and content*: The 3480 tape format is a magnetic tape data storage format developed by IBM. The cartridge contains a single reel. IBM's 3480 cartridge tape system sought to replace the traditional reels of magnetic tape in the computer center. Because of their speed, reliability, durability and low media cost, these tapes and tape drives are still in high demand. A hallmark of the genre is transferability. Tapes recorded with one tape drive are generally readable on another drive, even if the tape drives were built by different manufacturers. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-043 2273698	**Item - Sun Ultra 5** *Scope and content*: The Sun Ultra 5 is a 64-bit personal computer based on the UltraSPARC microprocessor line at a low price. The Ultra 5 has been declined in several variants: thus, some models have a processor with less cache memory to further decrease the price of the computer. *Restrictions on access*: Public	1998	Object

CERN-OBJ-CERN-OBJ-IT-044 2273800	**Item - 6250 BPI Magnetic Tape**		Object
	Scope and content: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-045 2273804	**Item - IBM WDI-325Q 21MB Hard Drive**		Object
	Scope and content: Size : 20 Mb *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-046 2273838	**Item - Acoustic Coupler Modem**		Object
	Scope and content: It's an acoustic coupler modem 300 bit/s from the 1970s. It is attaches to an ordinary telephone handset. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-047 2273906	**Item - Graham Magnetics EPOCH 480 Magnetic Reel Tape**	1970-1979	Object
	Scope and content: This media disk, used for stored audio and visual information, has a stronger binding system than the tape and can last a million uses. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-048 2273915	**Item - Scotch 777 6250 CPI**		Object
	Scope and content: 9-Track Tape Reel. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-049 2273920	**Item - CERNET High Speed Data Link**	1975	Object
	Scope and content: This card, based on a "4 slot DEC module", arbitrated the access priority of 15 datalinks of a CERNET node. Each datalinks could transfer data full duplex at 2.5 Mbit/sec over 1 Km of twisted pair (POD) cable. This was the frontier technology in 1980. The modest amount of integrated circuits was compensated by printing on the board photographs of the hardware designers, whose Belgian, Dutch and French nationality was underlined by the the short poem.		

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-050 2273923	**Item - Intel 10 Gbit/s Network Card**		Object
	Scope and content: One of the first Intel 10 Gbit/s Network Card (long-range 10 km lasers). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-051 2273932	**Item - Paper Punch Tape**		Object
	Scope and content: Physicists coded and recorded their programs through series of holes on punch paper tape or on punched cards. It was popular in the 1970s due to its high throughput speed and low cost, paper tape was one of the original data storage methods for computers. Information was encoded in the distinct pattern of holes punched in the paper; the paper itself was oiled to facilitate being run through the reading mechanism and to prevent tears due to brittleness. Though the paper was cheap, it had low storage capacity (only a few dozen kilobytes per roll) and the machinery involved in punching the holes was quite expensive. Higher capacity alternatives, such as magnetic tape, has get developped. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-052 2273938	**Item - Computer Data Punch Cards**	1970-1979	Object
	Scope and content: Those card are printed with minimal layout aids for the formatting of FORTRAN programs, plus extra guidelines every ten columns suggesting a generic tabular data layout. A punch card is a piece of stiff paper that can be used to contain digital information represented by the presence or absence of holes in predefined positions. Punched cards were used for specialized unit record machines, organized into semiautomatic data processing systems, used punched cards for data input, output, and storage. Furthermore many new digital computers started to used punched cards. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-053 2273948	**Item - StorageTek T10000 Data Cartridge**		Object
	Scope and content: This data cartridge works on several StorageTek systems. The goal is to provide cartridge compatibility across several system. It has been designed for space saving and ultra-high capacity tape. It permit to fulfill high-volume backup, archiving, and disaster recovery. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-054 2273956	**Item - Sun StorageTek T9940 Tape Drive**	2002	Object
	Scope and content:		

	Technology allowed reuse of the same data cartridge at higher capacity with later model of the tape drive hence offering significant savings of the media cost. It has been use by the CERN from 2002 to 2008. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-055 2273963	**Item - SONY SD1-1300L** *Scope and content*: Cartridge used in the SONY DMS-24 automated tape library system installed at CERN in 1995 and still in use by the NA49 experiment. Tape length is 1300 m with 100 GB storage capacity. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-056 2273973	**Item - IBM 3480** *Scope and content*: Introduced at CERN in 1985. It has a storage capacity of 200 MB *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-IT-057 2273977	**Item - DLT 2000 (CompactTape III)** *Scope and content*: It has been introduced at CERN in 1994 and used until recently in the DEC TL820 robot. It has a capacity of 10 GB and 1.25 MB/s. *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-058 2273991	**Item - Power Macintosh 7300/166** *Scope and content*: The Power Macintosh 7300 was released in 1997 and was the same case as the Power Macintosh 7600. Its main evolution is that it was equipped with a faster processor. It also had a bigger hard drive (2 GB) and a faster CD-ROM drive (12x to 8x). In return, Apple chose to remove the audiovisual connections that were present on all its predecessors of the range 7x00. *Restrictions on access*: Public	1997	Object
CERN-OBJ-CERN-OBJ-IT-059 2273994	**Item - 32 Word ROM Memory for a PDP 11 (Circa 1971)** *Scope and content*: It occupies a quad-width, double-height flipchip board you can visually read off its contents (presence or absence of diodes). In its time it represented a giant leap forward since you no longer had to toggle the bootstrap in on the frontpanel switches. *Restrictions on access*: Public	1971	Object

CERN-OBJ-CERN-OBJ-IT-060 2273997	**Item - Intel Quad Core Processor**		Object
	Scope and content: Intel quad core processor in its casing and mounted with copper heats sink on a motherboard. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-061 2274072	**Item - Iomega ZIP 250**		Object
	Scope and content: It's a 250 MB External Zip Disk Drive Portable *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-062 2274075	**Item - CDC Cyber Series**	1960-1969	Object
	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-063 2274081	**Item - Quicksilver Power Mac G4**	2001	Object
	Scope and content: A new generation with a reworked motherboard is launched on 2001 with however the same Graphite box. It also included a processor speed-bump, and brought the DVD-R "SuperDrive" to the mid-level model. The Quicksilver PowerMac was available in three configurations: The 733 MHz model, with 128 MB of RAM, a 40 GB hard drive, and a CD-RW drive, was 1,699 dollars, the 867 MHz configuration, with 128 MB of RAM, a 60 GB hard drive and a DVD-R drive, was 2,499 dollars, and the high-end dual-800 MHz model, with 256 MB of RAM, an 80 GB hard drive and a DVD-R drive, was 3,499 dollars. The 733 MHz model is the first personal computer to have a DVD burner, named SuperDrive at Apple. The design was updated on 2002 with 800 MHz, 933 MHz and dual 1 GHz configurations, becoming the first Mac to reach 1 GHz. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-064 2274088	**Item - Seagate Medalist ST38641A IDE Hard Drive**	1998	Object
	Scope and content: This hard drive has got a capacity of 8,6 Gb. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-065 2274092	**Item - Storagetek 411225803**		Object
	Scope and content: It's a hand gripper assembly with camera for 9310.		

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-066 2274098	**Item - IBM 3090 TCM CPU** *Scope and content*: This is a Thermal Conduction Module from an IBM 3090. This is a water cooled unit that holds loads of chips. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-067 2274102	**Item - Display Apple M7649Zm** *Scope and content*: It was Designed for the Power Mac G4. This Apple studio display gives you edge-to-edge distortion-free images. With more than 16.7 million colors and 1,280 x 1,024 dpi resolution, you view brilliant and bright images on this Apple 17-inch monitor. *Restrictions on access*: Public	2001	Object
CERN-OBJ-CERN-OBJ-IT-068 2274118	**Item - IBM 3380 E** *Scope and content*: In 1985 IBM announced a double density version. The Extended Capability Models of the 3380 (3380 E) having 5.04 gigabytes per chassis, that is, two 1.26 gigabyte actuators on two hard disk assemblies in one chassis. *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-IT-069 2274385	**Item - Olivetti M6 640** *Scope and content*: The M6-640 is the highest performance personal computer workstation in the Suprema range with multimedia, document imaging and communications capabilities. It has a 90MHz Pentium processor with 256Kb of secondary cache. It can accommodate up to 128Mb RAM and supports hard disks of up to 1Gb through an IDE interface. *Restrictions on access*: Public	1993	Object
CERN-OBJ-CERN-OBJ-IT-070 2274387	**Item - M-Office DW 500 Typewriter** *Scope and content*: It's the M-Office DW 500 Typewriter. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-071 2274393	**Item - IBM Storage Disk** *Scope and content*: IBM storage disk used in the 70s and 80s. This stack of eight 35 cm disks weighs more than 10 Kg, and can store 320 Megabytes or 34 minutes of music *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-072 2274398	**Item - Disk Interface 3380** *Scope and content*: Disk Interface for a disk cabinet. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-073 2274400	**Item - Olivetti OPE XM 5220/2** *Scope and content*: MFM Hard Drive. (Type of hard disk used in XT computers) *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-074 2274411	**Item - Bus and Tag Terminators for IBM system/360** *Scope and content*: Control units were connected to the channels with "Bus and Tag" cable pairs. The bus cables carried the address and data information and the tag cables identified what data was on the bus. There were three general types of bus-and-tag cables produced by IBM. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-075 2274412	**Item - Western Digital Hard Drive** *Scope and content*: MFM Hard Drive with a capacity of 20 Mb. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-076 2274414	**Item - 6250 BPI Magnetic Tape Olivetti** *Scope and content*: BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	Object

CERN-OBJ-CERN-OBJ-IT-077 2274420	**Item - RPS Micro Diskette** *Scope and content*: Small flexible plastic disk covered with a magnetic substance used to record data and computer programs. They can normally contain 1.44 MB of data and they are convenient for moving small amounts of data as they are transportable. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-078 2274422	**Item - Port Switch** *Scope and content*: It's a 48 x 1 Gbit/s port switch with 10 Gbit/s optical uplink connection. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-079 2274589	**Item - Amdahl 470 Chip Package** *Scope and content*: In the late 70s the larger IBM computers were water cooled. Amdahl, an IBM competitor, invented an air cooling technology for it's computers. His company worked hard, developing a computer that was faster and less expensive than the IBM System/360 mainframe computer systems. This object contains an actual Amdahl series 470 computer logic chip with an air cooling device mounted on top. The package leads and cooling tower are gold-plated. *Restrictions on access*: Public	1975	Object
CERN-OBJ-CERN-OBJ-IT-080 2274594	**Item - Multi-Core Itanium Processor** *Scope and content*: First Multi-Core Itanium processor. It has 1,7 billion transistors and 24 MB on die-cache. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-081 2274603	**Item - Dual-core Itanium Processor** *Scope and content*: Intel’s first dual-core Itanium processor, code-named "Montecito" is a major release of Intel's Itanium 2 Processor Family, which implements the Intel Itanium architecture on a dual-core processor with two cores per die (integrated circuit). Itanium 2 is much more powerful than its predecessor. It has lower power consumption and thermal dissipation. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-082 2274619	**Item - CDC 7600 module slice**		Object

	Scope and content: Each module contained 8 circuit cards for a total of about 300-500 uncovered transistors packaged with face plates so the Freon plates wouldn't touch the circuits. (cooling plates that surrounded each module). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-083 2274621	**Item - Single Platter of a CDC 7638 Disk Drive** *Scope and content*: This large 7638 disk on the CDC 7600 is primarily used as a sort of « paging store » for tape files and permanent files staged over from the front-end CDC6500. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-IT-084 2274733	**Item - Wafer of Intel Pentium 4 Prescott Chips** *Scope and content*: Silicon wafer with hundreds of Penryn cores (microprocessor). There are around four times as many Prescott chips can be made per wafer than with the previous generation of Northwood-core Pentium 4 processors. It is faster and cheaper. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-085 2274743	**Item - 3M No. 700 Black Watch 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-086 2274745	**Item - Disque PC IDE** *Scope and content*: It's a disque PC IDE 850 Mbytes. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-087 2274753	**Item - SRAM chip** *Scope and content*: It has a capacity of 1 Mb. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-088 2274772	**Item - Fuji Toshiba 360K 5.25 Internal Floppy Drive FDD** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-089 2274914	**Item - CDC Cyber Series Electronic Plate** *Restrictions on access*: Public	1965-1970	Object
CERN-OBJ-CERN-OBJ-IT-090 2274921	**Item - Sony 40 MB Vintage Hard Drive** *Restrictions on access*: Public	1990	Object
CERN-OBJ-CERN-OBJ-IT-091 2274939	**Item - Cable 18000 Volt** *Scope and content*: Capacity of this cable : 15 MVA / 13,5 MW / 450 Ampères. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-092 2274946	**Item - Hitachi Travelstar C4K60 Hard Disk Drives** *Scope and content*: Hitachi Travelstar C4K60 with a storage capacity of 60GB, 4200RPM. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-093 2274950	**Item - Quantum Hard Disk** *Scope and content*: It has a storage capacity of 40 Mb. *Restrictions on access*: Public	1987	Object
CERN-OBJ-CERN-OBJ-IT-094 2274951	**Item - Rodime Hard Drive** *Scope and content*: It has a storage capacity of 200 Mb. *Restrictions on access*: Public	1992	Object

CERN-OBJ-CERN-OBJ-IT-095 2274962	**Item - A Diode Matrix model M792** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-096 2274963	**Item - Cern DD4424 ROM Diode Matrix** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-097 2274968	**Item - DEC Digital PDP11 H214 8KX16 Planar Core Memory** *Scope and content*: Digital Equipment Corporation (DEC) introduced the PDP 11 line of computers in 1970. *Restrictions on access*: Public	1972	Object
CERN-OBJ-CERN-OBJ-IT-098 2275036	**Item - 6250 BPI IBM reduce version 3.3** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	1988	Object
CERN-OBJ-CERN-OBJ-IT-099 2275044	**Item - Newtronics Co. LTD Floppy Drive 0705449 D359T6** *Scope and content*: There is a floppy disk on it. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-100 2275052	**Item - Intel Core 2 Duo Processor E6600**		Object

	Scope and content: This processor relies on two key points: maximum performance and minimum heat output. 4M Cache ; frequency 2.40 GHz ; 1066 MHz FSB *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-101 2275057	**Item - IBM 4 Gbyte Hard Disk** *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-102 2275072	**Item - Control Data Floppy Disk** *Scope and content*: 8-inch floppy diskettes of the 70's and 80's. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-103 2275078	**Item - Seagate ST-225 Hard Drive** *Scope and content*: This hard drive was developed by Seagate in 1984, and had a capacity of 20 MB. It was the single most common 20MB drive ever to be produced. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-104 2275083	**Item - IBM 3000 Information Recorder I** *Scope and content*: The IBM 3000 is an information recorder which was used for data collection. The data were collected by being punched directly onto IBM cards. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-105 2275167	**Item - HP ProCurve J8694A 3500yl/6200yl Switch Module** *Restrictions on access*: Public	2005	Object
CERN-OBJ-CERN-OBJ-IT-106 2275217	**Item - CDC 3300 Timing Disk** *Scope and content*: It's a timing disc from the CDC 3300 computer. This computer was released in 1965. Moreover CDC means Control Data Corporation. *Restrictions on access*:		Object

	Public		
CERN-OBJ-IT-107	**Item - CDC 6600 VAXBARN Logic Board** CERN-OBJ-2275219 *Restrictions on access*: Public	1964	Object
CERN-OBJ-IT-108	**Item - System Software 7 Macintosh** CERN-OBJ-2277607 *Scope and content*: System 7 is a single-user graphical user interface-based operating system for Macintosh computers and was part of the classic Mac OS line of operating systems. It was introduced on May 13, 1991, by Apple Computer. It succeeded System 6, and was the main Macintosh operating system until it was succeeded by Mac OS 8 in 1997. Features added with the System 7 release included virtual memory, personal file sharing, QuickTime, QuickDraw 3D, and an improved user interface. This is the first real major evolution of the Macintosh system, bringing a significant improvement in the user interface, improved stability and many new features such as the ability to use multiple applications at the same time. "System 7" is the last operating system name of the Macintosh that contains the word "system". Macintosh operating systems were later called "Mac OS" (for Macintosh Operating System). *Restrictions on access*: Public	1991	Object
CERN-OBJ-IT-109	**Item - NextStation Color** CERN-OBJ-2277608 *Scope and content*: Steve Jobs created a NeXT generation operating system. The NeXTstation provides functionality that other computers are just providing today.The NS Color I/O cable attaches to the back of the computer on one end and on the other end the cable is split to connect to the display and the Sound Box. The Sound Box also has a keyboard signal port. Like a MAC or SUN of the same vintage, the mouse connects to the keyboard. These boxes run NEXTSTEP, which a full object-oriented OS. It has UNIX as a base and provides a gorgeous graphical interface. NEXTSTEP was also available for other platforms. They tend to run a little slow. But they have great digital sound and full color displays. *Restrictions on access*: Public		Object
CERN-OBJ-IT-110	**Item - Vectronic's Power Macintosh G3 (B & W)** CERN-OBJ-2277609 *Scope and content*: Apple introduced the Power Macintosh G3 Blue and White (B & W) on January 5, 1999. The Power Macintosh G3 line stayed in production until August 1999, and was replaced by the Power Macintosh G4, which used the same chassis. The Power Macintosh G3 originally cost between $1599 and $2900 depending on options. The three original Power Macintosh G3 models shipped with a 300 MHz, 350 MHz, or 400 MHz PowerPC 750 (G3) processor. Just pull on the small round handle on the side of the tower, and the entire side of the computer opens up. The G3's motherboard is mounted on that surface, giving you easy access for upgrading RAM or installed PCI cards. Apple added new ports (USB and the much-anticipated FireWire) that took the place of historic, and quickly becoming antiquated, Mac serial (printer and modem) ports. The Power Macintosh G3 has two USB (12 Mbps) ports, two FireWire (400 Mbps) ports, one 10/100BaseT Ethernet port, an RJ-11 jack for an optional 56K modem, a sound out and sound in jack, and one ADB (Apple Desktop Bus) port. The maximum RAM for the G3 is 1 GB.	1999	Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-111 2277694	**Item - Macintosh Plus**	1986	Object
	Scope and content: Apple introduced the Macintosh Plus on January 16, 1986. The Macintosh Plus has an 8 MHz 68000 processor and an internal 800K floppy disk drive. It supports up to 4 MB of RAM. The Plus is a significant improvement over the previous compact Macs primarily due to the addition of the SCSI bus. Previous Macs did not have SCSI, thus making it more difficult to find a suitable external hard drive able to connect through the drive port, the printer port, or the modem port. These drives are considerably slower (as much as 4 times slower) than external SCSI hard drives. The Macintosh Plus is a very important computer in the history of the Apple Computers. It set up many of the standards that Apple followed for over a decade going forward. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-112 2277708	**Item - IMac G4/800 (Flat Panel)**	2002	Object
	Scope and content: Apple introduced the iMac G4/800 on January 7, 2002. The total cost was about $2000 (base price of $1799 plus RAM upgrade). The iMac G4/800 has an 800 MHz G4 processor. The G4/800 has the following ports: three USB 1.1 ports, two Fire Wire 400-Mbps ports, one RJ-45, 10/100BASE-T Ethernet port, one RJ-11 56K V.90 modem port, one Mini-VGA output port, one speaker jack, and one headphone jack. There is a built in microphone set on the front of the monitor in the bottom left corner. There is a single internal SuperDrive capable of reading and writing CDs and DVDs. The disk drive is on the front of the computer. It opens by pushing the disk drive button on the iMac's keyboard. The monitor size is 15 inches. The G4/800 has a NVIDIA GeForce2 MX graphics processor with AGP 2X support that provides 32 MB of dedicated Double Data Rate (DDR) video memory. Native resolution is 1024 x 768, but the built in monitor is also capable of 640 x 480 and 800 x 600. RAM can be changed by removing a panel on the bottom of the chassis. This iMac is AirPort ready but does not have an AirPort Card installed. The internal hard drive is 60 GB. The G4/800 has a small internal speaker. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-113 2277709	**Item - Weston Standard battery**		Object
	Scope and content: This is a Weston AOIP standard battery with its calibration certificate (1956). Inside, the glassware forms an "H". Its name comes from the British physicist Edward Weston. A standard is the materialization of a given quantity whose value is known with great accuracy. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-114 2277763	**Item - PM 3655 PHILIPS Logic analyzer**		Object
	Scope and content: A logic analyzer is an electronic instrument that captures and displays multiple signals from a digital system or digital circuit. A logic analyzer may convert the captured data into timing diagrams, protocol		

	decodes, state machine traces, assembly language, or may correlate assembly with source-level software. Logic Analyzers have advanced triggering capabilities, and are useful when a user needs to see the timing relationships between many signals in a digital system. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-115 2279933	**Item - Philips LTC 2009/51**	1999	Object
	Scope and content: It was part of a range of high-performance monitors (computers screens) that were associated with other units such as Philip's video surveillance systems, cameras or transmission and control equipment. Included in this range of Philips monitors are LTC 2009 (like this one), LTC 2012, LTC 2017 and LTC 2020 Series monochrome monitors. They offer high-performance images with a resolution of 900 TVL (TV-Lines), or in the case of the LTC 2017 monitor, 700 TVL, making them ideal for remote viewing and video applications. The monitor housing consists of a robust rectangular metal case which minimizes interference from external signals and allows "stacking" of monitors when used in large numbers. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-116 2279959	**Item - CHT, CERN HIPPI Testbox**	1990	Object
	Scope and content: To allow CERN to test and maintain HIPPI equipment (High Performance Parallel Interface), a powerful test falcility is required. A tester has been developed at Los Alamos National Laboratories [9,10]. The CERN HIPPI testbox allows testing of HIPPI equipment both inside and outside the specifications. This includes the possibility of deliberately introducing errors. The main features of this testbox are: Manual set-up Processor controlled set-up Possibilities for remote analysis Checking the HIPPI specifications Checking illegal conditions *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-117 2279960	**Item - IBM model M keyboard**	1985	Object
	Scope and content: In 1985, the IBM Model M keyboard was created. This timeless classic was a hit. IBM came out with several varients of the model M. They had the space saver 104 key which is the one most seen today and many international versions of that as well. The second type, and rarest is the 122 key model M which has 24 extra keys at the very top, dubbed the "programmers keyboard". IBM manufactured these keyboards until 1991. The model M features "caps" over the actual keys that can be taken off separately one at a time for cleaning or to replace them with colored keys or keys of another language, that was a very cost effective way of shipping out internationally the keyboards. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-118 2280048	**Item - IBM 5150 computer**	1981	Object
	Scope and content: IBM's first personal computer arrived nearly 10 years after others companies, but instantly legitimized the market. IBM introduced its PC in 1981. IBM equipped the model 5150 with a cassette port for		

	connecting a cassette drive. The first IBM PC ran on a 4.77 MHz Intel 8088 microprocessor. The PC came equipped with 16 kilobytes of memory, expandable to 256k. The PC came with one or two 160k floppy disk drives and an optional color monitor. The price tag started at $1,565, which would be nearly $4,000 (about €3,400) today. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-119 2280057	**Item - HP 2671G GRAPHICS**	1981	Object
	Scope and content: The 2671 was a text-only printer with a maximum print speed of 120 characters per second. The 2671 printers are very robust. For paper, they use normal thermal roll paper sold in most office supply stores for older fax machines. Although thermal printing is a quiet technology, the paper advance mechanism of these printers is plenty loud. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-037 2273523	**Item - 8-inch IBM floppy disk**	1971	Object
	Scope and content: The 8-inch floppy disk was a magnetic storage disk for the data introduced commercially by IBM in 1971. It was designed by an IBM team as an inexpensive way to load data into the IBM System / 370. Plus it was a read-only bare disk containing 80 KB of data. The first read-write version was introduced in 1972 by Memorex and could contain 175 KB on 50 tracks (with 8 sectors per track). Other improvements have led to various coatings and increased capacities. Finally, it was surpassed by the mini diskette of 5.25 inches introduced in 1976. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-038 2273531	**Item - The Imation 9840 Tape Cartridge**		Object
	Scope and content: It’s a 20 GB uncompressed center-load cartridge used in StorageTek T9840 tape drives. The tape is a Metal Particle (MP) tape suitable for use on all Oracle/Sun/StorageTek 9840 A, B, C and D drives. The 9840 tape has an archival life of 15-30 years. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-039 2273541	**Item - Sony D-Eight**	1987	Object
	Scope and content: The 8mm backup format is a format for storing magnetic tape data used in computer systems, launched by Exabyte Corporation. It is also known as Data8, often abbreviated to D8 and writes D-Eight on some Sony brand media. The company was formed in order to take the 8 mm video format and make it suitable for data storage. They did this by building a mechanism and a reliable data format that used the common 8 mm video tape technology that was available at the time. This was the first form of helical scanning used commercially for data storage. The ribbon was made vertically and has a length of 112 meters. It was designed to withstand heat and high temperatures. It has been introduced in at CERN in 1994.		

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-040 2273680	**Item - Western Digital Caviar 31200**		Object
	Scope and content: Western Digital hard drive. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-041 2273691	**Item - StorageTek RedWood SD-3 tape drive**	1995	Object
	Scope and content: A helical scan recording drive, with a high-speed rotating head sweeping across the tape every few micrometers. Based on a professional video recording system, modified to be suitable for digital data recording. These are commonly used with large computer systems, typically in conjunction with a robotic tape library. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-042 2273694	**Item - IBM 3480 tape cartridge**	1984	Object
	Scope and content: The 3480 tape format is a magnetic tape data storage format developed by IBM. The cartridge contains a single reel. IBM's 3480 cartridge tape system sought to replace the traditional reels of magnetic tape in the computer center. Because of their speed, reliability, durability and low media cost, these tapes and tape drives are still in high demand. A hallmark of the genre is transferability. Tapes recorded with one tape drive are generally readable on another drive, even if the tape drives were built by different manufacturers. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-043 2273698	**Item - Sun Ultra 5**	1998	Object
	Scope and content: The Sun Ultra 5 is a 64-bit personal computer based on the UltraSPARC microprocessor line at a low price. The Ultra 5 has been declined in several variants: thus, some models have a processor with less cache memory to further decrease the price of the computer. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-044 2273800	**Item - 6250 BPI Magnetic Tape**		Object
	Scope and content: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*:		

	Public		
CERN-OBJ-CERN-OBJ-IT-045 2273804	**Item - IBM WDI-325Q 21MB Hard Drive** *Scope and content*: Size : 20 Mb *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-046 2273838	**Item - Acoustic Coupler Modem** *Scope and content*: It's an acoustic coupler modem 300 bit/s from the 1970s. It is attaches to an ordinary telephone handset. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-047 2273906	**Item - Graham Magnetics EPOCH 480 Magnetic Reel Tape** *Scope and content*: This media disk, used for stored audio and visual information, has a stronger binding system than the tape and can last a million uses. *Restrictions on access*: Public	1970-1979	Object
CERN-OBJ-CERN-OBJ-IT-048 2273915	**Item - Scotch 777 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-049 2273920	**Item - CERNET High Speed Data Link** *Scope and content*: This card, based on a "4 slot DEC module", arbitrated the access priority of 15 datalinks of a CERNET node. Each datalinks could transfer data full duplex at 2.5 Mbit/sec over 1 Km of twisted pair (POD) cable. This was the frontier technology in 1980. The modest amount of integrated circuits was compensated by printing on the board photographs of the hardware designers, whose Belgian, Dutch and French nationality was underlined by the the short poem. *Restrictions on access*: Public	1975	Object
CERN-OBJ-CERN-OBJ-IT-050 2273923	**Item - Intel 10 Gbit/s Network Card** *Scope and content*:		Object

	One of the first Intel 10 Gbit/s Network Card (long-range 10 km lasers). *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-051 2273932	**Item - Paper Punch Tape** Object *Scope and content*: Physicists coded and recorded their programs through series of holes on punch paper tape or on punched cards. It was popular in the 1970s due to its high throughput speed and low cost, paper tape was one of the original data storage methods for computers. Information was encoded in the distinct pattern of holes punched in the paper; the paper itself was oiled to facilitate being run through the reading mechanism and to prevent tears due to brittleness. Though the paper was cheap, it had low storage capacity (only a few dozen kilobytes per roll) and the machinery involved in punching the holes was quite expensive. Higher capacity alternatives, such as magnetic tape, has get developped. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-052 2273938	**Item - Computer Data Punch Cards** 1970-1979 Object *Scope and content*: Those card are printed with minimal layout aids for the formatting of FORTRAN programs, plus extra guidelines every ten columns suggesting a generic tabular data layout. A punch card is a piece of stiff paper that can be used to contain digital information represented by the presence or absence of holes in predefined positions. Punched cards were used for specialized unit record machines, organized into semiautomatic data processing systems, used punched cards for data input, output, and storage. Furthermore many new digital computers started to used punched cards. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-053 2273948	**Item - StorageTek T10000 Data Cartridge** Object *Scope and content*: This data cartridge works on several StorageTek systems. The goal is to provide cartridge compatibility across several system. It has been designed for space saving and ultra-high capacity tape. It permit to fulfill high-volume backup, archiving, and disaster recovery. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-054 2273956	**Item - Sun StorageTek T9940 Tape Drive** 2002 Object *Scope and content*: Technology allowed reuse of the same data cartridge at higher capacity with later model of the tape drive hence offering significant savings of the media cost. It has been use by the CERN from 2002 to 2008. *Restrictions on access*: Public

CERN-OBJ-CERN-OBJ-IT-055 2273963	**Item - SONY SD1-1300L**	1995	Object
	Scope and content: Cartridge used in the SONY DMS-24 automated tape library system installed at CERN in 1995 and still in use by the NA49 experiment. Tape length is 1300 m with 100 GB storage capacity. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-056 2273973	**Item - IBM 3480**	1985	Object
	Scope and content: Introduced at CERN in 1985. It has a storage capacity of 200 MB *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-057 2273977	**Item - DLT 2000 (CompactTape III)**	1994	Object
	Scope and content: It has been introduced at CERN in 1994 and used until recently in the DEC TL820 robot. It has a capacity of 10 GB and 1.25 MB/s. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-058 2273991	**Item - Power Macintosh 7300/166**	1997	Object
	Scope and content: The Power Macintosh 7300 was released in 1997 and was the same case as the Power Macintosh 7600. Its main evolution is that it was equipped with a faster processor. It also had a bigger hard drive (2 GB) and a faster CD-ROM drive (12x to 8x). In return, Apple chose to remove the audiovisual connections that were present on all its predecessors of the range 7x00. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-059 2273994	**Item - 32 Word ROM Memory for a PDP 11 (Circa 1971)**	1971	Object
	Scope and content: It occupies a quad-width, double-height flipchip board you can visually read off its contents (presence or absence of diodes). In its time it represented a giant leap forward since you no longer had to toggle the bootstrap in on the frontpanel switches. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-060 2273997	**Item - Intel Quad Core Processor**		Object
	Scope and content:		

	Intel quad core processor in its casing and mounted with copper heats sink on a motherboard. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-061 2274072	**Item - Iomega ZIP 250** *Scope and content*: It's a 250 MB External Zip Disk Drive Portable *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-062 2274075	**Item - CDC Cyber Series** *Restrictions on access*: Public	1960-1969	Object
CERN-OBJ-CERN-OBJ-IT-063 2274081	**Item - Quicksilver Power Mac G4** *Scope and content*: A new generation with a reworked motherboard is launched on 2001 with however the same Graphite box. It also included a processor speed-bump, and brought the DVD-R "SuperDrive" to the mid-level model. The Quicksilver PowerMac was available in three configurations: The 733 MHz model, with 128 MB of RAM, a 40 GB hard drive, and a CD-RW drive, was 1,699 dollars, the 867 MHz configuration, with 128 MB of RAM, a 60 GB hard drive and a DVD-R drive, was 2,499 dollars, and the high-end dual-800 MHz model, with 256 MB of RAM, an 80 GB hard drive and a DVD-R drive, was 3,499 dollars. The 733 MHz model is the first personal computer to have a DVD burner, named SuperDrive at Apple. The design was updated on 2002 with 800 MHz, 933 MHz and dual 1 GHz configurations, becoming the first Mac to reach 1 GHz. *Restrictions on access*: Public	2001	Object
CERN-OBJ-CERN-OBJ-IT-064 2274088	**Item - Seagate Medalist ST38641A IDE Hard Drive** *Scope and content*: This hard drive has got a capacity of 8,6 Gb. *Restrictions on access*: Public	1998	Object
CERN-OBJ-CERN-OBJ-IT-065 2274092	**Item - Storagetek 411225803** *Scope and content*: It's a hand gripper assembly with camera for 9310. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-066 2274098	**Item - IBM 3090 TCM CPU**		Object
	Scope and content: This is a Thermal Conduction Module from an IBM 3090. This is a water cooled unit that holds loads of chips. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-067 2274102	**Item - Display Apple M7649Zm**	2001	Object
	Scope and content: It was Designed for the Power Mac G4. This Apple studio display gives you edge-to-edge distortion-free images. With more than 16.7 million colors and 1,280 x 1,024 dpi resolution, you view brilliant and bright images on this Apple 17-inch monitor. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-068 2274118	**Item - IBM 3380 E**	1985	Object
	Scope and content: In 1985 IBM announced a double density version. The Extended Capability Models of the 3380 (3380 E) having 5.04 gigabytes per chassis, that is, two 1.26 gigabyte actuators on two hard disk assemblies in one chassis. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-069 2274385	**Item - Olivetti M6 640**	1993	Object
	Scope and content: The M6-640 is the highest performance personal computer workstation in the Suprema range with multimedia, document imaging and communications capabilities. It has a 90MHz Pentium processor with 256Kb of secondary cache. It can accommodate up to 128Mb RAM and supports hard disks of up to 1Gb through an IDE interface. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-070 2274387	**Item - M-Office DW 500 Typewriter**		Object
	Scope and content: It's the M-Office DW 500 Typewriter. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-071 2274393	**Item - IBM Storage Disk**		Object

	Scope and content: IBM storage disk used in the 70s and 80s. This stack of eight 35 cm disks weighs more than 10 Kg, and can store 320 Megabytes or 34 minutes of music *Restrictions on access*: Public	
CERN-OBJ-CERN-OBJ-IT-072 2274398	**Item - Disk Interface 3380** *Scope and content*: Disk Interface for a disk cabinet. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-073 2274400	**Item - Olivetti OPE XM 5220/2** *Scope and content*: MFM Hard Drive. (Type of hard disk used in XT computers) *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-074 2274411	**Item - Bus and Tag Terminators for IBM system/360** *Scope and content*: Control units were connected to the channels with "Bus and Tag" cable pairs. The bus cables carried the address and data information and the tag cables identified what data was on the bus. There were three general types of bus-and-tag cables produced by IBM. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-075 2274412	**Item - Western Digital Hard Drive** *Scope and content*: MFM Hard Drive with a capacity of 20 Mb. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-076 2274414	**Item - 6250 BPI Magnetic Tape Olivetti** *Scope and content*: BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-077 2274420	**Item - RPS Micro Diskette**	Object

	Scope and content: Small flexible plastic disk covered with a magnetic substance used to record data and computer programs. They can normally contain 1.44 MB of data and they are convenient for moving small amounts of data as they are transportable. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-078 2274422	**Item - Port Switch** *Scope and content*: It's a 48 x 1 Gbit/s port switch with 10 Gbit/s optical uplink connection. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-079 2274589	**Item - Amdahl 470 Chip Package** *Scope and content*: In the late 70s the larger IBM computers were water cooled. Amdahl, an IBM competitor, invented an air cooling technology for it's computers. His company worked hard, developing a computer that was faster and less expensive than the IBM System/360 mainframe computer systems. This object contains an actual Amdahl series 470 computer logic chip with an air cooling device mounted on top. The package leads and cooling tower are gold-plated. *Restrictions on access*: Public	1975	Object
CERN-OBJ-CERN-OBJ-IT-080 2274594	**Item - Multi-Core Itanium Processor** *Scope and content*: First Multi-Core Itanium processor. It has 1,7 billion transistors and 24 MB on die-cache. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-081 2274603	**Item - Dual-core Itanium Processor** *Scope and content*: Intel’s first dual-core Itanium processor, code-named "Montecito" is a major release of Intel's Itanium 2 Processor Family, which implements the Intel Itanium architecture on a dual-core processor with two cores per die (integrated circuit). Itanium 2 is much more powerful than its predecessor. It has lower power consumption and thermal dissipation. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-082 2274619	**Item - CDC 7600 module slice** *Scope and content*:		Object

	Each module contained 8 circuit cards for a total of about 300-500 uncovered transistors packaged with face plates so the Freon plates wouldn't touch the circuits. (cooling plates that surrounded each module). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-083 2274621	**Item - Single Platter of a CDC 7638 Disk Drive** *Scope and content*: This large 7638 disk on the CDC 7600 is primarily used as a sort of « paging store » for tape files and permanent files staged over from the front-end CDC6500. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-IT-084 2274733	**Item - Wafer of Intel Pentium 4 Prescott Chips** *Scope and content*: Silicon wafer with hundreds of Penryn cores (microprocessor). There are around four times as many Prescott chips can be made per wafer than with the previous generation of Northwood-core Pentium 4 processors. It is faster and cheaper. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-085 2274743	**Item - 3M No. 700 Black Watch 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-086 2274745	**Item - Disque PC IDE** *Scope and content*: It's a disque PC IDE 850 Mbytes. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-087 2274753	**Item - SRAM chip** *Scope and content*: It has a capacity of 1 Mb. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-088 2274772	**Item - Fuji Toshiba 360K 5.25 Internal Floppy Drive FDD**		Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-089 2274914	**Item - CDC Cyber Series Electronic Plate** *Restrictions on access*: Public	1965-1970	Object
CERN-OBJ-CERN-OBJ-IT-090 2274921	**Item - Sony 40 MB Vintage Hard Drive** *Restrictions on access*: Public	1990	Object
CERN-OBJ-CERN-OBJ-IT-091 2274939	**Item - Cable 18000 Volt** *Scope and content*: Capacity of this cable : 15 MVA / 13,5 MW / 450 Ampères. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-092 2274946	**Item - Hitachi Travelstar C4K60 Hard Disk Drives** *Scope and content*: Hitachi Travelstar C4K60 with a storage capacity of 60GB, 4200RPM. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-093 2274950	**Item - Quantum Hard Disk** *Scope and content*: It has a storage capacity of 40 Mb. *Restrictions on access*: Public	1987	Object
CERN-OBJ-CERN-OBJ-IT-094 2274951	**Item - Rodime Hard Drive** *Scope and content*: It has a storage capacity of 200 Mb. *Restrictions on access*: Public	1992	Object
CERN-OBJ-CERN-OBJ-IT-095 2274962	**Item - A Diode Matrix model M792** *Scope and content*:		Object

	A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-096 2274963	**Item - Cern DD4424 ROM Diode Matrix** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-097 2274968	**Item - DEC Digital PDP11 H214 8KX16 Planar Core Memory** *Scope and content*: Digital Equipment Corporation (DEC) introduced the PDP 11 line of computers in 1970. *Restrictions on access*: Public	1972	Object
CERN-OBJ-CERN-OBJ-IT-098 2275036	**Item - 6250 BPI IBM reduce version 3.3** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	1988	Object
CERN-OBJ-CERN-OBJ-IT-099 2275044	**Item - Newtronics Co. LTD Floppy Drive 0705449 D359T6** *Scope and content*: There is a floppy disk on it. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-100 2275052	**Item - Intel Core 2 Duo Processor E6600** *Scope and content*: This processor relies on two key points: maximum performance and minimum heat output. 4M Cache ; frequency 2.40 GHz ; 1066 MHz FSB		Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-101 2275057	**Item - IBM 4 Gbyte Hard Disk** *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-102 2275072	**Item - Control Data Floppy Disk** *Scope and content*: 8-inch floppy diskettes of the 70's and 80's. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-103 2275078	**Item - Seagate ST-225 Hard Drive** *Scope and content*: This hard drive was developed by Seagate in 1984, and had a capacity of 20 MB. It was the single most common 20MB drive ever to be produced. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-104 2275083	**Item - IBM 3000 Information Recorder I** *Scope and content*: The IBM 3000 is an information recorder which was used for data collection. The data were collected by being punched directly onto IBM cards. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-105 2275167	**Item - HP ProCurve J8694A 3500yl/6200yl Switch Module** *Restrictions on access*: Public	2005	Object
CERN-OBJ-CERN-OBJ-IT-106 2275217	**Item - CDC 3300 Timing Disk** *Scope and content*: It's a timing disc from the CDC 3300 computer. This computer was released in 1965. Moreover CDC means Control Data Corporation. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-107 2275219	**Item - CDC 6600 VAXBARN Logic Board**	1964	Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-108 2277607	**Item - System Software 7 Macintosh** *Scope and content*: System 7 is a single-user graphical user interface-based operating system for Macintosh computers and was part of the classic Mac OS line of operating systems. It was introduced on May 13, 1991, by Apple Computer. It succeeded System 6, and was the main Macintosh operating system until it was succeeded by Mac OS 8 in 1997. Features added with the System 7 release included virtual memory, personal file sharing, QuickTime, QuickDraw 3D, and an improved user interface. This is the first real major evolution of the Macintosh system, bringing a significant improvement in the user interface, improved stability and many new features such as the ability to use multiple applications at the same time. "System 7" is the last operating system name of the Macintosh that contains the word "system". Macintosh operating systems were later called "Mac OS" (for Macintosh Operating System). *Restrictions on access*: Public	1991	Object
CERN-OBJ-CERN-OBJ-IT-109 2277608	**Item - NextStation Color** *Scope and content*: Steve Jobs created a NeXT generation operating system. The NeXTstation provides functionality that other computers are just providing today.The NS Color I/O cable attaches to the back of the computer on one end and on the other end the cable is split to connect to the display and the Sound Box. The Sound Box also has a keyboard signal port. Like a MAC or SUN of the same vintage, the mouse connects to the keyboard. These boxes run NEXTSTEP, which a full object-oriented OS. It has UNIX as a base and provides a gorgeous graphical interface. NEXTSTEP was also available for other platforms. They tend to run a little slow. But they have great digital sound and full color displays. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-110 2277609	**Item - Vectronic's Power Macintosh G3 (B & W)** *Scope and content*: Apple introduced the Power Macintosh G3 Blue and White (B & W) on January 5, 1999. The Power Macintosh G3 line stayed in production until August 1999, and was replaced by the Power Macintosh G4, which used the same chassis. The Power Macintosh G3 originally cost between $1599 and $2900 depending on options. The three original Power Macintosh G3 models shipped with a 300 MHz, 350 MHz, or 400 MHz PowerPC 750 (G3) processor. Just pull on the small round handle on the side of the tower, and the entire side of the computer opens up. The G3's motherboard is mounted on that surface, giving you easy access for upgrading RAM or installed PCI cards. Apple added new ports (USB and the much-anticipated FireWire) that took the place of historic, and quickly becoming antiquated, Mac serial (printer and modem) ports. The Power Macintosh G3 has two USB (12 Mbps) ports, two FireWire (400 Mbps) ports, one 10/100BaseT Ethernet port, an RJ-11 jack for an optional 56K modem, a sound out and sound in jack, and one ADB (Apple Desktop Bus) port. The maximum RAM for the G3 is 1 GB. *Restrictions on access*: Public	1999	Object

CERN-OBJ-CERN-OBJ-IT-111 2277694	**Item - Macintosh Plus**	1986	Object
	Scope and content: Apple introduced the Macintosh Plus on January 16, 1986. The Macintosh Plus has an 8 MHz 68000 processor and an internal 800K floppy disk drive. It supports up to 4 MB of RAM. The Plus is a significant improvement over the previous compact Macs primarily due to the addition of the SCSI bus. Previous Macs did not have SCSI, thus making it more difficult to find a suitable external hard drive able to connect through the drive port, the printer port, or the modem port. These drives are considerably slower (as much as 4 times slower) than external SCSI hard drives. The Macintosh Plus is a very important computer in the history of the Apple Computers. It set up many of the standards that Apple followed for over a decade going forward. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-112 2277708	**Item - IMac G4/800 (Flat Panel)**	2002	Object
	Scope and content: Apple introduced the iMac G4/800 on January 7, 2002. The total cost was about $2000 (base price of $1799 plus RAM upgrade). The iMac G4/800 has an 800 MHz G4 processor. The G4/800 has the following ports: three USB 1.1 ports, two Fire Wire 400-Mbps ports, one RJ-45, 10/100BASE-T Ethernet port, one RJ-11 56K V.90 modem port, one Mini-VGA output port, one speaker jack, and one headphone jack. There is a built in microphone set on the front of the monitor in the bottom left corner. There is a single internal SuperDrive capable of reading and writing CDs and DVDs. The disk drive is on the front of the computer. It opens by pushing the disk drive button on the iMac's keyboard. The monitor size is 15 inches. The G4/800 has a NVIDIA GeForce2 MX graphics processor with AGP 2X support that provides 32 MB of dedicated Double Data Rate (DDR) video memory. Native resolution is 1024 x 768, but the built in monitor is also capable of 640 x 480 and 800 x 600. RAM can be changed by removing a panel on the bottom of the chassis. This iMac is AirPort ready but does not have an AirPort Card installed. The internal hard drive is 60 GB. The G4/800 has a small internal speaker. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-113 2277709	**Item - Weston Standard battery**		Object
	Scope and content: This is a Weston AOIP standard battery with its calibration certificate (1956). Inside, the glassware forms an "H". Its name comes from the British physicist Edward Weston. A standard is the materialization of a given quantity whose value is known with great accuracy. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-114 2277763	**Item - PM 3655 PHILIPS Logic analyzer**		Object
	Scope and content: A logic analyzer is an electronic instrument that captures and displays multiple signals from a digital system or digital circuit. A logic analyzer may convert the captured data into timing diagrams, protocol decodes, state machine traces, assembly language, or may correlate assembly with source-level software. Logic Analyzers have advanced triggering capabilities, and are useful when a user needs to see the timing relationships between many signals in a digital system.		

	Restrictions on access: Public
CERN-OBJ-CERN-OBJ-IT-115 2279933	**Item - Philips LTC 2009/51** 1999 Object *Scope and content*: It was part of a range of high-performance monitors (computers screens) that were associated with other units such as Philip's video surveillance systems, cameras or transmission and control equipment. Included in this range of Philips monitors are LTC 2009 (like this one), LTC 2012, LTC 2017 and LTC 2020 Series monochrome monitors. They offer high-performance images with a resolution of 900 TVL (TV-Lines), or in the case of the LTC 2017 monitor, 700 TVL, making them ideal for remote viewing and video applications. The monitor housing consists of a robust rectangular metal case which minimizes interference from external signals and allows “stacking” of monitors when used in large numbers. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-116 2279959	**Item - CHT, CERN HIPPI Testbox** 1990 Object *Scope and content*: To allow CERN to test and maintain HIPPI equipment (High Performance Parallel Interface), a powerful test falcility is required. A tester has been developed at Los Alamos National Laboratories [9,10]. The CERN HIPPI testbox allows testing of HIPPI equipment both inside and outside the specifications. This includes the possibility of deliberately introducing errors. The main features of this testbox are: Manual set-up Processor controlled set-up Possibilities for remote analysis Checking the HIPPI specifications Checking illegal conditions *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-117 2279960	**Item - IBM model M keyboard** 1985 Object *Scope and content*: In 1985, the IBM Model M keyboard was created. This timeless classic was a hit. IBM came out with several varients of the model M. They had the space saver 104 key which is the one most seen today and many international versions of that as well. The second type, and rarest is the 122 key model M which has 24 extra keys at the very top, dubbed the “programmers keyboard”. IBM manufactured these keyboards until 1991. The model M features “caps” over the actual keys that can be taken off separately one at a time for cleaning or to replace them with colored keys or keys of another language, that was a very cost effective way of shipping out internationally the keyboards. *Restrictions on access*: Public
CERN-OBJ-CERN-OBJ-IT-118 2280048	**Item - IBM 5150 computer** 1981 Object *Scope and content*: IBM’s first personal computer arrived nearly 10 years after others companies, but instantly legitimized the market. IBM introduced its PC in 1981. IBM equipped the model 5150 with a cassette port for connecting a cassette drive. The first IBM PC ran on a 4.77 MHz Intel 8088 microprocessor. The PC came equipped with 16 kilobytes of memory, expandable to 256k. The PC came with one or two 160k

	floppy disk drives and an optional color monitor. The price tag started at $1,565, which would be nearly $4,000 (about €3,400) today. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-119 2280057	**Item - HP 2671G GRAPHICS** *Scope and content*: The 2671 was a text-only printer with a maximum print speed of 120 characters per second. The 2671 printers are very robust. For paper, they use normal thermal roll paper sold in most office supply stores for older fax machines. Although thermal printing is a quiet technology, the paper advance mechanism of these printers is plenty loud. *Restrictions on access*: Public	1981	Object
CERN-OBJ-CERN-OBJ-IT-037 2273523	**Item - 8-inch IBM floppy disk** *Scope and content*: The 8-inch floppy disk was a magnetic storage disk for the data introduced commercially by IBM in 1971. It was designed by an IBM team as an inexpensive way to load data into the IBM System / 370. Plus it was a read-only bare disk containing 80 KB of data. The first read-write version was introduced in 1972 by Memorex and could contain 175 KB on 50 tracks (with 8 sectors per track). Other improvements have led to various coatings and increased capacities. Finally, it was surpassed by the mini diskette of 5.25 inches introduced in 1976. *Restrictions on access*: Public	1971	Object
CERN-OBJ-CERN-OBJ-IT-038 2273531	**Item - The Imation 9840 Tape Cartridge** *Scope and content*: It’s a 20 GB uncompressed center-load cartridge used in StorageTek T9840 tape drives. The tape is a Metal Particle (MP) tape suitable for use on all Oracle/Sun/StorageTek 9840 A, B, C and D drives. The 9840 tape has an archival life of 15-30 years. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-039 2273541	**Item - Sony D-Eight** *Scope and content*: The 8mm backup format is a format for storing magnetic tape data used in computer systems, launched by Exabyte Corporation. It is also known as Data8, often abbreviated to D8 and writes D-Eight on some Sony brand media. The company was formed in order to take the 8 mm video format and make it suitable for data storage. They did this by building a mechanism and a reliable data format that used the common 8 mm video tape technology that was available at the time. This was the first form of helical scanning used commercially for data storage. The ribbon was made vertically and has a length of 112 meters. It was designed to withstand heat and high temperatures. It has been introduced in at CERN in 1994. *Restrictions on access*: Public	1987	Object

CERN-OBJ-CERN-OBJ-IT-040 2273680	**Item - Western Digital Caviar 31200**		Object
	Scope and content: Western Digital hard drive. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-041 2273691	**Item - StorageTek RedWood SD-3 tape drive**	1995	Object
	Scope and content: A helical scan recording drive, with a high-speed rotating head sweeping across the tape every few micrometers. Based on a professional video recording system, modified to be suitable for digital data recording. These are commonly used with large computer systems, typically in conjunction with a robotic tape library. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-042 2273694	**Item - IBM 3480 tape cartridge**	1984	Object
	Scope and content: The 3480 tape format is a magnetic tape data storage format developed by IBM. The cartridge contains a single reel. IBM’s 3480 cartridge tape system sought to replace the traditional reels of magnetic tape in the computer center. Because of their speed, reliability, durability and low media cost, these tapes and tape drives are still in high demand. A hallmark of the genre is transferability. Tapes recorded with one tape drive are generally readable on another drive, even if the tape drives were built by different manufacturers. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-043 2273698	**Item - Sun Ultra 5**	1998	Object
	Scope and content: The Sun Ultra 5 is a 64-bit personal computer based on the UltraSPARC microprocessor line at a low price. The Ultra 5 has been declined in several variants: thus, some models have a processor with less cache memory to further decrease the price of the computer. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-044 2273800	**Item - 6250 BPI Magnetic Tape**		Object
	Scope and content: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public		

CERN-OBJ-CERN-OBJ-IT-045 2273804	**Item - IBM WDI-325Q 21MB Hard Drive**		Object
	Scope and content: Size : 20 Mb *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-046 2273838	**Item - Acoustic Coupler Modem**		Object
	Scope and content: It's an acoustic coupler modem 300 bit/s from the 1970s. It is attaches to an ordinary telephone handset. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-047 2273906	**Item - Graham Magnetics EPOCH 480 Magnetic Reel Tape**	1970-1979	Object
	Scope and content: This media disk, used for stored audio and visual information, has a stronger binding system than the tape and can last a million uses. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-048 2273915	**Item - Scotch 777 6250 CPI**		Object
	Scope and content: 9-Track Tape Reel. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-049 2273920	**Item - CERNET High Speed Data Link**	1975	Object
	Scope and content: This card, based on a "4 slot DEC module", arbitrated the access priority of 15 datalinks of a CERNET node. Each datalinks could transfer data full duplex at 2.5 Mbit/sec over 1 Km of twisted pair (POD) cable. This was the frontier technology in 1980. The modest amount of integrated circuits was compensated by printing on the board photographs of the hardware designers, whose Belgian, Dutch and French nationality was underlined by the the short poem. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-050 2273923	**Item - Intel 10 Gbit/s Network Card**		Object
	Scope and content: One of the first Intel 10 Gbit/s Network Card (long-range 10 km lasers). *Restrictions on access*:		

	Public		
CERN-OBJ-CERN-OBJ-IT-051 2273932	**Item - Paper Punch Tape**		Object
	Scope and content: Physicists coded and recorded their programs through series of holes on punch paper tape or on punched cards. It was popular in the 1970s due to its high throughput speed and low cost, paper tape was one of the original data storage methods for computers. Information was encoded in the distinct pattern of holes punched in the paper; the paper itself was oiled to facilitate being run through the reading mechanism and to prevent tears due to brittleness. Though the paper was cheap, it had low storage capacity (only a few dozen kilobytes per roll) and the machinery involved in punching the holes was quite expensive. Higher capacity alternatives, such as magnetic tape, has get developped. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-052 2273938	**Item - Computer Data Punch Cards**	1970-1979	Object
	Scope and content: Those card are printed with minimal layout aids for the formatting of FORTRAN programs, plus extra guidelines every ten columns suggesting a generic tabular data layout. A punch card is a piece of stiff paper that can be used to contain digital information represented by the presence or absence of holes in predefined positions. Punched cards were used for specialized unit record machines, organized into semiautomatic data processing systems, used punched cards for data input, output, and storage. Furthermore many new digital computers started to used punched cards. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-053 2273948	**Item - StorageTek T10000 Data Cartridge**		Object
	Scope and content: This data cartridge works on several StorageTek systems. The goal is to provide cartridge compatibility across several system. It has been designed for space saving and ultra-high capacity tape. It permit to fulfill high-volume backup, archiving, and disaster recovery. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-054 2273956	**Item - Sun StorageTek T9940 Tape Drive**	2002	Object
	Scope and content: Technology allowed reuse of the same data cartridge at higher capacity with later model of the tape drive hence offering significant savings of the media cost. It has been use by the CERN from 2002 to 2008. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-055 2273963	**Item - SONY SD1-1300L**	1995	Object
	Scope and content:		

	Cartridge used in the SONY DMS-24 automated tape library system installed at CERN in 1995 and still in use by the NA49 experiment. Tape length is 1300 m with 100 GB storage capacity. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-056 2273973	**Item - IBM 3480** *Scope and content*: Introduced at CERN in 1985. It has a storage capacity of 200 MB *Restrictions on access*: Public	1985	Object
CERN-OBJ-CERN-OBJ-IT-057 2273977	**Item - DLT 2000 (CompactTape III)** *Scope and content*: It has been introduced at CERN in 1994 and used until recently in the DEC TL820 robot. It has a capacity of 10 GB and 1.25 MB/s. *Restrictions on access*: Public	1994	Object
CERN-OBJ-CERN-OBJ-IT-058 2273991	**Item - Power Macintosh 7300/166** *Scope and content*: The Power Macintosh 7300 was released in 1997 and was the same case as the Power Macintosh 7600. Its main evolution is that it was equipped with a faster processor. It also had a bigger hard drive (2 GB) and a faster CD-ROM drive (12x to 8x). In return, Apple chose to remove the audiovisual connections that were present on all its predecessors of the range 7x00. *Restrictions on access*: Public	1997	Object
CERN-OBJ-CERN-OBJ-IT-059 2273994	**Item - 32 Word ROM Memory for a PDP 11 (Circa 1971)** *Scope and content*: It occupies a quad-width, double-height flipchip board you can visually read off its contents (presence or absence of diodes). In its time it represented a giant leap forward since you no longer had to toggle the bootstrap in on the frontpanel switches. *Restrictions on access*: Public	1971	Object
CERN-OBJ-CERN-OBJ-IT-060 2273997	**Item - Intel Quad Core Processor** *Scope and content*: Intel quad core processor in its casing and mounted with copper heats sink on a motherboard. *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-061 2274072	**Item - Iomega ZIP 250** *Scope and content*: It's a 250 MB External Zip Disk Drive Portable *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-062 2274075	**Item - CDC Cyber Series** *Restrictions on access*: Public	1960-1969	Object
CERN-OBJ-CERN-OBJ-IT-063 2274081	**Item - Quicksilver Power Mac G4** *Scope and content*: A new generation with a reworked motherboard is launched on 2001 with however the same Graphite box. It also included a processor speed-bump, and brought the DVD-R "SuperDrive" to the mid-level model. The Quicksilver PowerMac was available in three configurations: The 733 MHz model, with 128 MB of RAM, a 40 GB hard drive, and a CD-RW drive, was 1,699 dollars, the 867 MHz configuration, with 128 MB of RAM, a 60 GB hard drive and a DVD-R drive, was 2,499 dollars, and the high-end dual-800 MHz model, with 256 MB of RAM, an 80 GB hard drive and a DVD-R drive, was 3,499 dollars. The 733 MHz model is the first personal computer to have a DVD burner, named SuperDrive at Apple. The design was updated on 2002 with 800 MHz, 933 MHz and dual 1 GHz configurations, becoming the first Mac to reach 1 GHz. *Restrictions on access*: Public	2001	Object
CERN-OBJ-CERN-OBJ-IT-064 2274088	**Item - Seagate Medalist ST38641A IDE Hard Drive** *Scope and content*: This hard drive has got a capacity of 8,6 Gb. *Restrictions on access*: Public	1998	Object
CERN-OBJ-CERN-OBJ-IT-065 2274092	**Item - Storagetek 411225803** *Scope and content*: It's a hand gripper assembly with camera for 9310. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-066 2274098	**Item - IBM 3090 TCM CPU** *Scope and content*:		Object

	This is a Thermal Conduction Module from an IBM 3090. This is a water cooled unit that holds loads of chips. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-067 2274102	**Item - Display Apple M7649Zm**	2001	Object
	Scope and content: It was Designed for the Power Mac G4. This Apple studio display gives you edge-to-edge distortion-free images. With more than 16.7 million colors and 1,280 x 1,024 dpi resolution, you view brilliant and bright images on this Apple 17-inch monitor. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-068 2274118	**Item - IBM 3380 E**	1985	Object
	Scope and content: In 1985 IBM announced a double density version. The Extended Capability Models of the 3380 (3380 E) having 5.04 gigabytes per chassis, that is, two 1.26 gigabyte actuators on two hard disk assemblies in one chassis. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-069 2274385	**Item - Olivetti M6 640**	1993	Object
	Scope and content: The M6-640 is the highest performance personal computer workstation in the Suprema range with multimedia, document imaging and communications capabilities. It has a 90MHz Pentium processor with 256Kb of secondary cache. It can accommodate up to 128Mb RAM and supports hard disks of up to 1Gb through an IDE interface. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-070 2274387	**Item - M-Office DW 500 Typewriter**		Object
	Scope and content: It's the M-Office DW 500 Typewriter. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-071 2274393	**Item - IBM Storage Disk**		Object
	Scope and content: IBM storage disk used in the 70s and 80s. This stack of eight 35 cm disks weighs more than 10 Kg, and can store 320 Megabytes or 34 minutes of music *Restrictions on access*:		

	Public	
CERN-OBJ-CERN-OBJ-IT-072 2274398	**Item - Disk Interface 3380** *Scope and content*: Disk Interface for a disk cabinet. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-073 2274400	**Item - Olivetti OPE XM 5220/2** *Scope and content*: MFM Hard Drive. (Type of hard disk used in XT computers) *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-074 2274411	**Item - Bus and Tag Terminators for IBM system/360** *Scope and content*: Control units were connected to the channels with "Bus and Tag" cable pairs. The bus cables carried the address and data information and the tag cables identified what data was on the bus. There were three general types of bus-and-tag cables produced by IBM. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-075 2274412	**Item - Western Digital Hard Drive** *Scope and content*: MFM Hard Drive with a capacity of 20 Mb. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-076 2274414	**Item - 6250 BPI Magnetic Tape Olivetti** *Scope and content*: BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	Object
CERN-OBJ-CERN-OBJ-IT-077 2274420	**Item - RPS Micro Diskette** *Scope and content*: Small flexible plastic disk covered with a magnetic substance used to record data and computer programs. They can normally contain 1.44 MB of data and they are convenient for moving small amounts of data as they are transportable.	Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-078 2274422	**Item - Port Switch** *Scope and content*: It's a 48 x 1 Gbit/s port switch with 10 Gbit/s optical uplink connection. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-079 2274589	**Item - Amdahl 470 Chip Package** *Scope and content*: In the late 70s the larger IBM computers were water cooled. Amdahl, an IBM competitor, invented an air cooling technology for it's computers. His company worked hard, developing a computer that was faster and less expensive than the IBM System/360 mainframe computer systems. This object contains an actual Amdahl series 470 computer logic chip with an air cooling device mounted on top. The package leads and cooling tower are gold-plated. *Restrictions on access*: Public	1975	Object
CERN-OBJ-CERN-OBJ-IT-080 2274594	**Item - Multi-Core Itanium Processor** *Scope and content*: First Multi-Core Itanium processor. It has 1,7 billion transistors and 24 MB on die-cache. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-081 2274603	**Item - Dual-core Itanium Processor** *Scope and content*: Intel’s first dual-core Itanium processor, code-named "Montecito" is a major release of Intel's Itanium 2 Processor Family, which implements the Intel Itanium architecture on a dual-core processor with two cores per die (integrated circuit). Itanium 2 is much more powerful than its predecessor. It has lower power consumption and thermal dissipation. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-082 2274619	**Item - CDC 7600 module slice** *Scope and content*: Each module contained 8 circuit cards for a total of about 300-500 uncovered transistors packaged with face plates so the Freon plates wouldn't touch the circuits. (cooling plates that surrounded each module). *Restrictions on access*: Public		Object

CERN-OBJ-CERN-OBJ-IT-083 2274621	**Item - Single Platter of a CDC 7638 Disk Drive** *Scope and content*: This large 7638 disk on the CDC 7600 is primarily used as a sort of « paging store » for tape files and permanent files staged over from the front-end CDC6500. *Restrictions on access*: Public	1974	Object
CERN-OBJ-CERN-OBJ-IT-084 2274733	**Item - Wafer of Intel Pentium 4 Prescott Chips** *Scope and content*: Silicon wafer with hundreds of Penryn cores (microprocessor). There are around four times as many Prescott chips can be made per wafer than with the previous generation of Northwood-core Pentium 4 processors. It is faster and cheaper. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-085 2274743	**Item - 3M No. 700 Black Watch 6250 CPI** *Scope and content*: 9-Track Tape Reel. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-086 2274745	**Item - Disque PC IDE** *Scope and content*: It's a disque PC IDE 850 Mbytes. *Restrictions on access*: Public	1995	Object
CERN-OBJ-CERN-OBJ-IT-087 2274753	**Item - SRAM chip** *Scope and content*: It has a capacity of 1 Mb. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-088 2274772	**Item - Fuji Toshiba 360K 5.25 Internal Floppy Drive FDD** *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-089 2274914	**Item - CDC Cyber Series Electronic Plate**	1965-1970	Object

	Restrictions on access: Public		
CERN-OBJ-CERN-OBJ-IT-090 2274921	**Item - Sony 40 MB Vintage Hard Drive** *Restrictions on access*: Public	1990	Object
CERN-OBJ-CERN-OBJ-IT-091 2274939	**Item - Cable 18000 Volt** *Scope and content*: Capacity of this cable : 15 MVA / 13,5 MW / 450 Ampères. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-092 2274946	**Item - Hitachi Travelstar C4K60 Hard Disk Drives** *Scope and content*: Hitachi Travelstar C4K60 with a storage capacity of 60GB, 4200RPM. *Restrictions on access*: Public	2006	Object
CERN-OBJ-CERN-OBJ-IT-093 2274950	**Item - Quantum Hard Disk** *Scope and content*: It has a storage capacity of 40 Mb. *Restrictions on access*: Public	1987	Object
CERN-OBJ-CERN-OBJ-IT-094 2274951	**Item - Rodime Hard Drive** *Scope and content*: It has a storage capacity of 200 Mb. *Restrictions on access*: Public	1992	Object
CERN-OBJ-CERN-OBJ-IT-095 2274962	**Item - A Diode Matrix model M792** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*:		Object

	Public		
CERN-OBJ-CERN-OBJ-IT-096 2274963	**Item - Cern DD4424 ROM Diode Matrix** *Scope and content*: A diode matrix is an extremely low-density form of read-only memory. It's one of the earliest forms of ROMs (dating back to the 1950s). Each bit in the ROM is represented by the presence or absence of one diode. The ROM is easily user-writable using a soldering iron and pair of wire cutters.This diode matrix board is a floppy disk boot ROM for a PDP-11, and consists of 32 16-bit words. When you access an address on the ROM, the circuit returns the represented data from that address. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-097 2274968	**Item - DEC Digital PDP11 H214 8KX16 Planar Core Memory** *Scope and content*: Digital Equipment Corporation (DEC) introduced the PDP 11 line of computers in 1970. *Restrictions on access*: Public	1972	Object
CERN-OBJ-CERN-OBJ-IT-098 2275036	**Item - 6250 BPI IBM reduce version 3.3** *Scope and content*: These are magnetic coil bands designed by IBM with 6250 BPI. BPI means bits per inch and specifies the data density a magnetic coil can hold. *Restrictions on access*: Public	1988	Object
CERN-OBJ-CERN-OBJ-IT-099 2275044	**Item - Newtronics Co. LTD Floppy Drive 0705449 D359T6** *Scope and content*: There is a floppy disk on it. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-100 2275052	**Item - Intel Core 2 Duo Processor E6600** *Scope and content*: This processor relies on two key points: maximum performance and minimum heat output. 4M Cache ; frequency 2.40 GHz ; 1066 MHz FSB *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-101 2275057	**Item - IBM 4 Gbyte Hard Disk** *Restrictions on access*:	1994	Object

	Public		
CERN-OBJ-CERN-OBJ-IT-102 2275072	**Item - Control Data Floppy Disk** *Scope and content*: 8-inch floppy diskettes of the 70's and 80's. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-103 2275078	**Item - Seagate ST-225 Hard Drive** *Scope and content*: This hard drive was developed by Seagate in 1984, and had a capacity of 20 MB. It was the single most common 20MB drive ever to be produced. *Restrictions on access*: Public	1984	Object
CERN-OBJ-CERN-OBJ-IT-104 2275083	**Item - IBM 3000 Information Recorder I** *Scope and content*: The IBM 3000 is an information recorder which was used for data collection. The data were collected by being punched directly onto IBM cards. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-105 2275167	**Item - HP ProCurve J8694A 3500yl/6200yl Switch Module** *Restrictions on access*: Public	2005	Object
CERN-OBJ-CERN-OBJ-IT-106 2275217	**Item - CDC 3300 Timing Disk** *Scope and content*: It's a timing disc from the CDC 3300 computer. This computer was released in 1965. Moreover CDC means Control Data Corporation. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-107 2275219	**Item - CDC 6600 VAXBARN Logic Board** *Restrictions on access*: Public	1964	Object
CERN-OBJ-CERN-OBJ-IT-108 2277607	**Item - System Software 7 Macintosh**	1991	Object

	Scope and content: System 7 is a single-user graphical user interface-based operating system for Macintosh computers and was part of the classic Mac OS line of operating systems. It was introduced on May 13, 1991, by Apple Computer. It succeeded System 6, and was the main Macintosh operating system until it was succeeded by Mac OS 8 in 1997. Features added with the System 7 release included virtual memory, personal file sharing, QuickTime, QuickDraw 3D, and an improved user interface. This is the first real major evolution of the Macintosh system, bringing a significant improvement in the user interface, improved stability and many new features such as the ability to use multiple applications at the same time. "System 7" is the last operating system name of the Macintosh that contains the word "system". Macintosh operating systems were later called "Mac OS" (for Macintosh Operating System). *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-109 2277608	**Item - NextStation Color** *Scope and content*: Steve Jobs created a NeXT generation operating system. The NeXTstation provides functionality that other computers are just providing today.The NS Color I/O cable attaches to the back of the computer on one end and on the other end the cable is split to connect to the display and the Sound Box. The Sound Box also has a keyboard signal port. Like a MAC or SUN of the same vintage, the mouse connects to the keyboard. These boxes run NEXTSTEP, which a full object-oriented OS. It has UNIX as a base and provides a gorgeous graphical interface. NEXTSTEP was also available for other platforms. They tend to run a little slow. But they have great digital sound and full color displays. *Restrictions on access*: Public		Object
CERN-OBJ-CERN-OBJ-IT-110 2277609	**Item - Vectronic's Power Macintosh G3 (B & W)** *Scope and content*: Apple introduced the Power Macintosh G3 Blue and White (B & W) on January 5, 1999. The Power Macintosh G3 line stayed in production until August 1999, and was replaced by the Power Macintosh G4, which used the same chassis. The Power Macintosh G3 originally cost between $1599 and $2900 depending on options. The three original Power Macintosh G3 models shipped with a 300 MHz, 350 MHz, or 400 MHz PowerPC 750 (G3) processor. Just pull on the small round handle on the side of the tower, and the entire side of the computer opens up. The G3's motherboard is mounted on that surface, giving you easy access for upgrading RAM or installed PCI cards. Apple added new ports (USB and the much-anticipated FireWire) that took the place of historic, and quickly becoming antiquated, Mac serial (printer and modem) ports. The Power Macintosh G3 has two USB (12 Mbps) ports, two FireWire (400 Mbps) ports, one 10/100BaseT Ethernet port, an RJ-11 jack for an optional 56K modem, a sound out and sound in jack, and one ADB (Apple Desktop Bus) port. The maximum RAM for the G3 is 1 GB. *Restrictions on access*: Public	1999	Object
CERN-OBJ-CERN-OBJ-IT-111 2277694	**Item - Macintosh Plus** *Scope and content*: Apple introduced the Macintosh Plus on January 16, 1986. The Macintosh Plus has an 8 MHz 68000 processor and an internal 800K floppy disk drive. It supports up to 4 MB of RAM. The Plus is a significant improvement over the previous compact Macs primarily due to the addition of the SCSI bus. Previous Macs did not have SCSI, thus making it more difficult to find a suitable external hard drive	1986	Object

	able to connect through the drive port, the printer port, or the modem port. These drives are considerably slower (as much as 4 times slower) than external SCSI hard drives. The Macintosh Plus is a very important computer in the history of the Apple Computers. It set up many of the standards that Apple followed for over a decade going forward. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-112 2277708	**Item - IMac G4/800 (Flat Panel)**	2002	Object
	Scope and content: Apple introduced the iMac G4/800 on January 7, 2002. The total cost was about $2000 (base price of $1799 plus RAM upgrade). The iMac G4/800 has an 800 MHz G4 processor. The G4/800 has the following ports: three USB 1.1 ports, two Fire Wire 400-Mbps ports, one RJ-45, 10/100BASE-T Ethernet port, one RJ-11 56K V.90 modem port, one Mini-VGA output port, one speaker jack, and one headphone jack. There is a built in microphone set on the front of the monitor in the bottom left corner. There is a single internal SuperDrive capable of reading and writing CDs and DVDs. The disk drive is on the front of the computer. It opens by pushing the disk drive button on the iMac's keyboard. The monitor size is 15 inches. The G4/800 has a NVIDIA GeForce2 MX graphics processor with AGP 2X support that provides 32 MB of dedicated Double Data Rate (DDR) video memory. Native resolution is 1024 x 768, but the built in monitor is also capable of 640 x 480 and 800 x 600. RAM can be changed by removing a panel on the bottom of the chassis. This iMac is AirPort ready but does not have an AirPort Card installed. The internal hard drive is 60 GB. The G4/800 has a small internal speaker. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-113 2277709	**Item - Weston Standard battery**		Object
	Scope and content: This is a Weston AOIP standard battery with its calibration certificate (1956). Inside, the glassware forms an "H". Its name comes from the British physicist Edward Weston. A standard is the materialization of a given quantity whose value is known with great accuracy. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-114 2277763	**Item - PM 3655 PHILIPS Logic analyzer**		Object
	Scope and content: A logic analyzer is an electronic instrument that captures and displays multiple signals from a digital system or digital circuit. A logic analyzer may convert the captured data into timing diagrams, protocol decodes, state machine traces, assembly language, or may correlate assembly with source-level software. Logic Analyzers have advanced triggering capabilities, and are useful when a user needs to see the timing relationships between many signals in a digital system. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-115 2279933	**Item - Philips LTC 2009/51**	1999	Object
	Scope and content:		

	It was part of a range of high-performance monitors (computers screens) that were associated with other units such as Philip's video surveillance systems, cameras or transmission and control equipment. Included in this range of Philips monitors are LTC 2009 (like this one), LTC 2012, LTC 2017 and LTC 2020 Series monochrome monitors. They offer high-performance images with a resolution of 900 TVL (TV-Lines), or in the case of the LTC 2017 monitor, 700 TVL, making them ideal for remote viewing and video applications. The monitor housing consists of a robust rectangular metal case which minimizes interference from external signals and allows “stacking” of monitors when used in large numbers. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-116 2279959	**Item - CHT, CERN HIPPI Testbox**	1990	Object
	Scope and content: To allow CERN to test and maintain HIPPI equipment (High Performance Parallel Interface), a powerful test falcility is required. A tester has been developed at Los Alamos National Laboratories [9,10]. The CERN HIPPI testbox allows testing of HIPPI equipment both inside and outside the specifications. This includes the possibility of deliberately introducing errors. The main features of this testbox are: Manual set-up Processor controlled set-up Possibilities for remote analysis Checking the HIPPI specifications Checking illegal conditions *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-117 2279960	**Item - IBM model M keyboard**	1985	Object
	Scope and content: In 1985, the IBM Model M keyboard was created. This timeless classic was a hit. IBM came out with several varients of the model M. They had the space saver 104 key which is the one most seen today and many international versions of that as well. The second type, and rarest is the 122 key model M which has 24 extra keys at the very top, dubbed the “programmers keyboard”. IBM manufactured these keyboards until 1991. The model M features “caps” over the actual keys that can be taken off separately one at a time for cleaning or to replace them with colored keys or keys of another language, that was a very cost effective way of shipping out internationally the keyboards. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-118 2280048	**Item - IBM 5150 computer**	1981	Object
	Scope and content: IBM’s first personal computer arrived nearly 10 years after others companies, but instantly legitimized the market. IBM introduced its PC in 1981. IBM equipped the model 5150 with a cassette port for connecting a cassette drive. The first IBM PC ran on a 4.77 MHz Intel 8088 microprocessor. The PC came equipped with 16 kilobytes of memory, expandable to 256k. The PC came with one or two 160k floppy disk drives and an optional color monitor. The price tag started at $1,565, which would be nearly $4,000 (about €3,400) today. *Restrictions on access*: Public		
CERN-OBJ-CERN-OBJ-IT-119 2280057	**Item - HP 2671G GRAPHICS**	1981	Object

	Scope and content: The 2671 was a text-only printer with a maximum print speed of 120 characters per second. The 2671 printers are very robust. For paper, they use normal thermal roll paper sold in most office supply stores for older fax machines. Although thermal printing is a quiet technology, the paper advance mechanism of these printers is plenty loud. *Restrictions on access*: Public