

50

→ ANNIVERSARY OF SPACE

50

→ ANNIVERSARY OF EUROPE

50

→ SUPPLEMENT TO ANNUAL REPORT 2007

50

“2007 has been a year of symbols and anniversaries. We celebrated 50 years of space, because in October 1957 the first satellite was launched. We also celebrated 50 years of Europe, because in 1957 the Treaty of Rome was creating the European Community. ESA is at the crossroads of space and Europe, and now has a place that is valued by all space powers in the world.”

Jean-Jacques Dordain
ESA Director General

**→ 50TH ANNIVERSARY OF SPACE
AND THE EUROPEAN UNION**

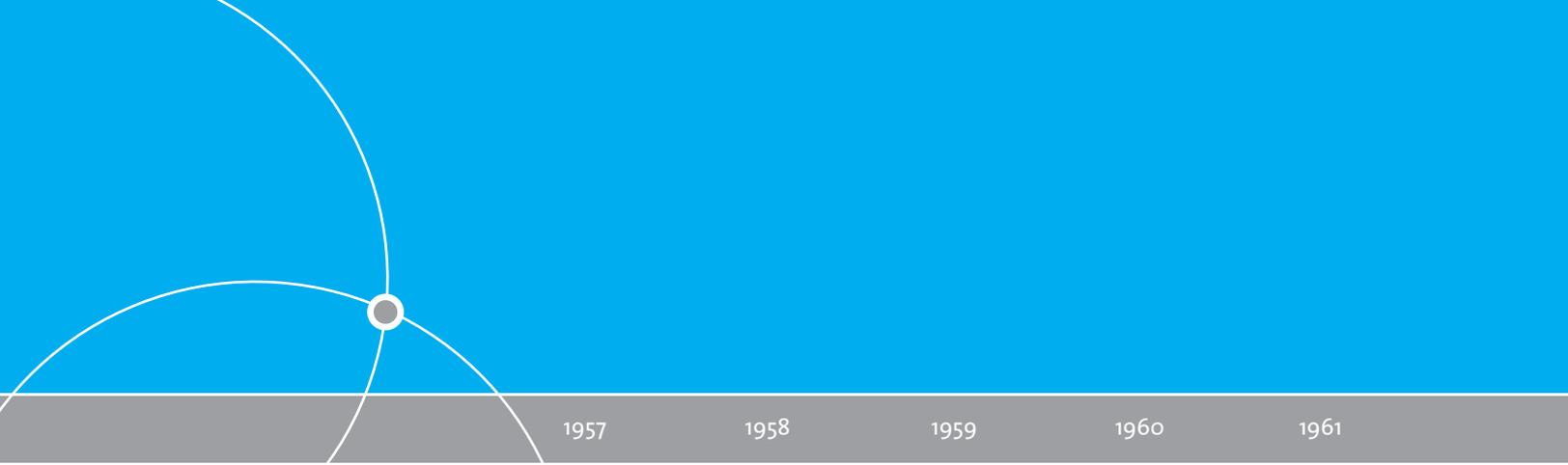
50 years of events in space and European history

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1957

1958

1959

1960

1961

1957–1966

A community is born, first steps in space

The European Union was set up with the aim of ending the frequent and sometimes bloody conflicts between neighbours, which had culminated in the Second World War. In 1951, the European Coal and Steel Community (ECSC) had begun to unite European countries economically and politically, helping to secure a lasting peace.

Many European scientists had left Western Europe after the war to work in either the United States or the Soviet Union. The 1950s and 1960s were then dominated by a ‘cold war’ between east and west. Although European countries could still invest in research and space-related activities, European scientists realised that solely national projects would be unable to compete with the major superpowers.

On 25 March 1957, the ‘Six’ – Belgium, France, Germany, Italy, Luxembourg and The Netherlands – signed the Treaty of Rome, the foundation of the European Community. It set up the European Economic Community (EEC), or ‘Common Market’, and the European Atomic Energy Community (Euratom) which would work alongside the ECSC.

The EEC established a Commission based in Brussels and all three communities shared a Parliamentary Assembly and a Court of Justice. The following year, preparations for a Common Agricultural Policy began, eventually launched in 1962.

On 4 October 1957, the Soviet Union took the initial steps in the ‘space race’, when it launched the first man-made satellite, Sputnik, and started humankind’s journey beyond Earth. Watching from Europe, two prominent members of the Western European scientific community, Pierre Auger of France and Edoardo Amaldi of Italy, recommended that European governments set up a ‘purely scientific’ joint organisation for space research, taking CERN as a model.



The early 1960s saw the emergence of youth culture, with groups such as The Beatles attracting huge crowds of teenage fans wherever they appeared. This helped to stimulate a cultural revolution and widen the generation gap, the era becoming known as the 'swinging sixties'.

1962

1963

1964

1965

1966

In 1960, scientists from ten European countries, the 'Groupe d'études européen pour la Collaboration dans le domaine des recherches spatiales' (GEERS), formed a commission at which government representatives would decide on possibilities for European cooperation in space.

By 1961, the 'Commission préparatoire européenne de recherches spatiales' (COPERS) had defined a scientific programme, an eight-year budget and administrative structure for the envisaged 'European Space Research Organisation'.

Russia widened the lead in space on 12 April 1961 when cosmonaut Yuri Gagarin captured the imagination of the world by becoming the first human in space. In August, the communist authorities in East Germany built a wall across Berlin to prevent their citizens from escaping to a freer life in the West.

On 14 June 1962, ten European nations signed the ESRO convention (Belgium, Denmark, France, West Germany, Italy, Netherlands, Spain, Sweden, Switzerland and United Kingdom (Austria and Norway, which had participated in the early COPERS activities, decided not to join the new organisation and retained an observer status).

By 1964, these nations had decided to have two different agencies, one to develop a launch system, the European Launch Development Organisation (ELDO) and the other, ESRO, to develop satellites.

The European Space Research Institute (ESRIN) was one of ESRO's first specialised centres in Europe. Now known as ESA's centre for Earth Observation, it began acquiring data from environmental satellites in the 1970s. The first director of ESRIN, HL Jordan, was appointed on 29 July 1964. Nine months later, a small group of five scientists, six technicians and four administrators were installed in temporary accommodation at the Park Hotel, Frascati, near Rome.

→ 1957–1966

A community is born, first steps in space

1957

Treaties of Rome signed



1958

Court of ECSC becomes European Court of Justice, based in Luxembourg; Auger and Amaldi propose a European space agency



Pierre Auger



Edoardo Amaldi

1959

Greece applies to join EEC; European Free Trade Association set up

1961

Berlin Wall built



East German soldier Hans Schumann jumps to the West

1957

Sputnik 1 launched



1960

European Organisation for the Safety of Air Navigation (Eurocontrol) is set up in Brussels, Belgium; 10 European countries discuss a 'European Space Research Organisation'

1961

First man in space; first US astronaut



Yuri Gagarin



Alan Shepard

1962

EU's Common Agricultural Policy introduced



Sicco Mansholt, considered the 'father' of the CAP

1963

Yaoundé Convention signed between EEC and 18 former colonies in Africa

1966

US TV series Star Trek airs for first time, inspiring a generation of youngsters



1963

First woman in space



Valentina Tereshkova

1965

Alexei Leonov walks in space; first US spacewalk by Ed White; NASA's Mariner 4 makes first successful fly-by of Mars; ESRIN set up in Frascati, near Rome; France becomes the third country to launch a satellite into space, Asterix-1



Alexei Leonov



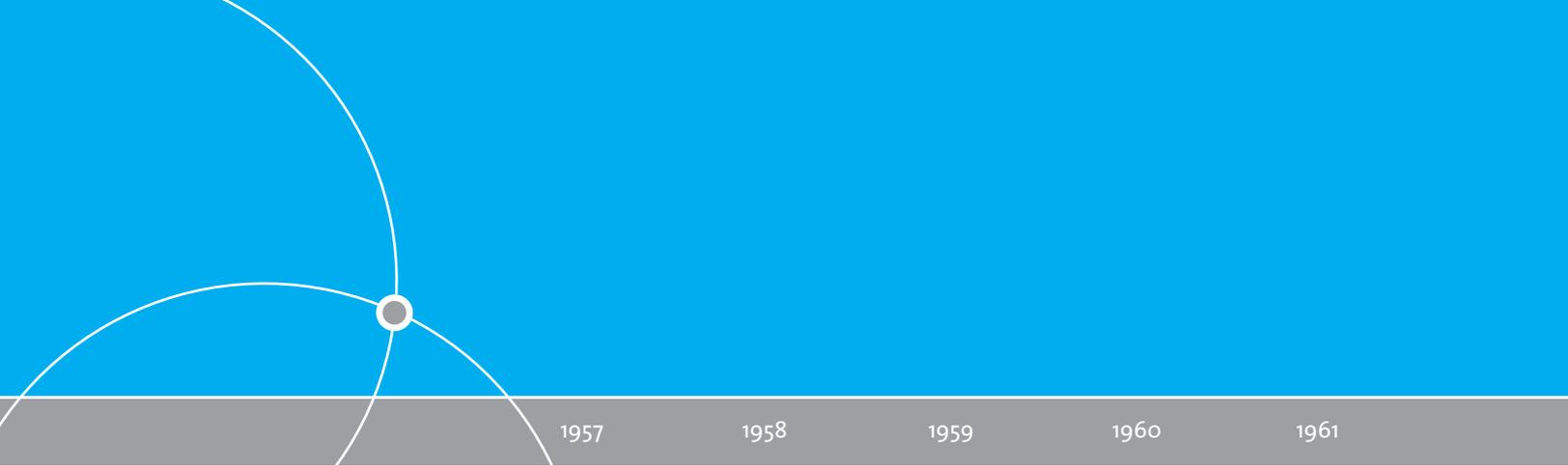
Ed White

1962

ESRO Convention signed; US astronaut John Glenn orbits Earth; first international satellite, Ariel 1, is launched (built by NASA and containing six instruments developed by British scientists).

1964

ESRO and ELDO created; the first two ESRO sounding rockets were launched from the Salto di Quirra test range, Sardinia



1957

1958

1959

1960

1961

1967–1976

Man on the Moon, and ESA formed

More ESRO establishments followed, and in 1967 the European Space Operations Centre (ESOC) was set up in Darmstadt, Germany. After an initial period in Delft, The Netherlands, the European Space Research and Technology Centre (ESTEC) moved to its present site at Noordwijk in April 1968. More than 40 spacecraft, starting with ESRO-1, have been designed and placed into orbit with the backing of ESTEC expertise since the early 1960s.

Many changes in society and behaviour became associated with the so-called '68 generation', and May 1968 became notorious for student riots in Paris. Milder student protests occurred in other EU countries, reflecting frustration as well as protests against the Vietnam War and the nuclear arms race.

In July 1968, the six original EEC countries removed customs duties on goods imported from each other, allowing free cross-border trade for the first time. They also applied the same duties on their imports from outside countries. This was a time when EU countries experienced growth and rising prosperity. They also agreed joint control over food production, and soon there was even surplus agricultural produce.

Democratic reforms in Czechoslovakia were not well received by the Soviet Union who, after failed negotiations, sent troops and tanks to occupy the country in August 1968. Czechoslovakia remained occupied until 1990. By December 1968, the United States had flown three men around the Moon on Apollo 8. This paved the way for Neil Armstrong and Buzz Aldrin to become the first humans to set foot on the Moon in July 1969. Six more flights would put ten more people on the Moon before the Apollo programme ended in 1972.

Although ESRO was establishing itself as a leader in space exploration, ELDO was dealing with technical problems, cost overruns and political disputes. The idea of a new single European space organisation was first discussed in 1972.



After the Moon landings, ESRO and NASA agreed to build Spacelab, a modular science package for use on Space Shuttle flights. Construction started in 1974 and the first module was given to NASA by ESA in 1982 in exchange for flight opportunities for European astronauts. Spacelab was used on 25 shuttle flights between 1983 and 1998.

1962

1963

1964

1965

1966

Although the EU's first plan for a single currency dates back to 1970, the exchange rate mechanism was created in 1972, and is a first step towards the introduction of the Euro, nearly 30 years later.

Denmark, Ireland and the United Kingdom joined the EU in January 1973, increasing the number of member states to nine. Following the Arab-Israeli war of October 1973, Middle East oil-producing nations imposed big price increases and restricted sales to certain European countries, creating economic problems within the EU.

France first proposed the Ariane project and it was officially started in 1973 after delicate discussions between France, Germany and the UK. The project was Western Europe's second attempt to develop its own launcher following ELDO's unsuccessful Europa project.

The overthrow of the Salazar regime in Portugal in 1974 and the death of General Franco of Spain in 1975 enabled both countries to commit themselves to democratic government – an important step towards qualifying for future membership of the EU.

The changes in ESRO and ELDO led to ESA being created in its current form in 1975. There were 10 founding members: Belgium, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden, Switzerland and the United Kingdom. Ireland joined later in the same year.

ESA launched its first major scientific mission, COS-B, a satellite monitoring gamma-ray emissions in the Universe. One of the most successful space missions ever, it operated for more than six years, four years longer than planned. The first international cooperation mission, the joint US/Russian Apollo-Soyuz Test Project, also took place in 1975.

→ 1967–1977

Man on the Moon, and ESA formed

1967

United Kingdom re-applies to join EEC, followed by Ireland, Denmark and by Norway; ESA Control Centre moves from ESTEC in Netherlands to new ESOC building in Germany



1968

Students riot and clash with police in Paris; Soviet-led invasion of Czechoslovakia



Paris



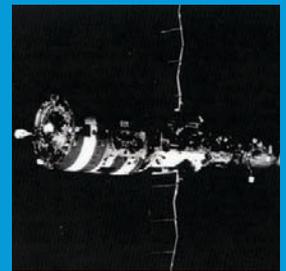
Prague

1970

Negotiations open in Luxembourg for Denmark, Ireland, Norway and United Kingdom to join EEC; Apollo 13 crippled on its way to the Moon

1971

Russia launches first space station, Salyut 1; two Russian spacecraft, Mars 2 and Mars 3, are the first objects to successfully land on Mars, but both lose contact within seconds of landing.



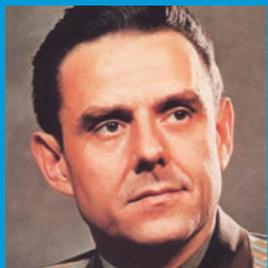
Salyut

1967

Apollo fire kills three US astronauts; cosmonaut Komarov killed in Soyuz accident



Grissom, White, Chaffee



Vladimir Komarov

1968

First successful launch of ESRO satellite, ESRO-2B; ESTEC inaugurated; Apollo 8 rounds the Moon



1969

Apollo 11 lands on the Moon



Buzz Aldrin on the Moon

1972

European exchange rate mechanism (ERM) created

1973

Denmark, Ireland and UK formally enter EU

1974

EU sets up the European Regional Development Fund



1975

ESA formed by merging ESRO and ELDO



1976

NASA's Viking landers relay the first colour pictures from the surface of Mars



1972

Last US Apollo moonlanding, Apollo 17



Eugene Cernan, last man on the Moon

1973

US Skylab space station launched; ESRO and NASA agree to build Spacelab



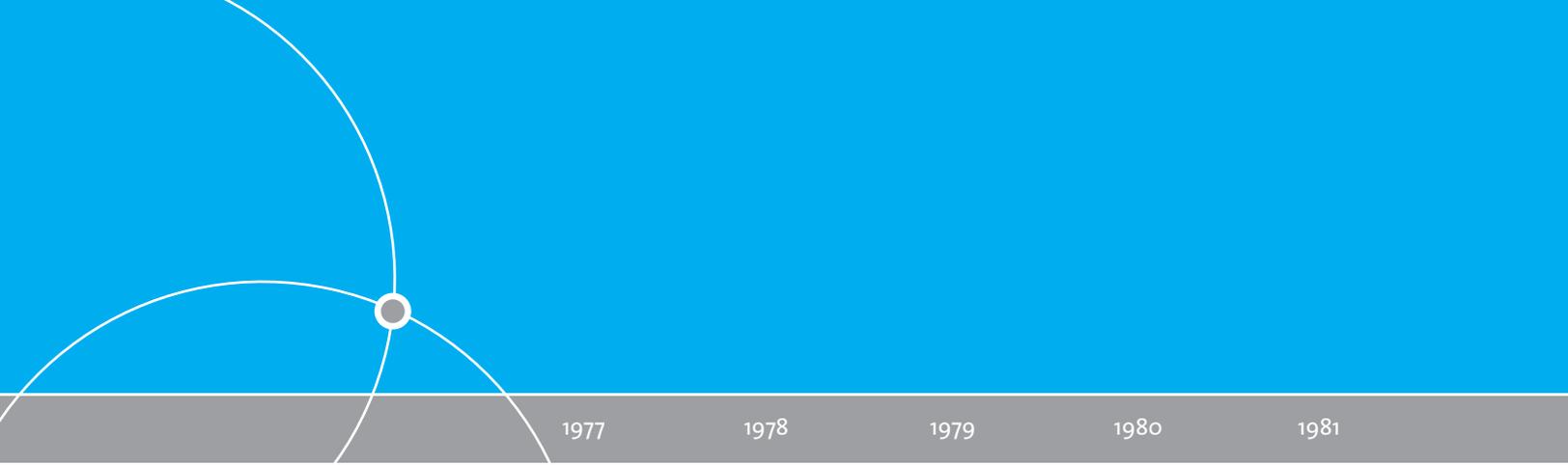
Skylab

1975

First international 'handshake' in space, the US/Russian Apollo-Soyuz Test Project



Deke Slayton and Alexei Leonov



1977

1978

1979

1980

1981

1977–1986

A changing Europe, a growing space agency

In 1978 Canada became a 'Cooperating State' and, in the same spirit, ESA joined NASA and the UK in launching the International Ultraviolet Explorer (IUE), the world's first high-orbit telescope, which went on to operate successfully for 18 years.

The EU regional policy started to transfer huge sums to create jobs and infrastructure in poorer areas (EU leaders had set up the European Regional Development Fund in 1974 to improve communications, attract investment and create employment).

The European Parliament increased its influence in EU affairs and by 1979 all citizens could, for the first time, elect their members directly. Austria signed an Association Agreement with ESA in 1979. The first Ariane was being readied for launch with its flight scheduled for 15 December 1979. After two delays, Ariane-1 blasted into space from Europe's Spaceport in Kourou, French Guiana, on 24 December 1979. Europe's independent adventure in space had begun.

In 1980, Arianespace was formed to produce, operate and market the Ariane rocket as part of ESA's Ariane programme. In the summer of the same year, the Polish trade union, Solidarity, and its leader Lech Walesa, became household names across Europe as the world was following the Gdansk shipyard strikes.



In March 1986, ESA's first deep-space mission Giotto made its close pass of Comet Halley and then moved on to Comet Grigg-Skjellerup. It was humankind's first encounter with a comet, revealing the shape of Halley's nucleus and offering evidence of organic material in such an object.

1982

1983

1984

1985

1986

In 1981 Greece joined the EU, taking the number of Member States to ten. It had been eligible to join since the overthrow of its military regime in 1974 and the restoration of democracy.

Computers and automation were changing the way we lived and worked. To stay in the forefront of innovation, the EU adopted the Esprit programme in 1984 as the first of many research and development programmes it has since funded.

Although customs duties disappeared in 1968, trade was not flowing freely across EU borders. The main obstacles were differences in national regulations. The Single European Act of 1986 launched a vast six-year programme to sort these out. The Act also gave the European Parliament more say and strengthened EU powers in environmental protection.

In January 1986, Spain and Portugal joined ESA. Although the Hubble Space Telescope, a joint NASA/ESA mission was completed in 1985, its scheduled 1986 launch aboard NASA's Space Shuttle was delayed when the Shuttle *Challenger* exploded during the 28 January launch. The tragic loss grounded the Shuttle for two and a half years, producing a longer delay in the Hubble launch and having a major impact on the European position in the launcher sector as the Shuttle programme was reassessed.

→ 1977–1986

A changing Europe, a growing space agency

1977

US movie *Star Wars* is released, becoming a cult phenomenon and fascinating another generation of space-mad youngsters



1978

Former Italian Prime Minister Aldo Moro kidnapped and killed



1981

Greece joins EU; Maiden flight of the NASA Space Shuttle *Columbia*, STS-1



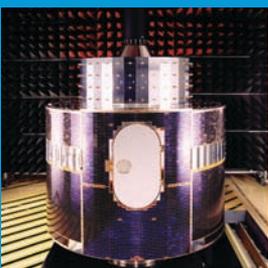
1980

Solidarity in Poland creates a wave of anti-communism across the Eastern Bloc



1977

Meteosat-1 launch begins the successful series of weather satellites developed and operated by ESA (later by Eumetsat)



1978

Canada becomes an ESA Cooperating State; first ESA astronauts selected



Nicollier, Merbold, Ockels and Malerba

1979

NASA's Skylab falls back to Earth; first Ariane launch; Austria signs an Association Agreement with ESA



Skylab



Ariane

1983

ESA's first astronaut, German Ulf Merbold, accompanies Spacelab into orbit



1984

EU adopts 'Esprit' IT research and development programme

1985

Live Aid, a fund-raising effort headed by Bob Geldof, induced millions of people to donate money and urges their governments to participate in the relief of the Ethiopian famine. This was one of the most widely viewed TV events in history.

1986

Spain and Portugal enter the EU; European flag (created in 1955 by the Council of Europe) is adopted by EU



1984

US astronaut Bruce McCandless becomes the first human to fly untethered in space (from Space Shuttle *Challenger*)



1985

Approval of ESA Horizon 2000 Science Programme, which leads to missions such as Giotto, Hipparcos, Ulysses, XMM-Newton, Integral and Rosetta

1986

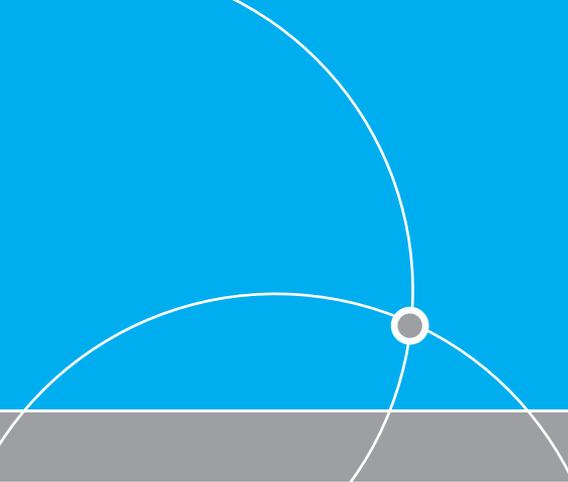
Loss of US Space Shuttle *Challenger* and her crew; Creation of the European Organisation for the Exploitation of Meteorological Satellites (Eumetsat); Russia launches Mir space station



STS 51-L crew



Mir



1987

1988

1989

1990

1991

1987–1996

Europe without frontiers

In 1987 the Single European Act was signed. This treaty provided the basis for a vast six-year programme aimed at sorting out the problems with the free-flow of trade across EU borders and thus created the 'Single Market'.

Since 1984, Ariane had been taking mostly commercial payloads into orbit. A more advanced launch system, Ariane-4, began operation in 1988, lasting until 2003 and establishing ESA as the world leader in commercial space launches during the 1990s.

There was major political upheaval when, on 9 November 1989, the Berlin Wall was pulled down and the border between East and West Germany opened for the first time in 28 years, leading to the reunification of Germany in October 1990, effectively adding East Germany to the EU (and ESA).

For ESA Science, the 1990s saw closer collaboration with NASA. The Space Shuttle launched the ESA/NASA Hubble Space Telescope on 24 April 1990. Soon, the space telescope was discovered to have a major flaw: the mirror was the wrong shape and nothing would focus. In December 1993, ESA astronaut Claude Nicollier flew on the Space Shuttle to assist in fixing Hubble, but the European Faint Object Camera had to be removed in order to make room for the corrective optics.

With the collapse of communism across Central and Eastern Europe, many new countries became potential EU members. However, in the Balkans during 1991, the EU's neighbour Yugoslavia began to break apart and fighting erupted first in Croatia, then in Bosnia and Herzegovina, leading to civil war.



The Hubble Space Telescope (HST) is a collaboration between ESA and NASA. It is a long-term, space-based observatory making observations in visible, infrared and ultraviolet light. In many ways Hubble has revolutionised modern astronomy, not only by being an efficient tool for making new discoveries, but also by being a massive public relations success and driving astronomical research in general.

1992

1993

1994

1995

1996

In 1993 the Single Market was completed with the 'four freedoms', which are the movement of goods, services, people and money. The 1990s was also the decade of two treaties. The 'Maastricht' Treaty on European Union in 1992, set clear rules for the future single currency, foreign and security policy and closer cooperation in justice and home affairs. The Treaty of Amsterdam augmented these on 17 June 1997.

ESA entered the field of Earth observation with the launch of its ERS-1 satellite in 1991 and ERS-2 in 1995. These satellites monitor sea level and ice cover, land movement and ozone levels among other things. The Sun became a major scientific focus for ESA with the launch of the solar polar orbiter Ulysses on 6 October 1990 and the Solar and Heliospheric Observatory (SOHO) on 2 December 1995.

During 1995, the EU gained three more new members, Austria, Finland and Sweden. A small village in Luxembourg gave its name to the 'Schengen' agreements, which gradually allowed people to travel without having their passports checked at the borders between seven countries – Belgium, France, Germany, Luxembourg, the Netherlands, Portugal and Spain. Millions of young people began studying abroad under the EU's Erasmus scheme.

→ 1987–1996

Europe without frontiers

1987

The Single European Act comes into force 1 July; EU launches the 'Erasmus' programme to fund university students wishing to study for up to a year in another European country.

1989

The Berlin Wall falls, leading to reunification of Germany



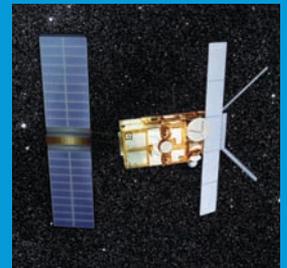
1990

Creation of the European Astronaut Centre, Cologne, Germany



1991

Collapse of the Soviet Union; civil war breaks out in former Yugoslavia; ESA enters field of Earth remote-sensing with launch of ERS-1



1988

First launch of Ariane-4



1989

NASA's Voyager spacecraft reaches Neptune, the furthest planetary encounter ever made



1990

The NASA/ESA Hubble Space Telescope launched; NASA/ESA solar polar orbiter Ulysses launched



Hubble launch on STS-31

1992

Maastricht Treaty on European Union is signed



1995

Austria, Finland and Sweden join EU

1996

ESA's Cluster lost in Ariane 501 launch failure



1993

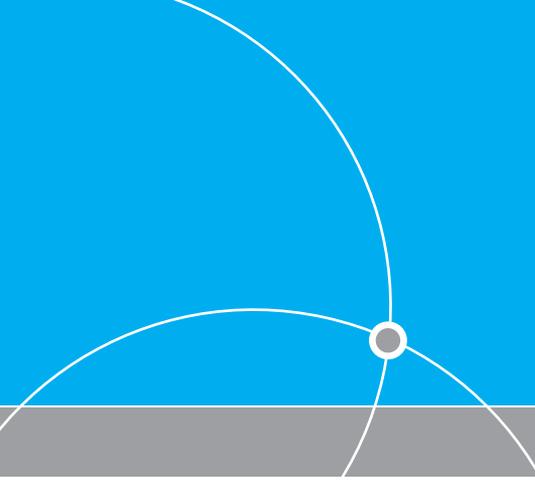
ESA astronaut Claude Nicollier takes part in NASA's first Hubble servicing mission



1995

The NASA/ESA Solar Heliospheric Observatory (SOHO) is launched; Eumetsat takes over direct operational control of Meteosat meteorological satellites





1997

1998

1999

2000

2001

1997–2007

A decade of further expansion

On 13 December 1997, EU leaders started the process of membership negotiations with ten countries in central and eastern Europe: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. Cyprus and Malta were also included.

After years of preparation, the euro was introduced in 11 countries on 1 January 1999 for commercial and financial transactions only. Notes and coins came later.

After 86 000 orbits of Earth, Russia deorbited the Mir space station on 23 March 2001, to concentrate on their partnership in the International Space Station.

In 2003, ESA's Mars Express was launched. The first fully European mission to any planet, Mars Express proved a great success and continues to this day. Unfortunately, with the world's media focused on it, the Beagle 2 lander failed.

By 2004, negotiations with the ten central and eastern Europe countries, and Cyprus and Malta, were resolved and they all joined the EU, almost doubling the number of Member States. It marked the end of the division of Europe decided by Winston Churchill, Franklin D. Roosevelt and Joseph Stalin, 60 years earlier at the Yalta conference.

The same year, the 25 EU countries signed a Treaty establishing a European Constitution. It was designed to streamline democratic decision-making and management but had to be ratified by all 25 countries.

The European Space Astronomy Centre (ESAC) was founded in 2004 near Madrid, Spain, which had officially opened in 1978 as 'VILSPA', a tracking station. ESAC hosts the science operation centres for all ESA astronomy and Solar System missions, together with their scientific archives (ESAC would be officially inaugurated in 2008).



Known as 9/11, 11 September 2001 entered history after hijacked airliners were flown into buildings in New York and Washington by terrorists. EU countries begin to work much more closely for security and safety.

2002

2003

2004

2005

2006

The Kyoto Protocol, an international treaty to limit global warming and cut emissions of greenhouse gases, came into force on 16 February 2005. The EU has consistently taken the lead in efforts to reduce the impact of climate change but the agreement could only come into force following ratification by Russia on 18 November 2004.

On 1 November 2004, 'Exploration' was added to the name of the ESA's Directorate of Human Spaceflight and Microgravity. It reflected the Aurora exploration programme's ambition to land Europeans on Mars by 2030.

In 2005, citizens in both France and the Netherlands voted 'No' to the EU Constitution, so EU leaders declared a 'period of reflection'.

After hitching a ride through space on NASA's Cassini mission, ESA's Huygens probe landed on the surface of Titan, Saturn's largest moon, marking the furthest ever landing in the Solar System.

Two more countries, Bulgaria and Romania, joined the EU on 1 January 2007. Croatia, the Former Yugoslav Republic of Macedonia and Turkey became candidates for future membership.

The European Space Policy Resolution was adopted by the Space Council (Ministers in charge of space activities in ESA's Member States, and those tasked with internal market, industry and research within the European Union's Competitiveness Council) on 22 May 2007, unifying the approach of ESA with those of EU Member States. Jointly drafted by the European Commission and ESA's Director General, the European Space Policy outlined the strategic guidelines for Europe's future activities in space. It created for the first time a common political framework for space activities across Europe.

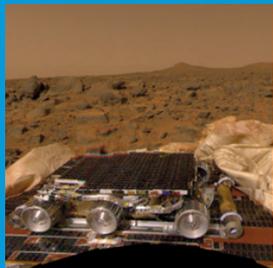
Following their period of reflection, the Heads of State and Government of the 27 Member States of the European Union signed the Treaty of Lisbon on 13 December 2007.

→ 1999–2007

A decade of further expansion

1997

EU opens membership negotiations with ten countries in central and eastern Europe, plus Cyprus and Malta



1997

NASA's Mars Pathfinder successfully lands on Mars

1999

The euro is introduced in 11 countries for commercial and financial transactions only

2001

ESA Ministerial Council meeting in Edinburgh initiates Aurora, Europe's long-term plan for the robotic and human exploration of the Solar System



2002

The euro is launched as physical coins and banknotes



2002

ESA's Earth observation satellite Envisat launched



1998

A single European Astronaut Corps formed



2000

EU Treaty changes agreed in Nice open the way for many new members; ESA and EU Councils met separately to adopt resolutions endorsing the joint European Strategy for Space

2004

A Framework Agreement endorsed by the EU Council and adopted by the ESA Council leads to the first joint 'Space Council' of ESA and EU Member States; European Space Astronomy Centre (ESAC) founded near Madrid, Spain



2005

Kyoto Protocol on climate change comes into force

2007

Bulgaria and Romania join EU; 27 Member States of the European Union sign the Treaty of Lisbon; European Space Policy adopted on 22 May by 29 European countries



2003

European Research Commissioner Philippe Busquin introduces the 'Green Paper on European Space Policy', prepared in cooperation with ESA; ESA's Mars Express successfully enters Martian orbit on Christmas Day; China becomes the third space power with ability to launch humans into space, with the flight of Yang Liwei on Shenzhou 5



Mars Express

2005

Huygens lands on Titan, Saturn's largest moon, on 14 January



2006

The NASA/ESA/ASI Cassini orbiter continues to investigate beneath Titan's atmosphere, revealing startling features

