RACE TO THE MOON AND BACK: POLICY PERSPECTIVES 50 YEARS AFTER THE JFK'S MOONS SPEECH

AN EUROPEAN RETROSPECTIVE OF SPACE EXPLORATION

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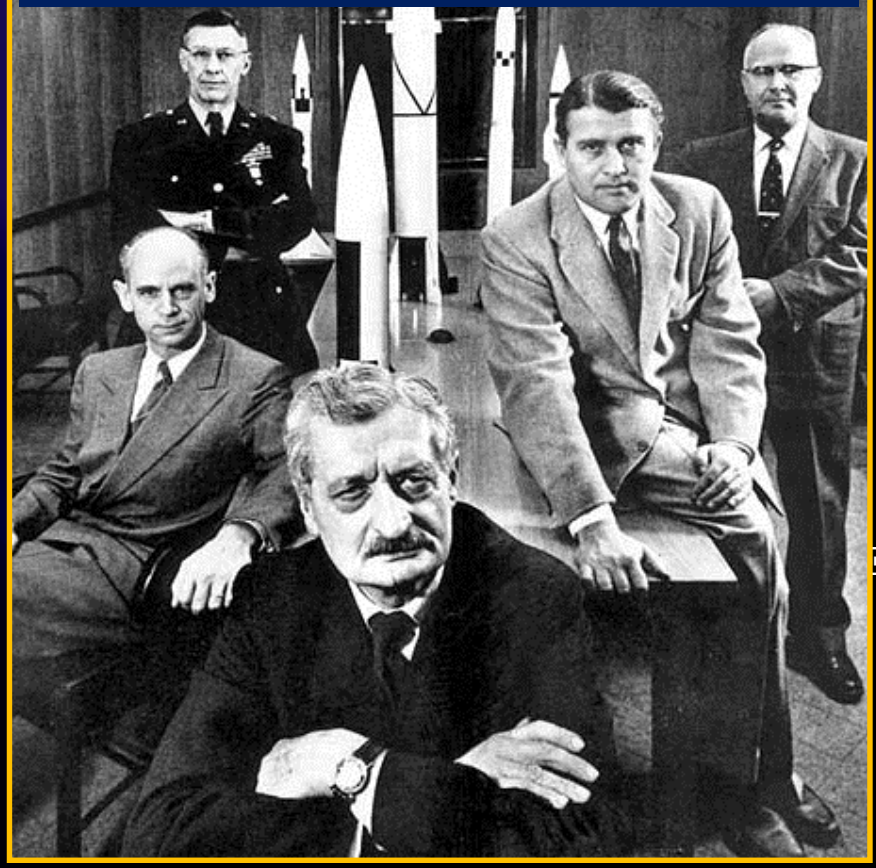
Cosmonaut

President of the Association of Space Explorers

Space era beginnings engine

Hermann Oberth with officials from Army Ballistic Missile Agency in 1956. from left to right: Ernst Stuhlinger (sitting); Maior-General H. N. Toftoy, Wernher von Braun and Eberhard Rees.



- "The cold war would become the great engine, the supreme catalyst, that sent rockets and their cargoes far above Earth and worlds away.
If Tsiolkovsky, Oberth, Godd ard, and others were the fathers of rocketry, the competition between capitalism and communism was its midwife."

- William E. Burrows, This New Ocean (Nov. 1999), "The Other World Series", p. 147

Beginning of the space race

- 4 October 1957 –the first artificial satellite, Sputnik 1
- 3 November 1957 - First animal in orbit, the dog Laika
- 31 January 1958 – First American Satellite, Explorer 1
- 13 September 1959 - First impact into the Moon, Luna 2
- 4 October 1959 - First photos of far side of the Moon, Luna 3
- 7 August 1959 - First photograph of Earth from orbit, Explorer 6
- 19 August 1960 - First plants and animals to return alive from Earth orbit, Sputnik 5
- 12 April 1961 - First human spaceflight, Yuri Gagarin
- 5 May 1961 - First American to make a suborbital flight into space, Alan Shepard
- 20 February 1962 - first American to orbit the Earth, John Glenn

Apollo Program motivation

In the context of the Cold War, the United States feared that the Soviet Union lagged behind both the technological progress and the international prestige.

After consulting with Vice President Lyndon Johnson and the American scientific authorities, President Kennedy set a very inspiring landmark to regroup U.S.

A human journey to the moon was dramatic enough to capture the attention of the world and sufficiently difficult and expensive to achieve priority to overcome the USSR in space exploration.

On May 25, 1961, President John F. Kennedy announced his goal of putting a man on the Moon by the end of the decade.

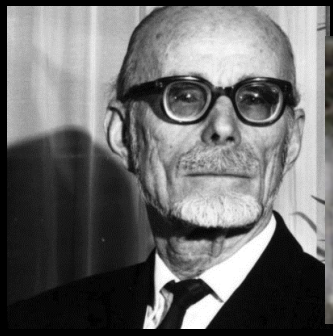
The European approach to space

After the WW2 German Rocket program was stopped, the infrastructure, rockets and scientists were shared by the big powers.

France and UK launched the fist European sounding rockets for atmospheric research.

European scientists realized that solely national projects would be unable to compete with the major superpowers.

In 1958 Pierre Auger (F) and Edoardo Amaldi (I), recommend that European governments set up a 'purely scientific' joint organization for space research taking CERN (European Organization for Nuclear Research) as a model.



The European approach to space

1960

1 December - Intergovernmental conference at Meyrin, Switzerland, setting up a European Preparatory Commission for Space Research (COPERS)

1962

29 March - Belgium, France, Germany, Italy, the Netherlands, the United Kingdom and Australia (associate member) sign in London the Convention creating the European Launcher Development Organisation (ELDO)

14 June - Belgium, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden, Switzerland and the United Kingdom sign in Paris the Convention creating the European Space Research Organisation (ESRO)

The European approach to space

1968

17 May - Launch of ESRO 2B intended to study cosmic rays and solar X-rays, the first successful satellite launch by ESRO

1973

12 and 31 July - Second Package Deal: The European Space Conference (ESC) meeting in Brussels decides the start of three new programmes: Spacelab, L3S (Ariane) and MAROTS and the creation of the European Space Agency (ESA)

1975

30 May - Belgium, Denmark, France, Germany (Federal Republic), Italy, the Netherlands, Spain, Sweden, Switzerland and the United Kingdom sign the Convention on the **establishment of ESA**

The European approach to space

1977

Establishment of the Eutelsat (European Telecommunications Satellite Organization), an intergovernmental organisation

1978

11 May - Launch of OTS-2 (Orbital Test Satellite-2), ESA's first comsat

1979

1 January - The first five-year Cooperation Agreement between Canada and ESA comes into effect

24 December - The first Ariane is launched from the Guiana Space Centre

1980

26 March - Arianespace, the world's first commercial space transportation company is created

3 July - Decision to upgrade Ariane to Ariane 3 designed to launch two satellites into GTO

The Eastern European approach to space

Soyuz 28
March 2nd to 10th
1978

Interkosmos was a space program, designed to give nations on friendly terms with the Soviet Union access to manned and unmanned space missions.

Begun in April 1967 with unmanned research satellite missions, the first manned mission occurred in March 1978.

Vladimír Remek is the first Czechoslovak in space and the first cosmonaut from a country other than the Soviet Union or the United States. Now V. Remek is a member of the European Parliament.

The Eastern European approach to space

Mirosław Hermaszewski
Poland
Soyuz 30 -
June 1978

Sigmund Jähn

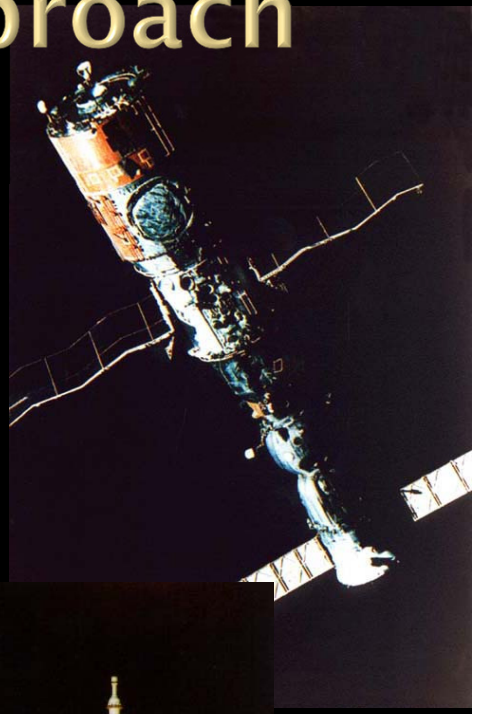
East Germany
Soyuz 29, Soyuz 31
August 1978

Second Intercosmos cosmonaut and back-up teams
1978-1981

The Eastern European approach to space

Dumitru-Dorin Prunariu
1st Romanian in space

May 14-22, 1981



Completed 22 scientific experiments in the fields of:
- **astrophysics,**
- **space radiation,**
- **space technologies,**
- **space medicine and**
- **biology.**

On board Soyuz-40 - Saliut-6 - Soyuz-T4 space complex:
125 orbits and
5,260,000 km around the Earth

First Western European In Space

Jean-Loup Chrétien

first Frenchman and the first western European in space.

June 1982

flew on two Franco-Soviet space missions and a NASA Space Shuttle mission:

Soyuz T-6, Soyuz TM-7 / Mir Aragatz / Soyuz TM-6, STS-86

The European approach to space

- Central and Eastern European countries developing space activities and manned space flights within Interkosmos programme are now full members of the EU:
- Czech Republic, Poland, united Germany, Bulgaria, Hungary, Romania, Slovak Republic.
- All have cooperation agreements with ESA, two of them being already full members (Czech Republic and Romania).

- These countries came into EU and ESA with their space historical heritage and enriched the overall heritage of Europe.

The European approach to space

Ulf Merbold,
ESA's first astronaut

1983

28 November - First Spacelab launch with Ulf Merbold, ESA's first astronaut on board the US Space Shuttle

1985

30-31 January - ESA Ministerial Council in Rome: ministers approve the start of preparatory work on the Ariane 5 launch vehicle

1986

13-14 March - Successful historic encounter of Giotto with Comet Halley

June - The Eumetsat Convention enters into force

1987

1 January - Austria and Norway become ESA's 12th and 13th Member States

9-10 November - ESA Ministerial Council in The Hague: ministers approve the development of Ariane 5

The European approach to space

1988

29 September - Memorandum of Understanding on cooperation in the design, and development of the Space Station Freedom signed by ESA and NASA in Washington

15 June - Ariane 4 launched for the first time

1991

17 July - Launch of ERS-1

1995

1 January - Finland becomes ESA's 14th Member State

20 April - Launch of ERS-2

18-20 October - ESA Ministerial Council in Toulouse, France: ministers agree on the funding of Europe's contribution to the ISS

1996

4 June - Ariane 5's first test flight (Flight 501) fails and causes the loss of four Cluster spacecraft

The European approach to space

1997

15 October - Cassini-Huygens launched from Cape Canaveral

1999

11-12 May - ESA Ministerial Council in Brussels which approved investments in major new programmes in the areas of telecommunications, navigation including the definition phase for the Galileo programme (in partnership with the European Union), and Earth observation

10 December - Launch of XMM-Newton by Ariane 5

The European approach to space

2000

1 January - Portugal becomes ESA's 16th Member State

15 December - Approval of the development of the small launcher Vega

2002

1 March - Launch of Envisat by Ariane 5

11 March - Argentina signs Cooperation Agreement with ESA

28 August - Launch of MSG-1 by Ariane 5

11 December - First launch of Ariane 5 ECA (failure)

The European approach to space

2003

15 February - Last flight of an Ariane 4 after 116 flights

7 April - Hungary becomes first ESA European Cooperating State

2 June - Mars Express, Europe's first mission to the 'Red Planet', launched from Baikonur

27 September - SMART-1, Europe's first mission to the Moon, launched by Ariane 5

25 November - Signature of the Framework Agreement between ESA and the European Community in Brussels

The European approach to space

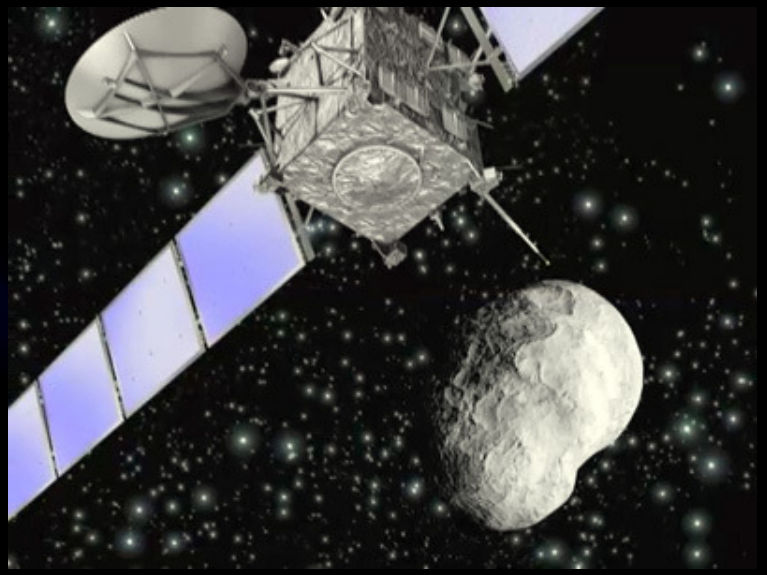
2004

4 February - Approval of the programme to build a complex at the Guiana Space Centre for commercial Soyuz launches

2 March - Launch of Rosetta from Kourou

24 November - Czech Republic becomes second ESA European Cooperating State

25 November - First ESA/EU 'Space Council' in Brussels



The European approach to space

2005

14 January - Historic landing of Huygens probe on Titan

12 February - First successful launch of Ariane 5 ECA

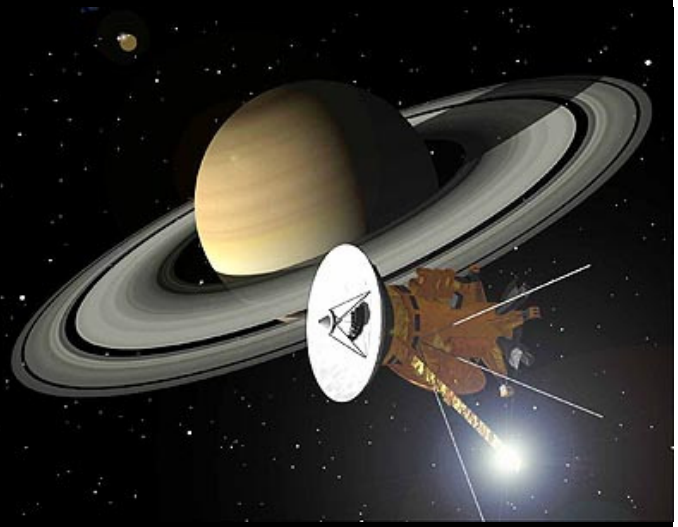
16 March - Greece becomes ESA's 16th Member State

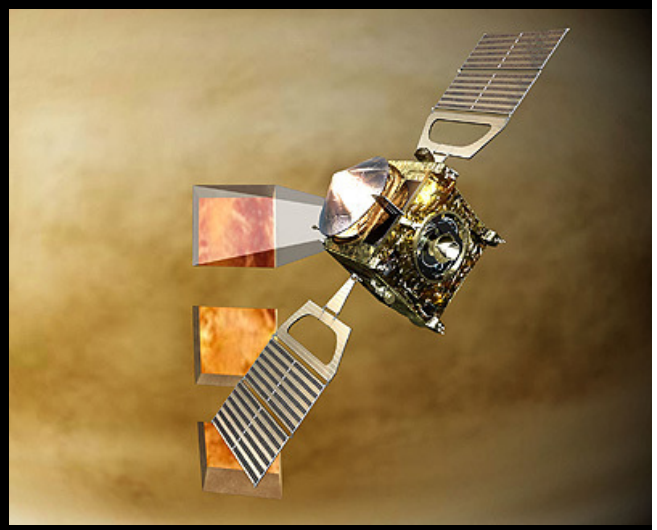
30 June - Luxembourg becomes ESA's 17th Member State

9 November - Venus Express launched from Baikonur on a Starsem Soyuz-Fregat launcher

5/6 December - ESA Ministerial Council meeting in Berlin

28 December - Launch of first Galileo test satellite (GIOVE-A)





2006

27 February - Romania becomes third ESA European Cooperating State

19 October - Launch of MetOp-A from Baikonur

The European approach to space

2007

26 February - Inauguration of Soyuz launch pad in Kourou.
BepiColombo, the mission to explore planet Mercury, definitively 'adopted' by ESA's Science Programme Committee

4 May - Poland becomes fourth ESA European Cooperating State

22 May - A consensus of 29 ESA/EU countries adopt a Resolution on European Space Policy

23 October - ESA astronaut Paolo Nespoli and Node-2 module launched to ISS

The European approach to space

2008

11 February - Columbus installed on ISS

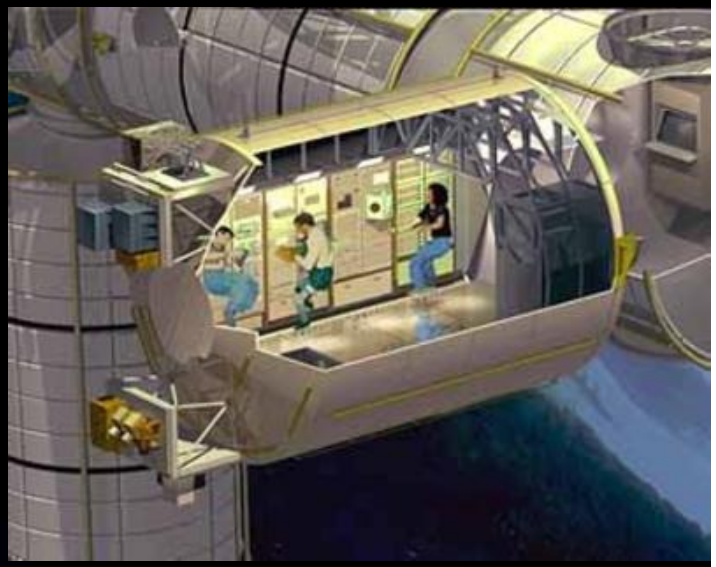
9 March - ESA launches first ATV resupply spacecraft to ISS

27 April - Launch of ESA's second Galileo In-Orbit Validation Element satellite GIOVE-B

9 June - Slovenia signs Cooperation Agreement with ESA

12 November - Czech Republic becomes 18th ESA Member State

25/26 November - ESA Ministerial Council in The Hague



The European approach to space

2009

20 May - Six new ESA astronauts selected: two Italian, one French, one Dane, one German and one British

29 May - Sixth 'Space Council', Brussels

24 July - Latvia signs Cooperation Agreement with ESA

27 August - Cyprus signs Cooperation Agreement with ESA

10 November - Estonia becomes fifth European Cooperating State

The European approach to space

2010

22 January - Slovenia becomes sixth European Cooperating State

12 February - European-built Node-3 and Cupol modules installed on ISS

8 April - ESA's 'ice mission', CryoSat-2, launched

28 April - Slovak Republic signs Cooperation Agreement with ESA

3 June - Mars500, 520-day simulated mission to Mars begins

7 October - Lithuania signs Cooperation Agreement with ESA

25 November - Seventh 'Space Council', Brussels

26 November - Hylas-1, ESA's first PPP satellite launched

The European approach to space

2011

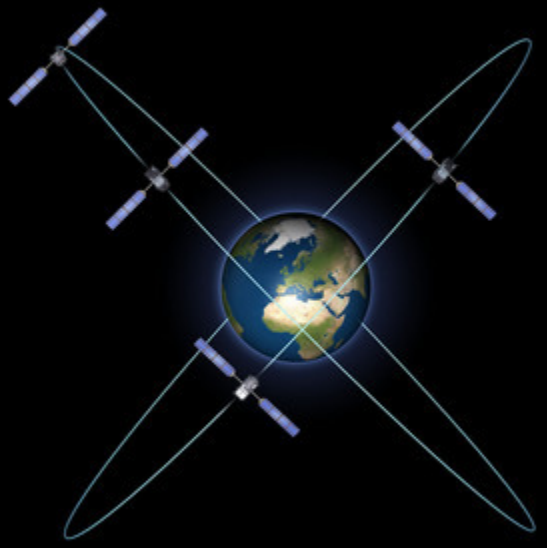
20 January – Romania signs the Accession Agreement to the ESA Convention

31 January - Israel signs Cooperation Agreement with ESA

21 October - Soyuz lifts off for first time from Europe's Spaceport in French Guiana, carrying two Galileo IOV satellites

21 November - ESA's Council grants observer status to 10 states that are members of the EU but not ESA: Bulgaria, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia.

22 December - Romania officially became ESA's 19th Member State



2012

20 February - Malta signs a Cooperation Agreement with ESA

13 September – Poland signs the Accession Agreement to the ESA Convention

D. Prunariu chairing the Working Group of the 4th Committee of the UN General Assembly

New York, UN Office, October 14, 2010

European astronauts at the 23rd Congress of the Association of Space Explorers after the election of D. Prunariu as President of ASE Europe

Kuala Lumpur, Malaysia October 5, 2010

Main elements of the European policy for space

- **Satellites**

- The policy expresses support for an operational and autonomous Global Monitoring for Environment and Security (GMES) satellite capability before the end of 2008, and for a global navigation satellite system under European civil control, i.e. the Galileo positioning system.

Main elements of the European policy for space

- **Galileo**

- The European Union has already started work on a project to create the **Galileo positioning system**, to break dependence on the United States GPS system. This is in cooperation with ESA as well as other countries.

Main elements of the European policy for space

- **Kopernikus (GMES)**

- The Kopernikus or **Global Monitoring for Environment and Security** mission is a constellation of 25 satellites (to be 30 by 2014) providing environmental and security data from around the world. It should be able to detect detail information such as illegal deforestation and the requirements of a refugee camp.

Main elements of the European policy for space

- **Launch systems**

- The policy emphasizes the importance for Europe to maintain independent, reliable and cost-effective access to space through European launch systems, without mentioning any specifically by name. The policy statement affirms support for the "EC-ESA Framework Agreement" and the resolution on the evolution of the European launcher sector adopted in 2005.

Main elements of the European policy for space

- **ISS**

- The policy reaffirms a continuing European commitment to the International Space Station (ISS), and describes ESA participation in future international exploration programmes as being important.

Main elements of the European policy for space

- **Science and Technology**

- The policy includes the goal of maintaining programmes that give Europe a leading role in selected areas of science. It also calls for development of technologies that allow European industry to avoid dependency on international suppliers.

Orientations of the European Policy in Space (outlined in 2007)

Coordinating more effective civil space programmes between ESA, EU and their respective Member States to ensure value for money and eliminate unnecessary duplication, thus meeting shared European needs.

Developing and exploiting European space applications such as GALILEO and GMES (Global Monitoring for the Environment and Security) and satellite communication applications.

Preserving EU autonomous access to space.

Increasing synergy between defense and civil space programmes and technologies and pursue, in particular, interoperability of civil/military systems.

Ensuring that space policy is coherent with, and supports the EU's external relationships.

Thank you for your attention