ESF-ESSC to SSB
November 2016

Athena Coustenis
Nicolas Walter
Jean-Claude Worms

The European Science Foundation Hosts Scientific Expert Boards and Committees

Composed of high-level independent researchers or research managers to provide targeted expert advice in areas of science, policy, infrastructure, environment and society in Europe:

- Nuclear Physics European Collaboration Committee (NuPECC)
- **European Space Sciences Committee (ESSC)**
- Marine Board (EMB)
- Committee on Radio Astronomy Frequencies (CRAF)
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" The mission of the ESSC is to provide an independent European voice on European space research and policy. It is the ESF's expert body on space research "

ESSC Representation

International Environment

European Union

- FP7/H2020 Space Advisory Group (individuals)
- Horizon 2020 stakeholder consultations
- Direct interactions with programme executives

National Space Agencies

- Annual meeting with ESSC Funding Organisations
- UKSA's SPAC
- Swedish national committee

ESA

- Council at Ministerial level
- High-level Science Policy Advisory Committee (ex-Officio)
- Scientific advisory committees at programme level (ex-Officio)
- Meetings with programme executives

- COSPAR Science Advisory Committee (ex-Officio)
- UN Office of Outer Space Affairs (NEO Action Team 14)

- US National Academies Space Studies Board (ex-Officio)

Output and advice from ESSC on the ESA programme proposals at the 2016 Council Ministerial Level

Lucerne, Switzerland

1-2 Dec. 2016

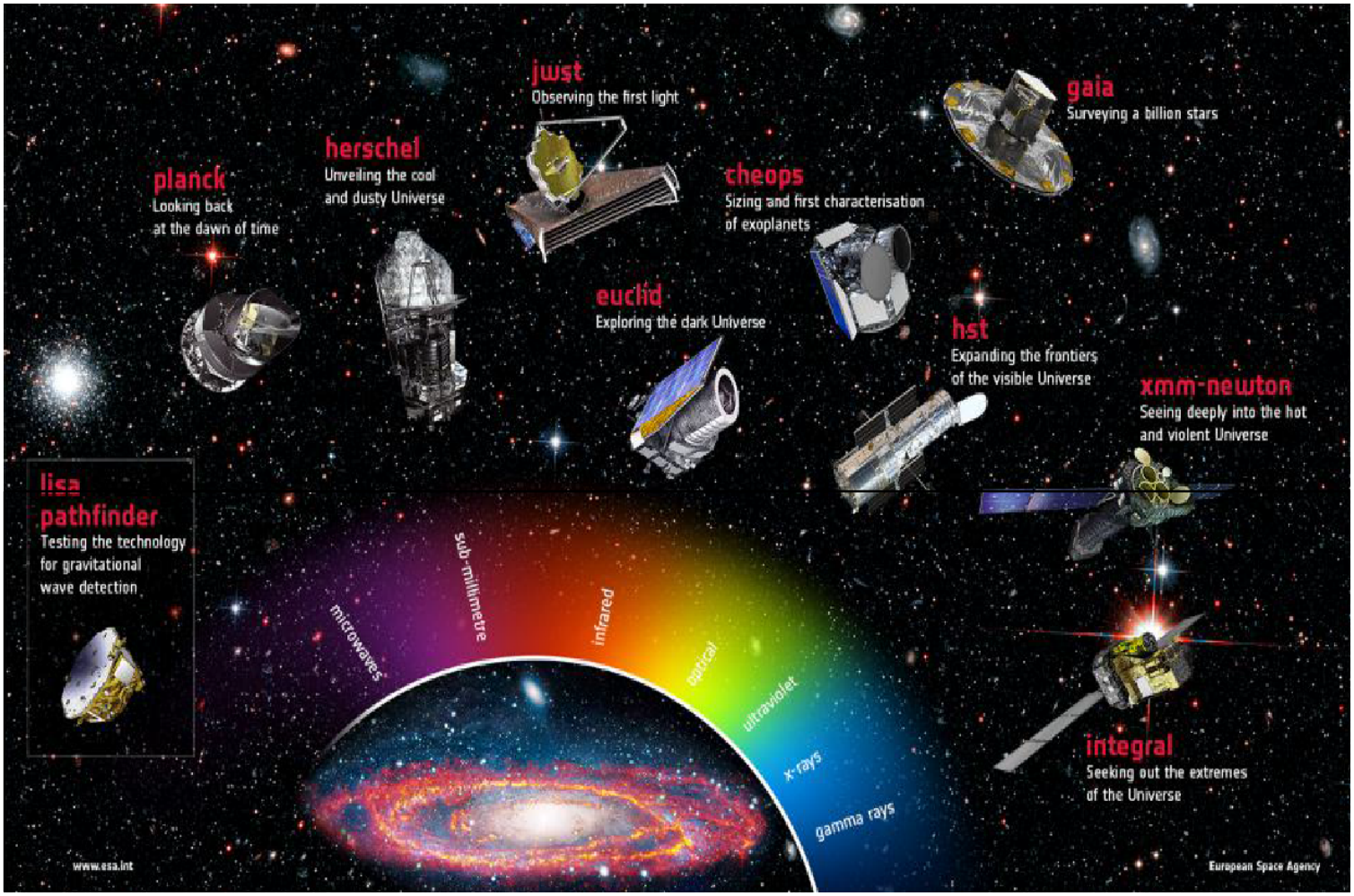
ESSC position on ESA programmes at C-MIN 2016

Interactions With ESA

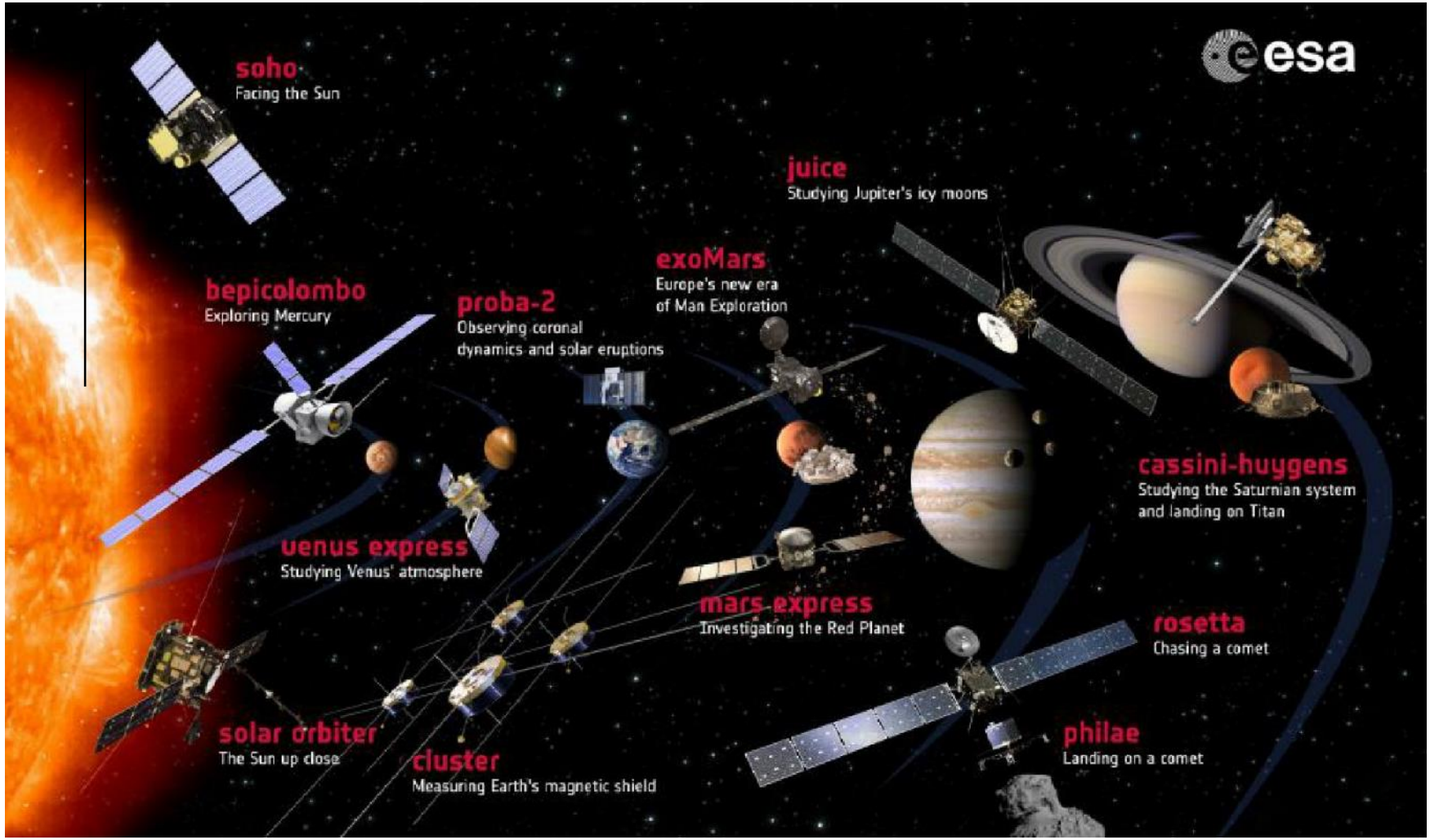
- Interactions with DG and ESA Directors
- Participation to the ELIPS roadmapping workshop
- Participation to HESAC, HiSPAC and SSAC

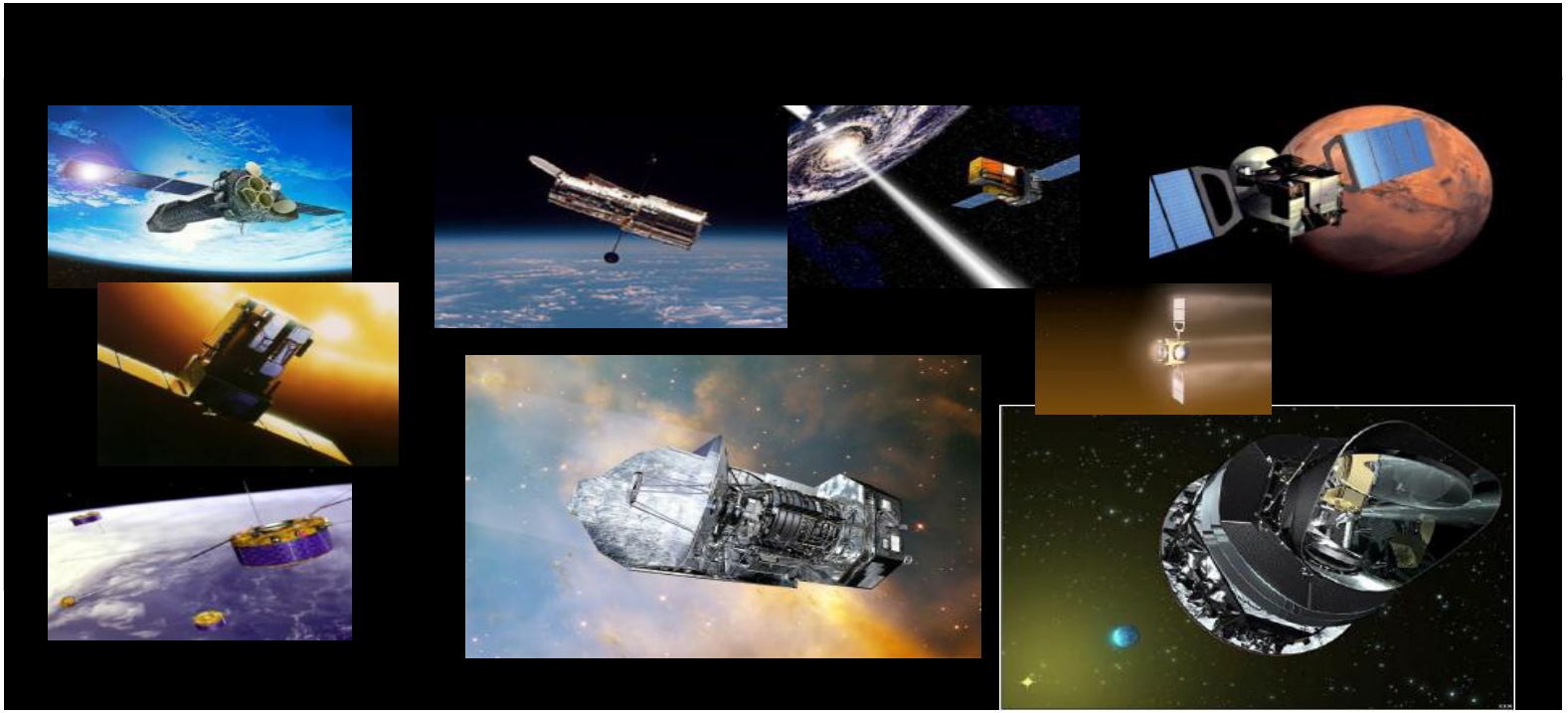
- > ESSC Position on the program proposals
  - Science Mandatory programme
  - Human and Exploration programme
  - Earth Observations programme
  - Space Situation Awareness programme

ESA’s astronomy missions



ESA’s missions fleet in the solar system





- To enable the European scientific community to achieve and sustain excellence in science through a cutting-edge scientific programme meeting the challenges of worldwide research.
- To be a pillar in the creation and maintenance of space skills and capabilities for Europe, including advanced technologies, key for the competitiveness of European industry on the worldwide scene.
- To fascinate, inspire and motivate European citizens.

The ESA science programme at C-MIN 2016

Successes and objectives of the science mandatory programme

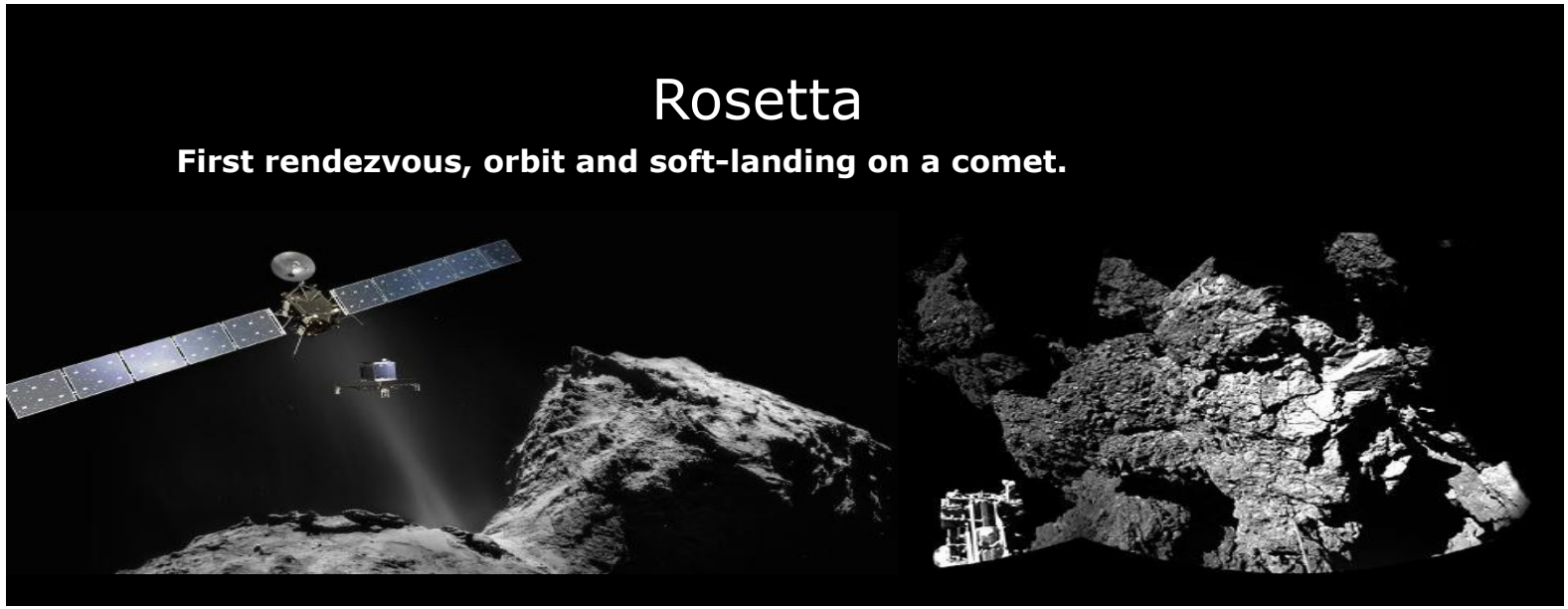
- Basically, the programme is based on a bottom-up, peer reviewed selection of missions on the basis of scientific excellence following an open call.
- Long-term planning to service a broad community.
- Regular sequence of launches based on a balance of mission sizes, fostering both ambitious, high-return missions and faster, smaller missions.
- Solid partnership with National programmes in Member States.
- Open to broad international cooperation with European identity

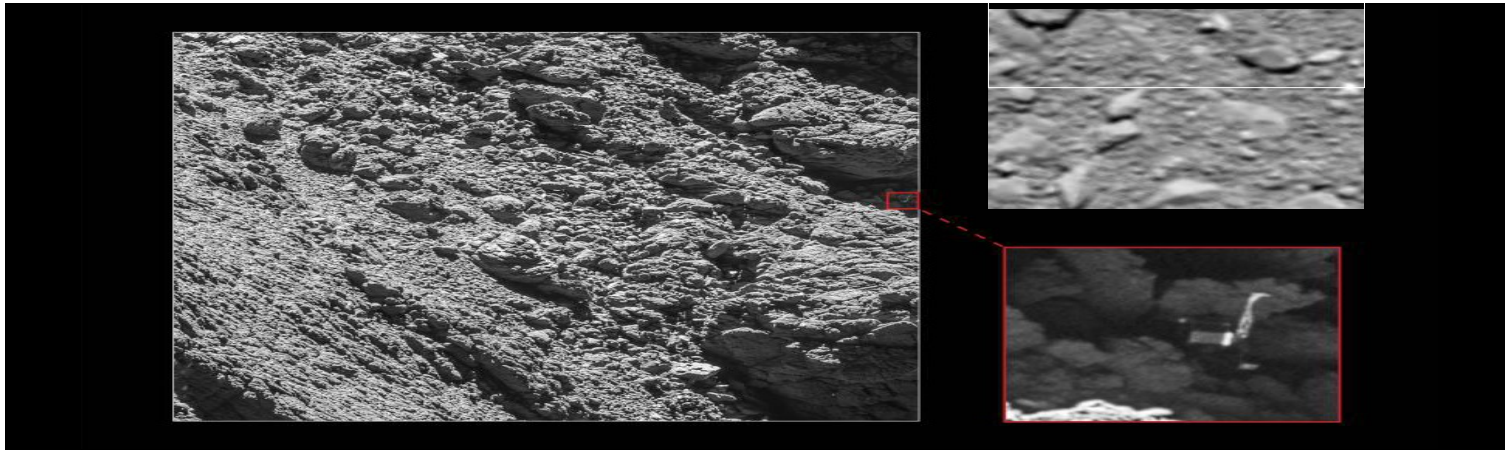
The ESA science programme at C-MIN 2016

Successes and objectives of the science mandatory programme

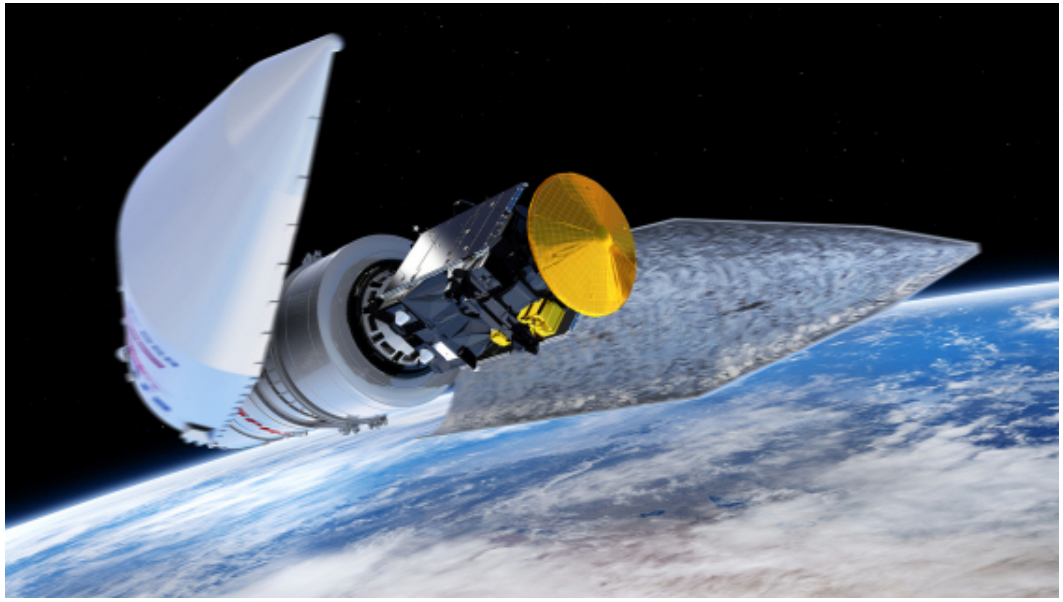
- The Science Programme is a key element of ESA and its only Mandatory Programme.
- To achieve its goals the Science Programme requires the combination of stability (regular cadence of calls and launches) and affordability (within a stable LoR).
- The content of the Programme (which missions?) is decided by the SPC.
- The annual budget over five years is decided at ESA Council at Ministerial level.

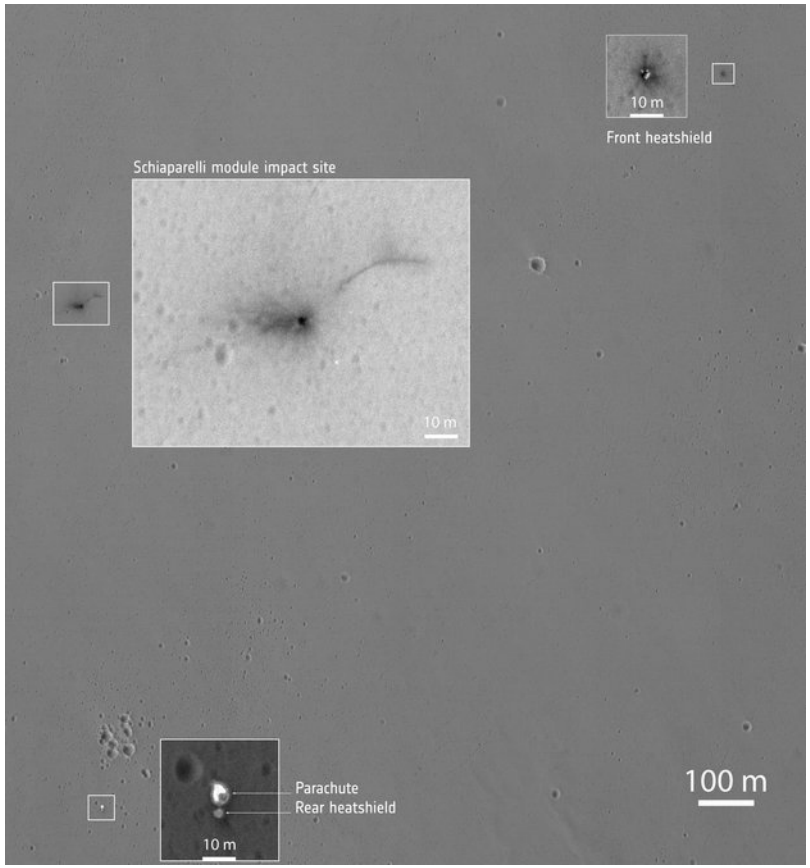
ROSETTA





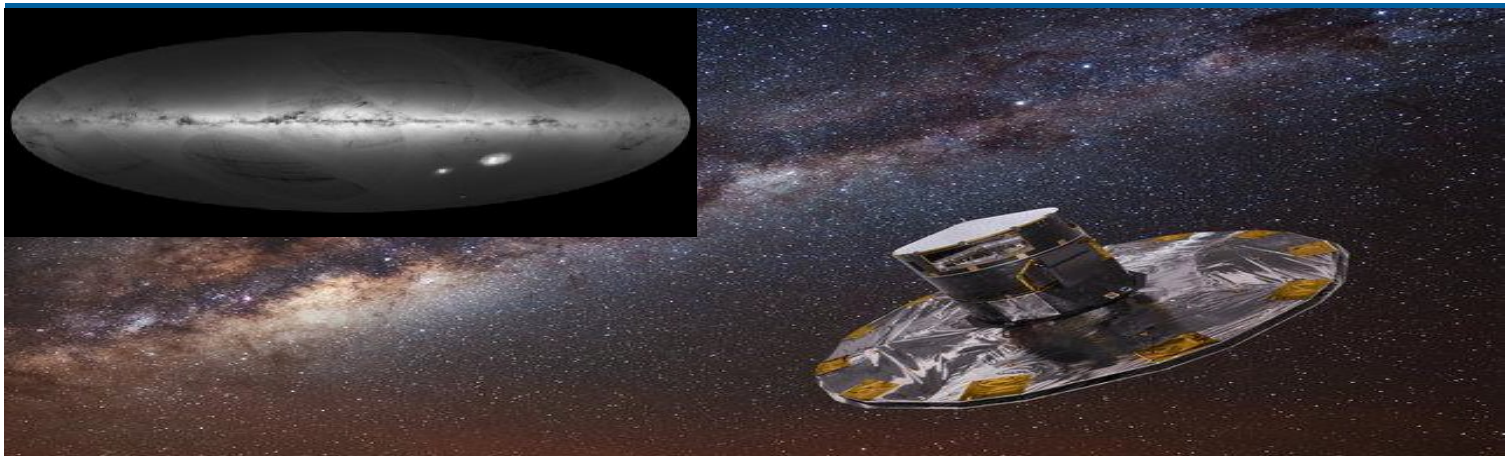
EXOMARS





- Mission from December 2017 until end of 2022. Orbiter will serve as relay for the 2020 rover mission
    - will study the Martian atmosphere for evidence of biological gases (CH4, etc)
- The EDLM has provided technology validation for entry and descent but not for landing

GAIA



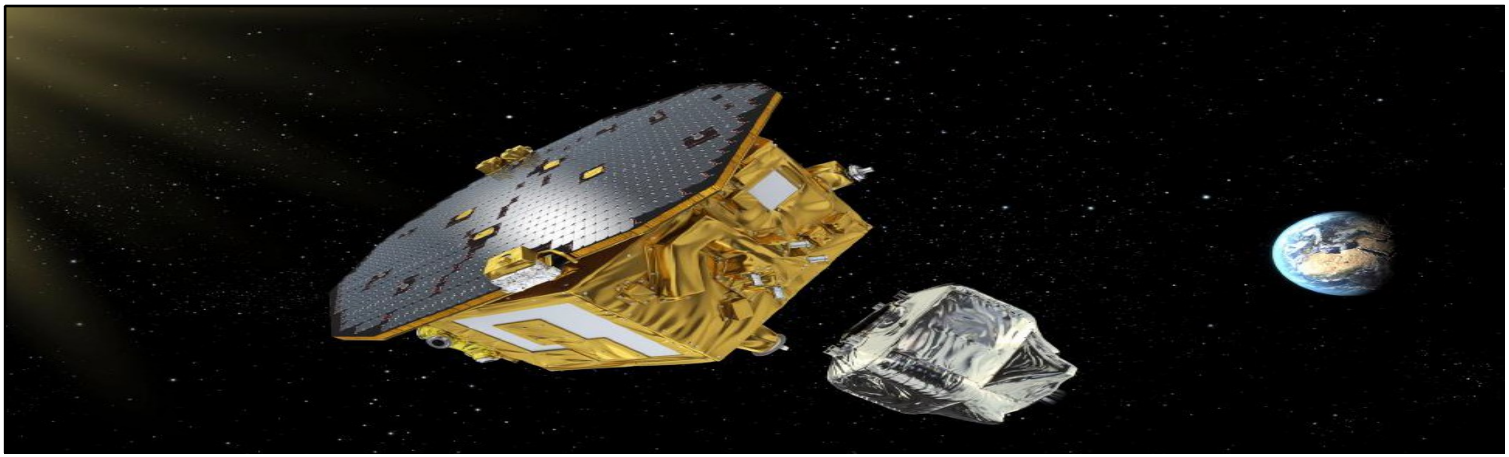
Progress towards Gaia first data release

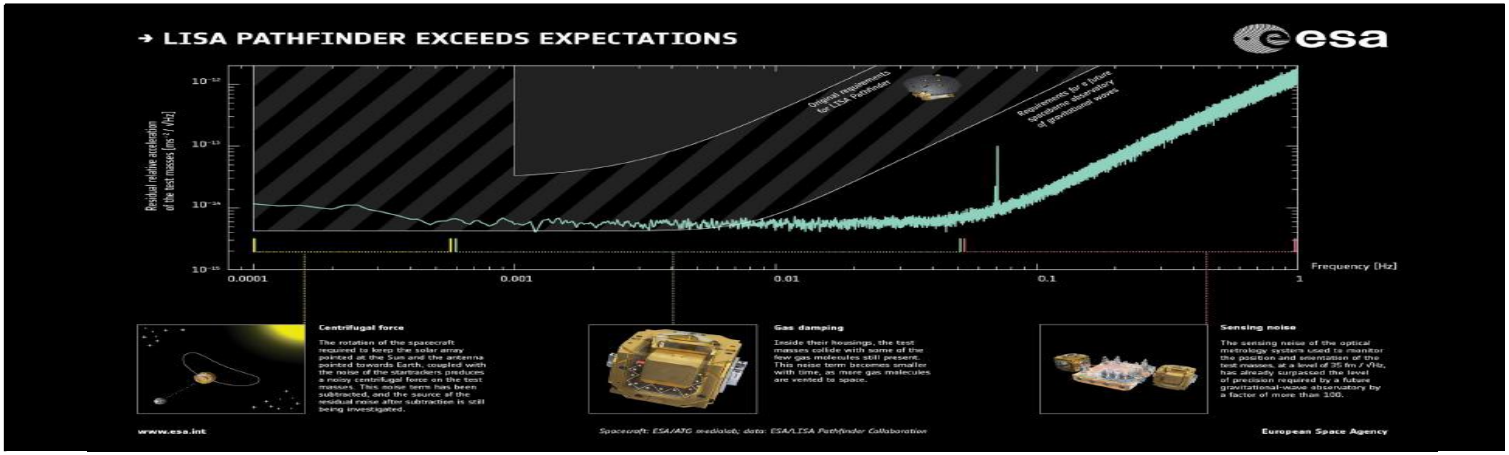
Measurements as of Sepember 2016: 490 billion
positions
118 billion brightnesses
10 billion spectra

First public data release in September 2016: Positions & broad-band photometry for ~1 billion stars
Positions, parallaxes, & proper motions
for 2 million stars in common with Tycho catalogue Selected RR Lyrae
& Cepheid light curves

Next data release in 2017:
Full astrometric solution for ~1 billion stars, including
parallaxes & proper motions

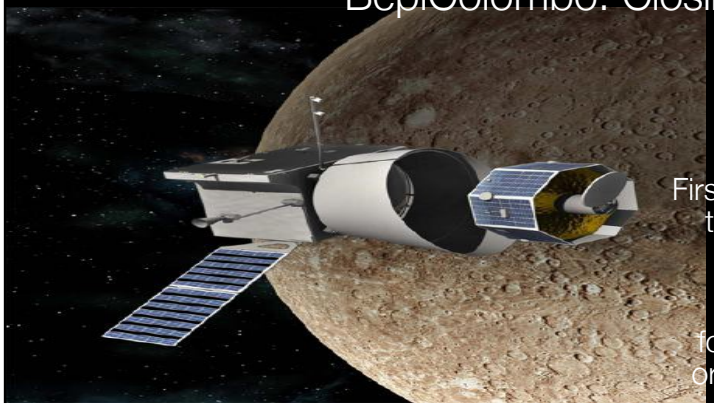
LISA PATHFINDER





FUTURE MISSIONS

BepiColombo: Closing in on Mercury



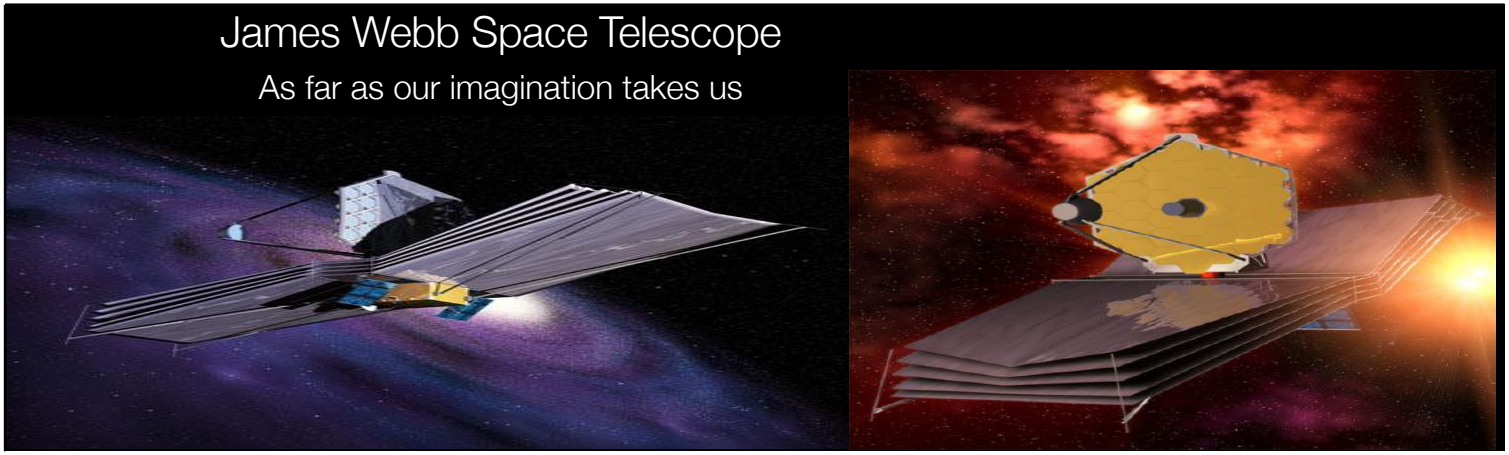
Joint ESA/JAXA mission, and the first dual- satellite enterprise to Mercury

First European mission to orbit a planet in the hot regions of the Solar System, to make the most extensive study of Mercury – from the interior to the exosphere

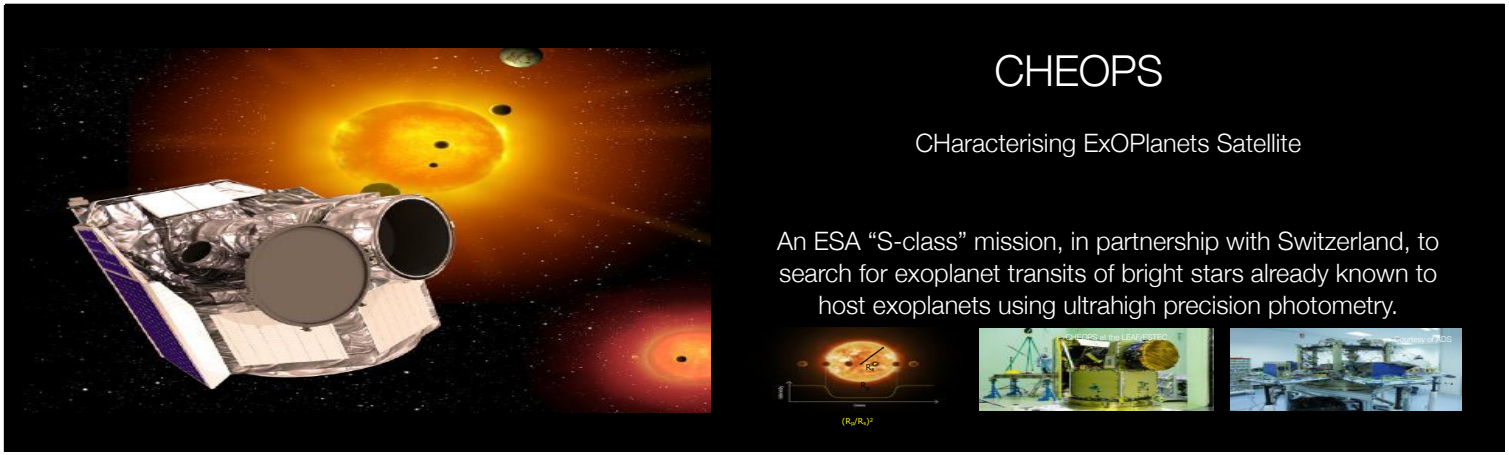
Helping to reveal the evolution of Mercury and the formation of the inner planets, and to understanding the origin of Mercury's global magnetic field – the only one of

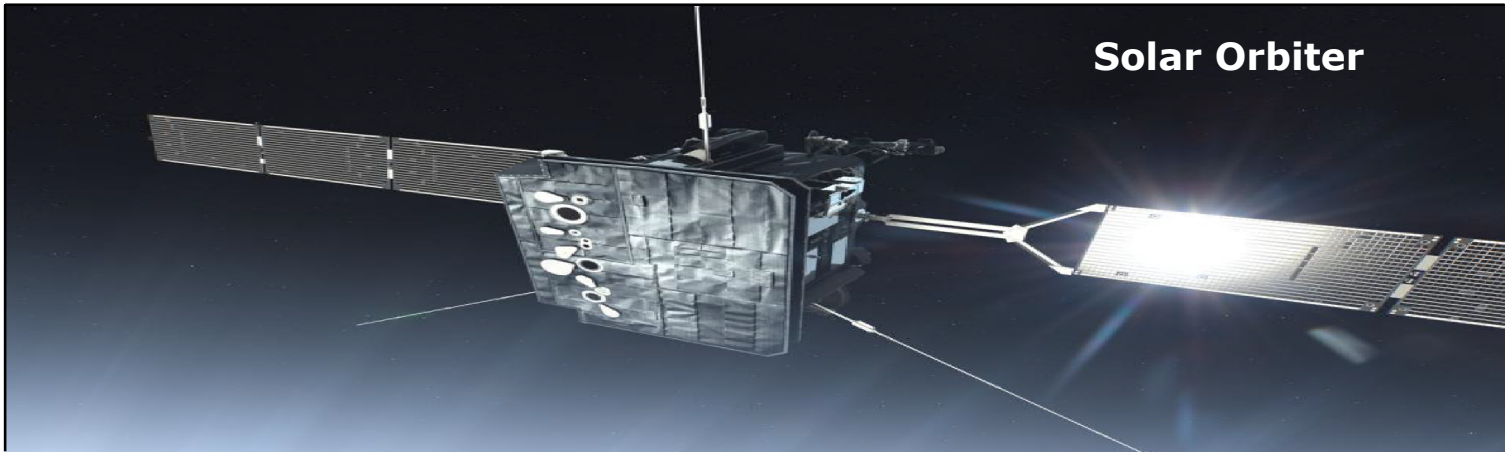
James Webb Space Telescope

As far as our imagination takes us

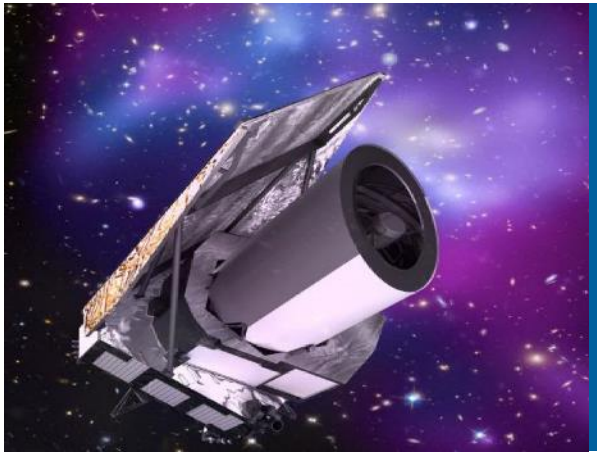


FUTURE MISSIONS





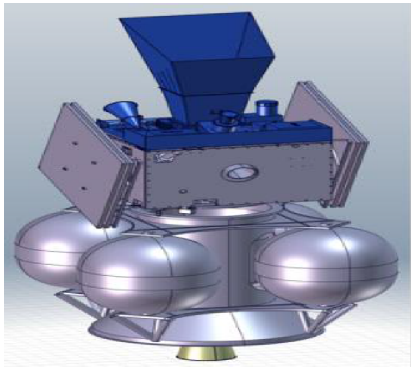
EUCLID



Mission to understand the nature of dark energy and dark matter

- imaging of cosmic structures at different ages of the Universe to see the accelerated expansion during its lifetime.
- Investigating the structures formed by both dark matter and baryonic (luminous) matter using different measurement techniques.
- Survey of 36% of the sky in the visible and near-IR with the best possible angular resolution.

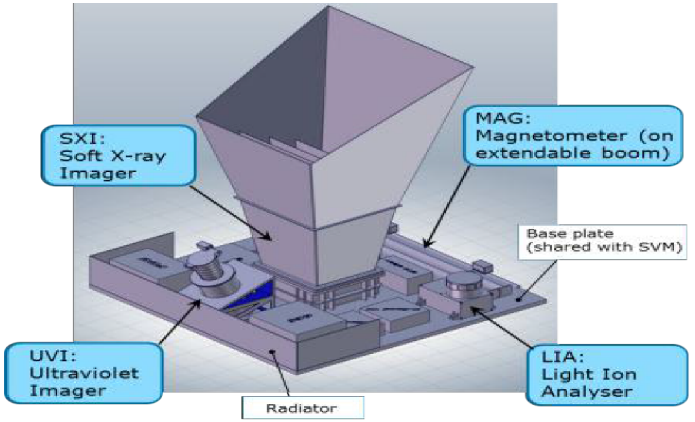
SMILE (ESA-CAS mission)



PLM (ESA)

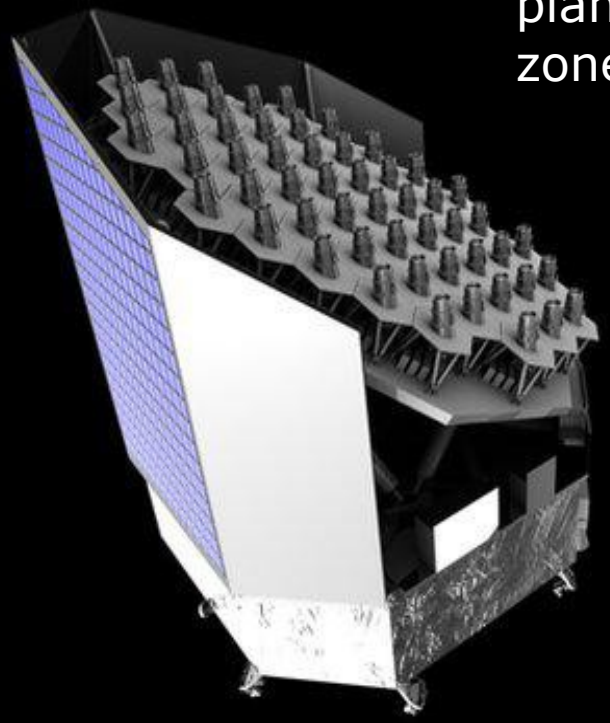
SVM (CAS)

PM (CAS)

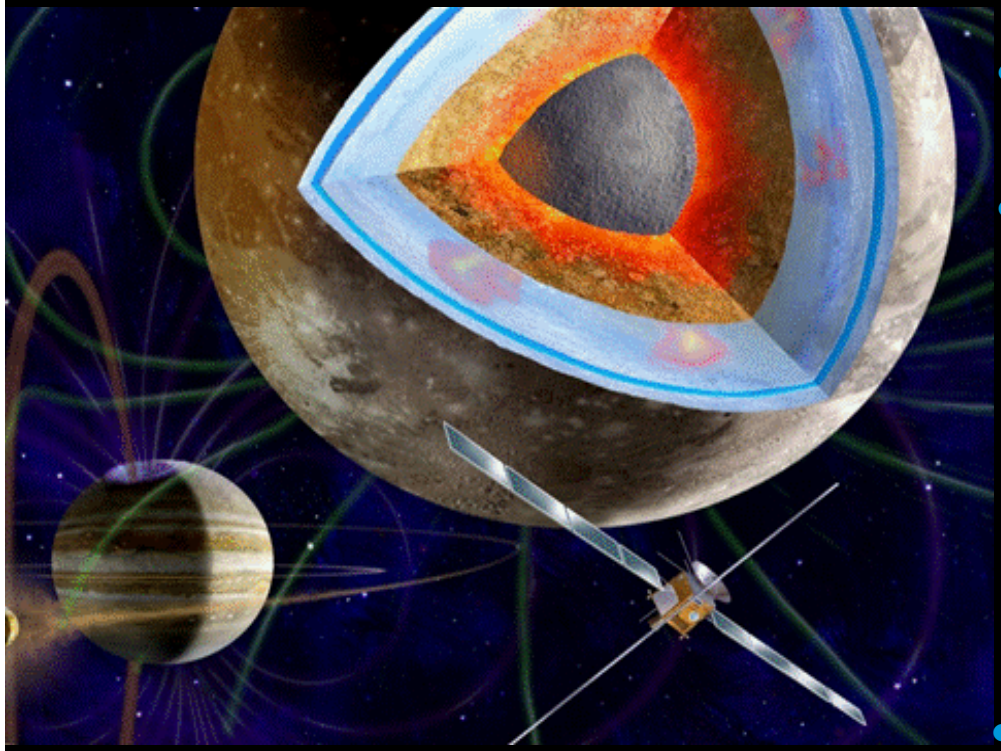


PLATO

Detection and characterisation of terrestrial exoplanets around bright solar-type stars, with emphasis on planets orbiting in the habitable zone.

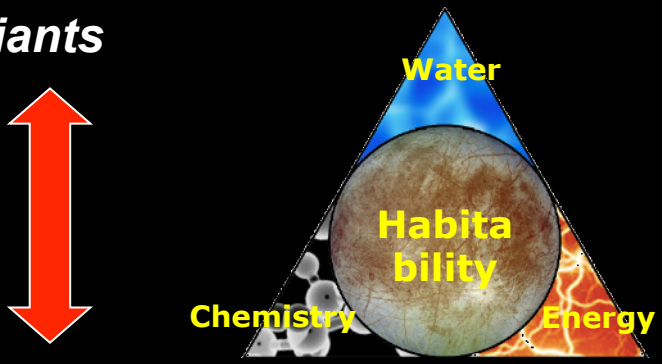


JUICE: JUpiter Icy moons Explorer



JUICE Science Goals

- *Emergence of habitable worlds around gas giants*
- *Jupiter system as an archetype for gas giants*



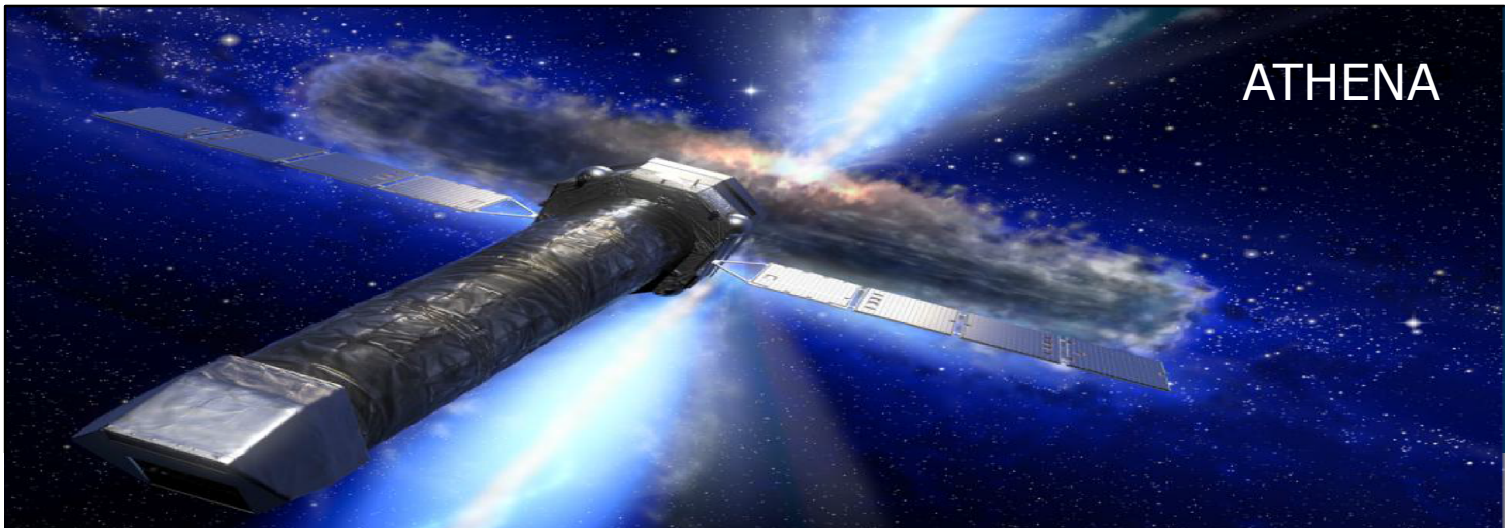
Cosmic Vision Themes

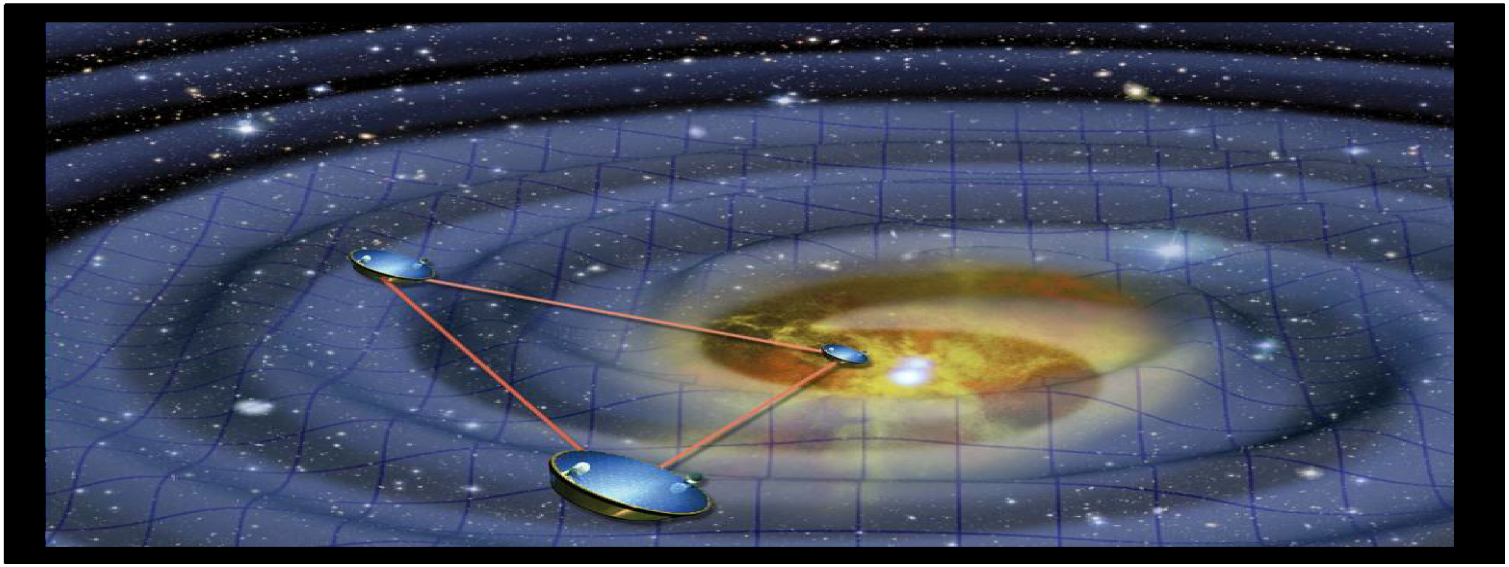
- *What are the conditions for planetary formation and emergence of life?*
- *How does the Solar System work?*

JUICE : the 1st Large CV mission concept

- *Single spacecraft mission to the Jovian system*
- *Investigations from orbit and flyby trajectories*
- *Synergistic and multi-disciplinary payload*
- *European mission with international participation*

FUTURE L-CLASS MISSIONS





THE COSMIC VISION PROGRAMME

COSMIC VISION 2016-2035

GW Observatory

M7

M6

ATHENA

M5

Cheops Smile
Microscope
ExoMars IRIS

M4

PLATO

EUCLID

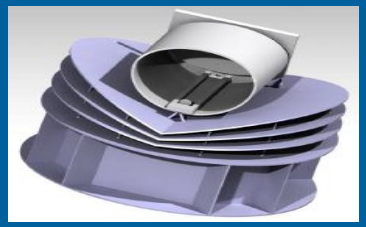
JUICE

Solar Orbiter

JWST

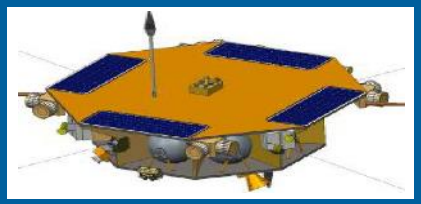
Bepi Colombo

M4 Candidate Missions



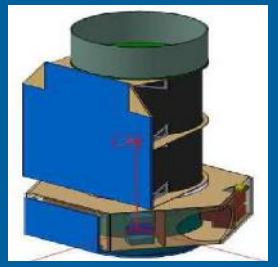
ARIEL

Exoplanet atmosphere spectroscopy in the IR (λ = 2-8 ∝m) for hot transiting planets. L2 orbit .



THOR

Understanding turbulent fluctuations in plasmas. Spinning S/C, in High Elliptic Orbit.



XIPE

Observatory for measuring the polarization of X-ray sources. LEO equatorial orbit 550 km

The ESA science programme at C-MIN 2016

LoR and objectives of the science mandatory programme

- The Science Programme is part of the Level of Resource decision: the budget is decided, with a horizon of 5 years, by unanimity in Council at Ministerial level (CMIN).
- The Programme has to meet the requirements of its stakeholders (National Agencies and Scientific Community) while being realistic and achievable.
- It will not be possible to preserve the content of the Programme in the presence of an eroding budget through “increased efficiency”

The ESA science programme at C-MIN 2016

2017-2021

- Use the proposed constant purchasing power to maintain the current planning for the period 2017-2021, i.e.
  - Launch 5 missions: Bepi Colombo, JWST, Solar Orbiter, Euclid and Cheops.
  - Select 5 new missions: L3, M4, M5, M6 and S2.
- Use the proposed 2% per year increase to introduce further improvements in the Programme's scope and flexibility

ESSC position on ESA programmes at C-MIN 2016

Successes and objectives of the science mandatory programme

- The ESSC recognises the structuring effect of the scientific programme on the European scientific community and the involvement of this community in defining science priorities.
- The ESSC is considering very positively that ESA is effectively pursuing the guidelines of the Cosmic Vision 2015-2025, aimed to address fundamental scientific questions concerning: planetary system formation and evolution, emergence of life, solar system, origin of the Universe and its fundamental physical laws.
- The ESSC recommends that a long-term scientific strategic vision and planning of the scientific programme be further developed. Such a strategic vision, which of course includes some risk and complements and/or updates the Cosmic Vision programme should be developed in consultation with the scientific community and the international partners.

Human and Robotic Exploration Programme: European Exploration Envelope (E3P)

Strategic guidelines of E3P

- Balanced mix of human and robotic
  - ***Robots as Human precursors***
- Secure maximum benefit from existing investments
  - ***ISS and ExoMars***
- Progressively develop new technological and operational capabilities
- Prepare future steps for beyond LEO sustained human presence
  - ***Moon as most likely next destination***
- Seek new opportunities for international cooperation
  - ***Maintain NASA as core partner***

The ESA European Exploration Envelope programme (E3P) at C-MIN 2016

Successes and objectives of the E3P programme

- The ESA exploration strategy is well reflected in the E3P proposal. We note the outstanding outcome of the ELIPS programme in increasing European knowledge, capacity and capability in fundamental and applied sciences as well as on exploration-related research.
- The programme proposed is well balanced for science and technology. It builds on current strengths and big successes and coherently connects the continued efforts on ISS with a promising exploration programme going from the Moon (including CisLunar Space) to Mars (and its moons).
- The ESSC strongly supports the concept of an envelope programme for European robotic exploration and human spaceflight in LEO and beyond. The ESSC particularly welcomes the coherent long(er)-term vision of the E3P approach, as it is forward-oriented, integrative, adaptive, and well balanced. The envelope approach should allow to retrieve the most out of each individual programmatic element and to contribute in making E3P an overall highly competitive programme on the international scene.

The ESA European Exploration Envelope programme (E3P) at C-MIN 2016

Successes and objectives of the E3P programme

SciSpacE - Science in Space Environment (post-ELIPS)

- The SciSpacE element is well integrated within the ambitions of the E3P programme and ESSC recognises that, if supported at the adequate level, it will become a strong and leading pillar of this programme.
- In order to allow for the achievements of SciSpacE ambitions, the ESSC supports the ISS Extension to 2024 and the two long-duration ESA astronaut missions proposed in the E3P programme.
- The ESSC strongly recommends to start preparing for the future and in particular for the post-ISS era. It would be judicious to develop prioritised scientific roadmaps that will take into consideration key scientific challenges and objectives as well as the platforms (including commercial) and technology required to achieve these.

The ESA European Exploration Envelope programme (E3P) at C-MIN 2016

Successes and objectives of the E3P programme

Exploration - Mars

- ExoMars is an important milestone in performing astrobiology science operations on the Martian surface. The ESSC is convinced that both ExoMars elements (2016 TGO and 2020) will produce exciting and excellent new science.
- The Committee highlights the strategic requirement for European independence to continue developing Europe's capability in EDM technology based on lessons learned from the Schiaparelli failure to land.
- In the future, Mars Sample Return is definitively considered by the ESSC as a positive longer-term investment with presumably highest value both in scientific, technological and cooperation level.
- The ESSC strongly supports further development of the MREP-2 programme as it can provide the technologies for Europe to play a major role in the future sample return programme with an ultimate goal of Mars Sample Return, including the timely design, building and commissioning of sample receiving and curation facilities.

The ESA European Exploration Envelope programme (E3P) at C-MIN 2016

Successes and objectives of the E3P programme

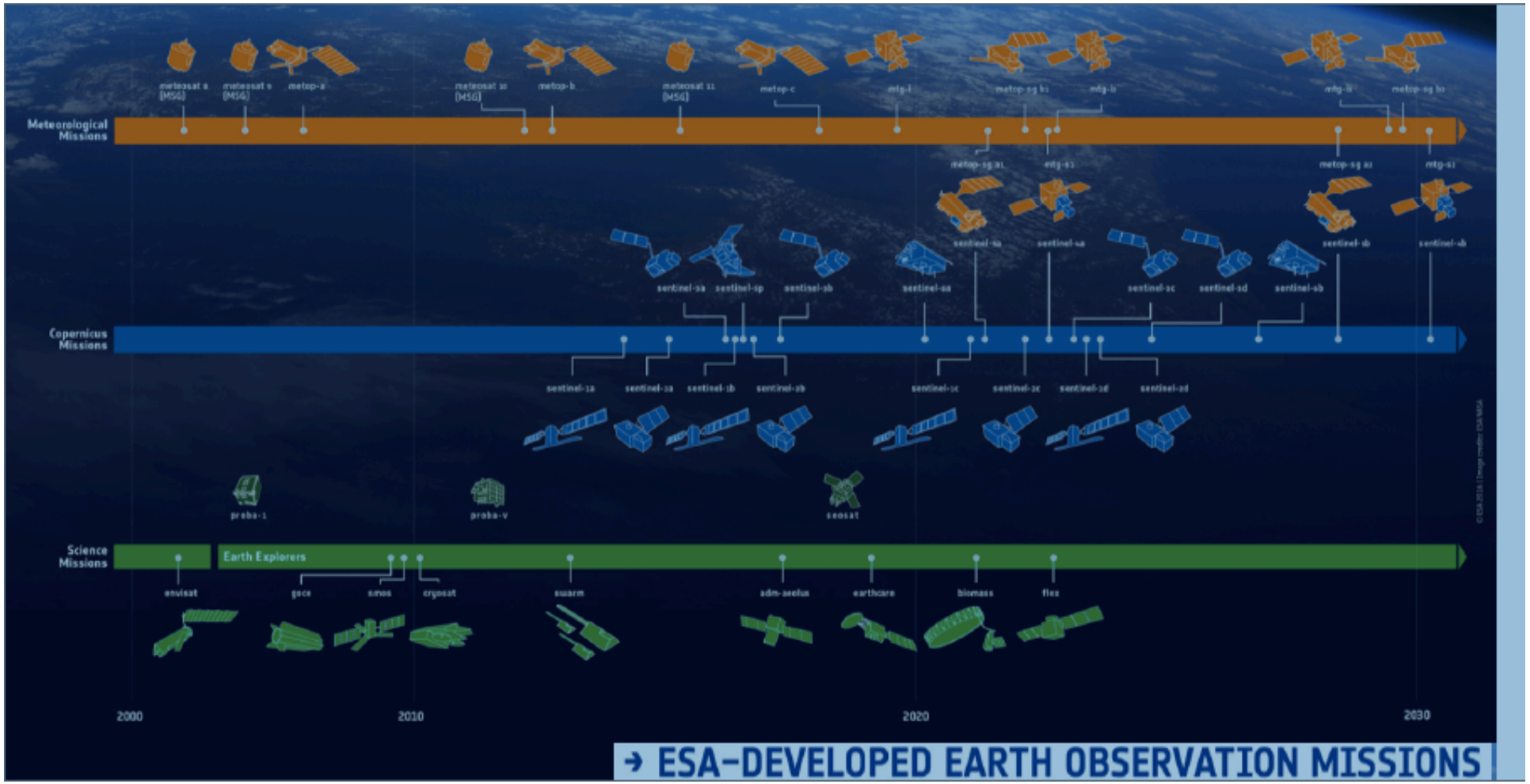
Exploration - Moon

- The continuity between Rosetta, ExoMars and Luna Resource Lander to foster specific European technology and science elements (precise and safe landing, end-to-end sampling including drilling) is considered as a sustainable and efficient approach by the ESSC.
- The ESSC supports efforts by the ESA Executive to secure funding for Europe's continued participation to the Luna-Resource and Luna Glob missions. These, along with the proposed Lunar Polar Sample Return (and Phobos Sample Return) mission with Russia should be an integral part of ESA's wider exploration strategy. The ESSC also recommends widening collaboration in this area to include other international partners with expertise in lunar and other small body exploration, in the spirit of the recently formulated Global Exploration Roadmap.
- The approach proposed in the Exploration Preparation, Research and Technology (ExPeRT) element is considered valid and promising in providing a coherent longer-term planning well integrated and articulated into the broader human space and robotic exploration programme.

ESA Earth Observation programme

Earth Observation: Boundary Conditions

ESA Earth Observation programme



The ESA Earth Observation programme at C-MIN 2016

ESSC position on the EO programme

- The ESSC commends the achievements of the ESA Earth Observation programme as well as its coherency and consistency. This programme has delivered a large number of original and ambitious missions, including the unique *Copernicus Sentinel Satellites* that produce excellent data for scientific research. Moreover, there is a large number of Earth Explorers and Sentinels in the pipeline.

- The ESSC therefore strongly endorses the EOEP-5 envelope programme and recommends for it to be fully supported by the EOEP Member States.

The ESA Earth Observation programme at C-MIN 2016

ESSC position on the EO programme

- For the Sentinels, ESSC recommends that ESA discuss the bottlenecks for the validation of the Sentinel Satellites with the European Commission, to come to a sustainable programme covering all scientific and operational requirements.
- "Bringing the users to the data, instead of the data to the users" is an important concept that is part of EOEP-5 and the ESSC supports this approach. ESSC recommend to implement supporting platforms as a continuous activity that started small but with a scalable design.
- The Altius mission in the Earth Watch programme is important for the continuation of occultation and limb measurements of the stratosphere, which has been identified in several gap analyses.
- ESSC recommends designing a strategy for developing satellite missions in less than 5 years and demonstrate this strategy using micro satellites and/or high-altitude platforms.

ESA space situational awareness programme

ESS position on the SSA programme

- ESSC recommends that in order to safeguard the European technological systems in space and on the ground, and in order to ensure the highest level of safety for human flight and exploratory human missions, Europe and ESA cooperate and participate in the global/international development of a coordinated robust space system of Sun-heliosphere monitoring in order to acquire exhaustive real-time data sets, to improve space weather understanding and predictions.
- ESSC recommends that Europe participate in the global space weather monitoring effort by providing a spacecraft system composed of two or three elements, strategically distributed in space, to monitor solar activity, solar eruptions, and their effects on Earth.
- ESSC recommends focused research on the physical and chemical properties of NEOs and SDOs in the near-Earth space, increasing our preparedness for mitigating the threats posed by these objects. An increased understanding of science and resource potential of NEOs as a result of these investigations would be an added benefit.

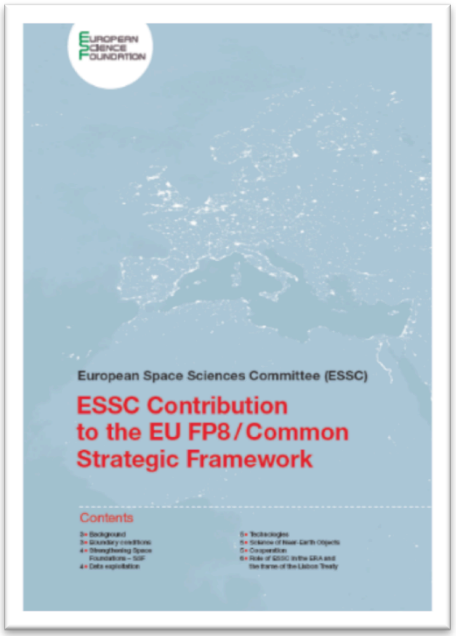
International collaboration

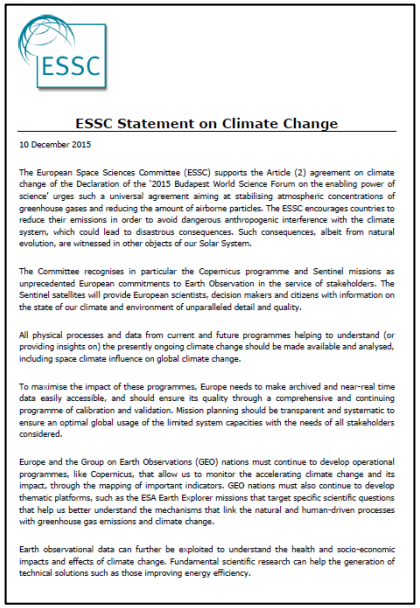
ESSC recommendations for international collaboration

- The ESSC recognises that ESA needs to establish a leading role in the space exploration landscape by developing and operating ESA-led missions. At the same time, the current portfolio in ESA's programme contains a large number of missions and concept studies that are performed in collaboration with other space agencies, essentially NASA but also JAXA and CAS. This is essential for ensuring a more efficient implementation and science return of elements of common interest in times where the resources worldwide do not abound.

- The science community urges ESA to envisage scientific exchanges and discussions at the beginning of a mission definition phase with potential partners so as to ensure an optimised return of the mission within a bottom-up approach.

Advice to the European Commission





ESSC Statement on Climate Change

10 December 2015

The European Space Sciences Committee (ESSC) supports the Article (2) agreement on climate change of the Declaration of the '2015 Budapest World Science Forum on the enabling power of science' urges such a universal agreement aiming at stabilising atmospheric concentrations of greenhouse gases and reducing the amount of airborne particles. The ESSC encourages countries to reduce their emissions in order to avoid dangerous anthropogenic interference with the climate system, which could lead to disastrous consequences. Such consequences, albeit from natural evolution, are witnessed in other objects of our Solar System.

The Committee recognises in particular the Copernicus programme and Sentinel missions as unprecedented European commitments to Earth Observation in the service of stakeholders. The Sentinel satellites will provide European scientists, decision makers and citizens with information on the state of our climate and environment of unparalleled detail and quality.

All physical processes and data from current and future programmes helping to understand (or providing insights on) the presently ongoing climate change should be made available and analysed, including space climate influence on global climate change.

To maximise the impact of these programmes, Europe needs to make archived and near-real time data easily accessible, and should ensure its quality through a comprehensive and continuing programme of calibration and validation. Mission planning should be transparent and systematic to ensure an optimal global usage of the limited system capacities with the needs of all stakeholders considered.

Europe and the Group on Earth Observations (GEO) nations must continue to develop operational programmes, like Copernicus, that allow us to monitor the accelerating climate change and its impact, through the mapping of important indicators. GEO nations must also continue to develop thematic platforms, such as the ESA Earth Explorer missions that target specific scientific questions that help us better understand the mechanisms that link the natural and human-driven processes with greenhouse gas emissions and climate change.

Earth observational data can further be exploited to understand the health and socio-economic impacts and effects of climate change. Fundamental scientific research can help the generation of technical solutions such as those improving energy efficiency.

Public consultation on a Space Strategy for Europe

European Space Sciences Committee Contribution

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25 MAY 2016

SCIENCE CONNECT

EC New Space Strategy For Europe

OPPORTUNITY FOR US INVESTIGATORS TO JOIN HORIZON 2020 PROJECTS

- Under the deal, US researchers who have their own funding source will be able to collaborate with EU projects without signing the EU grant agreement and binding themselves to EU regulations.

EC New Space Strategy For Europe

MAXIMISING THE BENEFITS OF SPACE FOR SOCIETY AND THE EU ECONOMY

- Encouraging the uptake of space services and data
  - facilitate the use of Copernicus data and information by strengthening data dissemination and setting up platform services, promoting interfaces with non-space data and services.
  - stimulate the development of space applications with a greater involvement of new actors from different domains
- Advancing the EU space programmes and meeting new user needs
  - remain committed to the stability of the EU space programmes and prepare the new generations, on a user-driven basis, to continue delivering state-of-the-art services.
  - address emerging needs related, in particular, to climate change/ sustainable development and security and defense.

EC New Space Strategy For Europe

FOSTERING A GLOBALLY COMPETITIVE AND INNOVATIVE EUROPEAN SPACE SECTOR

– Supporting research and innovation and development of skills

…The Commission will also seek to ensure that future research activities better integrate space research with other policy areas addressing global and societal challenges. It will encourage horizontal synergies and multidisciplinary approaches that allow the cross-fertilisation of ideas and spinning-in/ off of space and non-space technologies…

EC New Space Strategy For Europe

FOSTERING A GLOBALLY COMPETITIVE AND INNOVATIVE EUROPEAN SPACE SECTOR

– Supporting research and innovation and development of skills
The Commission will:

- *step up its efforts to support space R&D activities, in cooperation with Member States and ESA, and review its strategic approach to boosting the competitiveness of the European space sector.*
- *strengthen the use of innovative procurement schemes to stimulate the demand-side of innovation10 and explore new approaches to leverage private sector investments and partnerships with industry*
- *together with Member States and ESA, promote the use of common technology roadmaps to ensure greater complementarity of R&D projects.*
- *include space/Earth observation in the blueprint for sectoral cooperation on skills addressing new skills requirements in the sector.*

– Fostering entrepreneurship and new business opportunities

EC New Space Strategy For Europe

REINFORCING EUROPE'S AUTONOMY IN ACCESSING AND USING SPACE IN A SECURE AND SAFE ENVIRONMENT

– Maintaining Europe's autonomous access to space

The Commission will consolidate EU support for autonomous access to space by:

- aggregating demand for launch services to provide visibility to industry and reduce implementation costs;
- supporting research and innovation efforts, in particular to ensure Europe's ability to react to and anticipate disruptive changes (re-usability, small launchers);

– Ensuring access to radio frequency spectrum

EC New Space Strategy For Europe

REINFORCING EUROPE'S AUTONOMY IN ACCESSING AND USING SPACE IN A SECURE AND SAFE ENVIRONMENT

– Ensuring the protection and resilience of critical European space infrastructure:

- enhance the current EU SST services and consider comprehensive space situational awareness services (such as space weather, cyber alerts). In doing so, it will work to establish partnerships, particularly with the US.
- help raise awareness of space weather risks at European and international level, and of the emerging cybersecurity risks to critical European space infrastructure.

– Reinforcing synergies between civil and security space activities

EC New Space Strategy For Europe

STRENGTHENING EUROPE'S ROLE AS A GLOBAL ACTOR AND PROMOTING INTERNATIONAL COOPERATION

- pursue space dialogues with strategic international partners, ensure that space policy is duly taken into account in EU export control dialogues with third countries, use economic diplomacy and, trade policy instruments to assist European companies active in global markets and to address societal challenges.
- foster the EU's contribution to international initiatives such as the Group on Earth Observation and CEOS.
- together with the other EU institutions and Member States, engage with international partners to promote responsible behaviour in outer space and preserve and protect the space environment for peaceful use by all nations.

EC New Space Strategy For Europe

ESA AND EC JOINT STATEMENT ON SHARED VISION AND GOALS FOR THE FUTURE OF EUROPEAN SPACE

- Space is also an enabler for responding to societal challenges and it effectively contributes to smart growth, the competitiveness of the European economy, and produces highly qualified jobs.
- Space is expanding the frontiers of knowledge, is inspiring and motivating the next generations.
- Europe has had many successes from breakthrough science and exploration missions across the Solar system, its contributions to the International Space Station, the development of unique Earth's monitoring systems with the Copernicus and meteorology programmes, a cutting-edge global navigation infrastructure with Galileo and EGNOS, world leading commercial telecommunications constellations and launch systems, and a solid industrial base, just to name a few.

EC New Space Strategy For Europe

ESA AND EC JOINT STATEMENT ON SHARED VISION AND GOALS FOR THE FUTURE OF EUROPEAN SPACE

- Our common European ambition is that Europe remains a world-class actor in space and a partner of choice on the international scene. By 2030, Europe should be able to fully benefit from its space solutions to implement its policies, to strengthen European values and security, improve knowledge and foster prosperity.
- We […] envisage to:
  - foster a globally competitive European space sector, by supporting research, innovation, entrepreneurship for growth and jobs across all Member States, and seizing larger shares of global markets;
  - ensure European autonomy in accessing and using space in a safe and secure environment, and in particular consolidate and protect its infrastructures, including against cyber threats.
- These goals should rest on the solid foundation of excellence in science, technology and applications, expressed through an environment of outstanding education and skills and a thorough knowledge base.

PROJECTS AND ACTIVITIES

Future activities

- ESSC finalised its Strategic/Operational Plan 2016-2019
- Consolidating Expert Boards position and activities in continuing ESF → joint session at last plenary
    - joint ESSC-NuPECC Working Group on radiation/ hadrontherapy/nuclear medicine
    - joint ESSC-EMB WG on « exo-oceans »
- Preparing the ESA Ministerial Council 2016
- Strengthening existing partnership with our international partners and seek similar relation with other countries where possible
- Offering coordination between the various space science roadmaps at international level
- Next plenary meeting in November 14-15, 2016

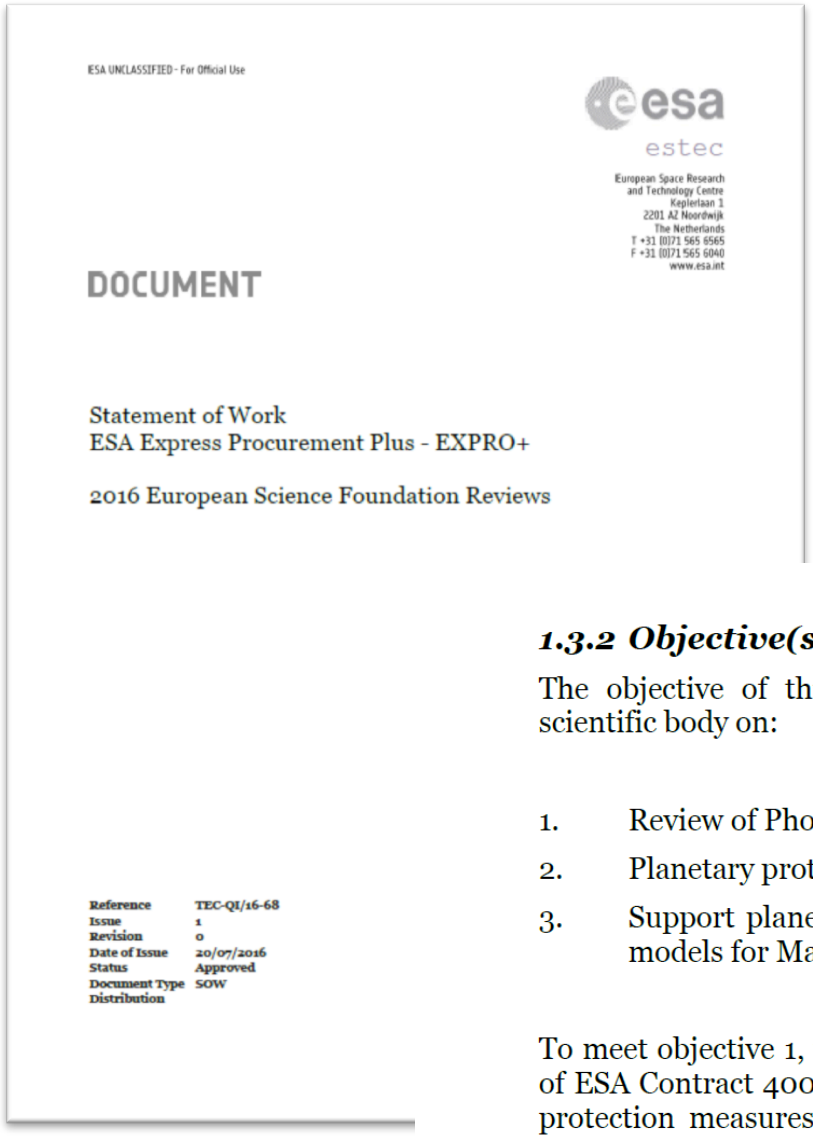
ESF Space–related activities
(Implemented by ESSC Secretariat)

- Activities concluded in 2015
  - ASTROMAP (FP7 CSA) www.astromap.eu – ***major input for ELIPS' roadmapping – Published in Astrobiology Journal***
  - Mars special regions (joint ESSC-SSB study for ESA & NASA) – ***available online***
  - Framework Agreement with D-TEC on Planetary Protection matters
- Ongoing activities
  - MASE (FP7 CSA) www.mase-eu.org
  - DEMOCRITOS (H2020 CSA) http://democritos.esf.org/
  - BIOWYSE (H2020 R&I)
  - PPOSS (H2020 CSA)
  - EUROPLANET (H2020 RI) http://www.europlanet-eu.org/

ESSC MEMBERS REGULARLY BRIEFED

PPOSS

- PPOSS Planetary Protection of Outer Solar System bodies is supported by the European Commission Horizon 2020 programme for three years (2016-2018) under Grant Agreement 687373
- Seven Contractual Partners
  - European Science Foundation – ESF, France (Coordinator)
  - German Aerospace Center – DLR, Germany
  - Committee on Space Research – COSPAR, France
  - Eurospace, France
  - National Institute for Astrophysics – INAF, Italy
  - Space Technology Ireland Limited –STIL, Ireland
  - Imperial College of Science, Technology and Medicine – IC, UK



1.3.2 Objective(s) of the Activity

The objective of this activity is to obtain advice from an internationally recognized scientific body on:

1. Review of Phobos/Deimos planetary protection categorisation
2. Planetary protection review of the Oxia Planum landing site
3. Support planetary protection review of near and far field contamination transport models for Mars

To meet objective 1, the ESF shall establish a temporary review team to review the output of ESA Contract 40001122742/14/NL/HB – Sterilisation limits for sample return planetary protection measures [AD1] and evaluate the consequences on the planetary protection categorisation for missions to Phobos and Deimos according to [AD2]. The review team shall at least have eight European experts. The review team shall have at least two 2-day

A research community and infrastructure for PLANETARY SCIENTISTS

www.europlanet-2020-ri.eu

Nigel Mason, Athena Coustenis
(coordinators)

ESF (N. Walter) is evaluation office

US collaboration is now possible

2015-19: Europlanet 2020 RI

- **Budget 9.945 million Euros 2015-2019,**

  start date 1 September 2015, to:

- **Support scientific meetings and workshops**
- **Foster Academia-industry collaborations through technology workshops**
- **Support and develop a unique Outreach programme including support pilot projects.**
- **Provide access to 5 field sites and 11 labs (open calls + peer review selection): TNA's**
- **Develop and run two new on-line services**
- **Fund the necessary developments through Joint Research Activities (JRA)**
- **INTERNATIONAL COLLEAGUES ARE WELCOME !!**

Exo-oceans

Studying the worlds in the outer solar system with possible subsurface liquid water oceans

- Concept for a joint working group between ESSC and the European Marine Board
- Would involve marine scientists (geo/bio), planetary scientists and astrobiologists.
- Objectives: provide recommendations on issues of common scientific interest and opportunity to foster collaborations between programmes
- International collaboration?

Recent and upcoming Events

- ESA HESAC (July and September)
- Preparation of C-MIN (September)
- Space 4 Inspiration (September)
- ESA SSAC (October)
- Meeting with EC representatives (Winter)
- SSB meeting (2-4 November)
- ESSC Plenary fall meeting (14-15 Nov. 2016)
- ESA CMIN in Lucerne in December 2016
- …

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www.esf.org/space
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