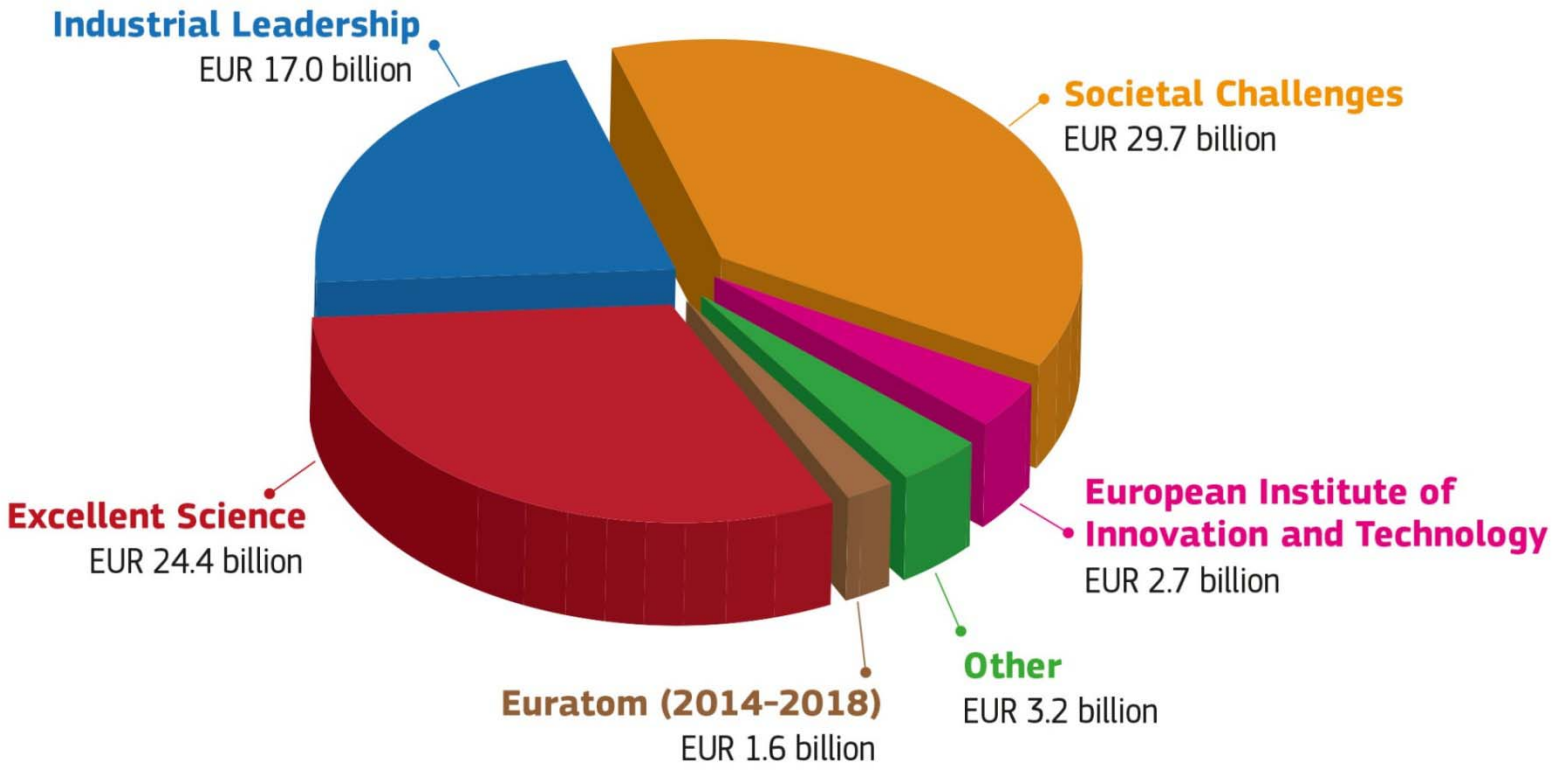
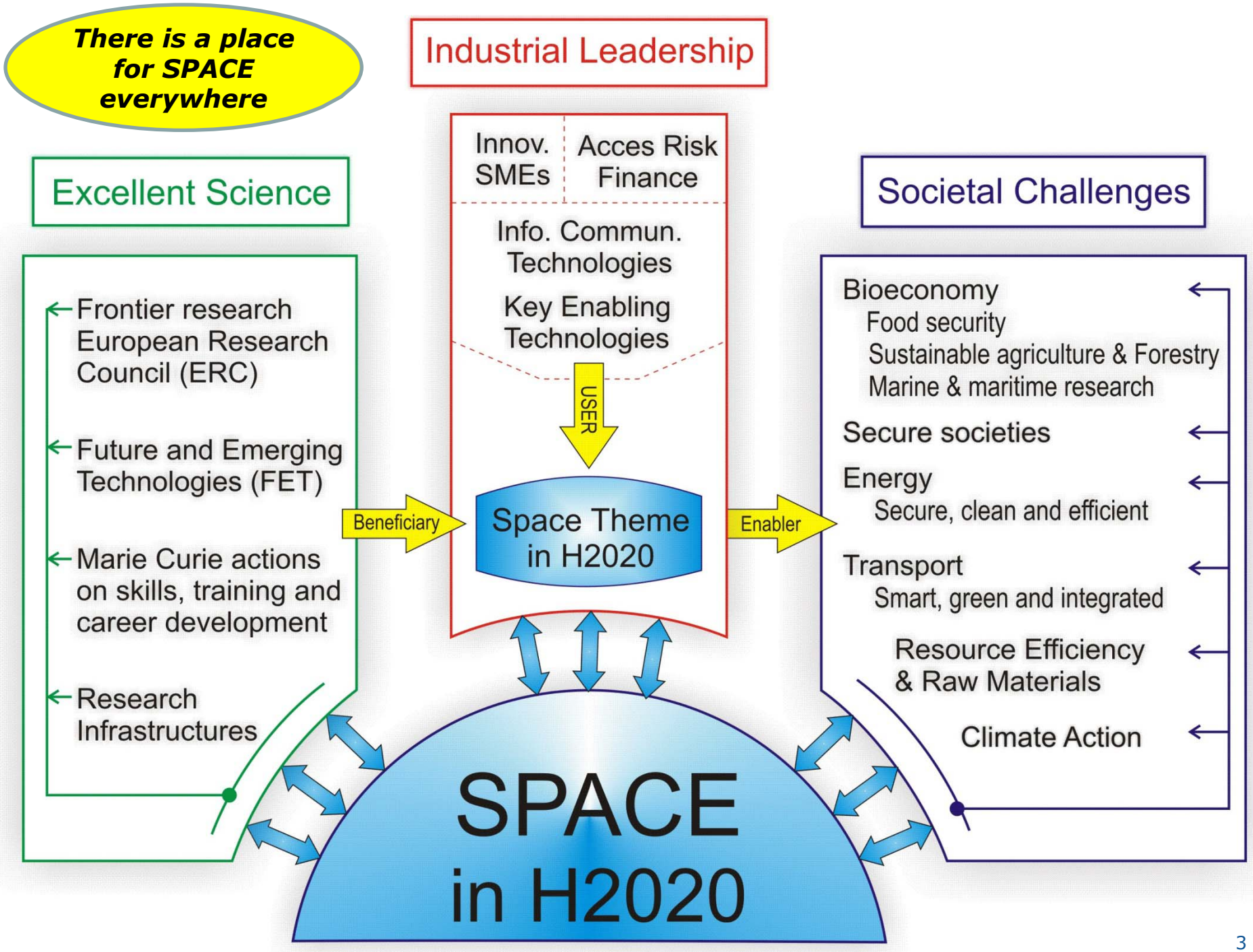

European
Commission
Space Work Programme 2015
HORIZON 2020

€ 79 billion from 2014 to 2020

HORIZON 2020 BUDGET (in current prices)




There is a place for SPACE everywhere
Industrial Leadership
Innov. SMEs
Acces Risk Finance
Info. Commun. Technologies
Key Enabling Technologies
USER
Excellent Science
Frontier research European Research Council (ERC)
Future and Emerging Technologies (FET)
Marie Curie actions on skills, training and career development
Research Infrastructures
Beneficiary
Space Theme in H2020
Enabler
Societal Challenges
Bioeconomy
Food security
Sustainable agriculture & Forestry
Marine & maritime research
Secure societies
Energy
Secure, clean and efficient
Transport
Smart, green and integrated
Resource Efficiency & Raw Materials
Climate Action
SPACE in H2020

Four objectives (specific programme)

1. *Enhance **competitiveness, non-dependence, and innovation** of EU space sector*
2. *Enable advances in **space technologies***
3. *Increase **exploitation of space data***
4. *Enable participation in **international space partnerships***

*+ relevant **space applications** under Societal Challenges*

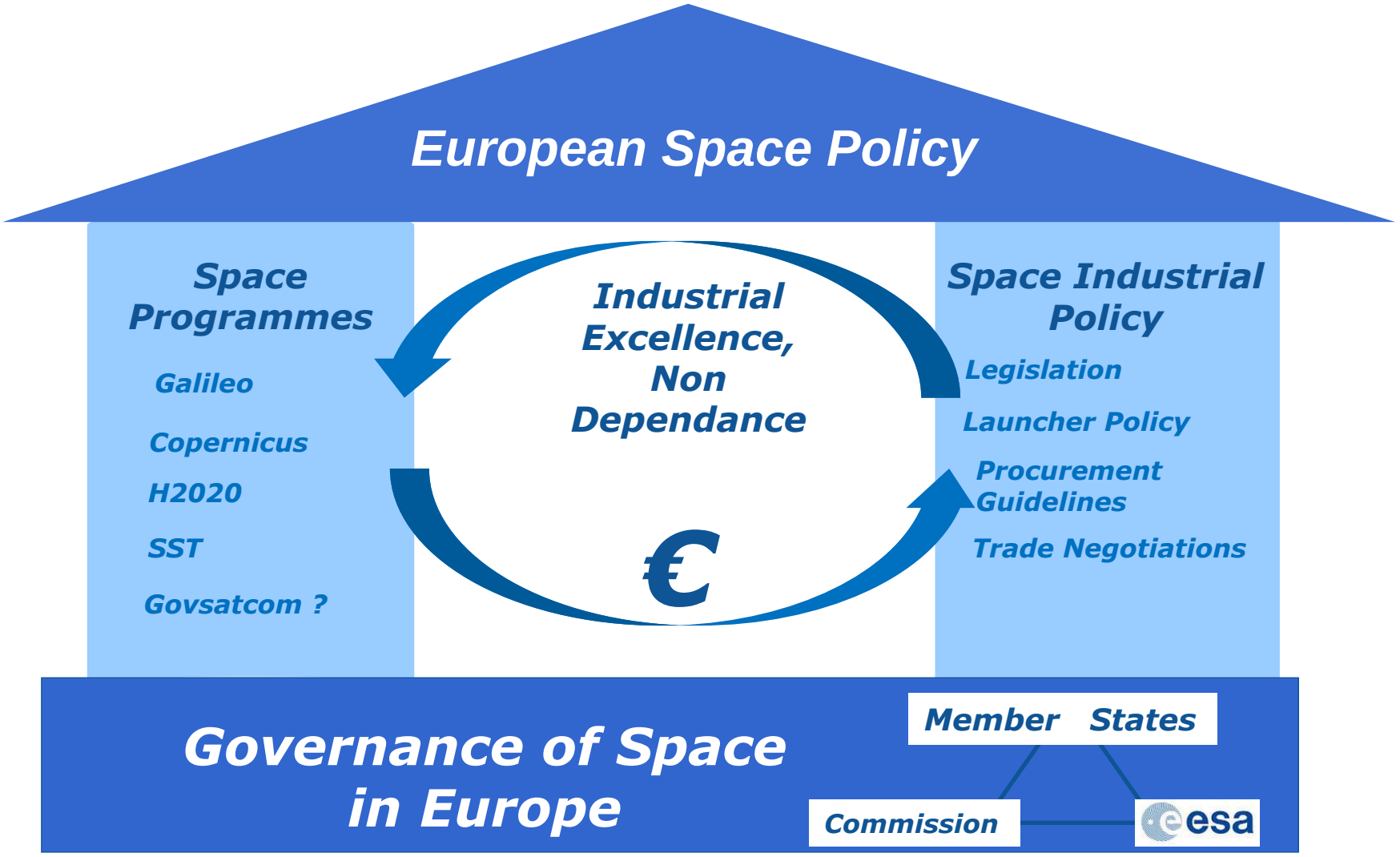
- **Transport, Climate, Security,…..**

Policy Context

- European Satellite Navigation Programmes (GALILEO, EGNOS)
- Copernicus Programme
- Space Surveillance and Tracking (SST) Support Framework Decision

- 2011 Commission Communication "Towards a space strategy for the EU that benefits its citizens"
- 2013 Commission Communication "Releasing the potential for growth of the space sector"
- 2013 Commission Communication and associated European Council Conclusions on Defence

- Council Conclusions and EP Resolutions


European Space Policy
Space Programmes
Galileo
Copernicus
H2020
SST
Govsatcom ?
Industrial Excellence, Non Dependance
€
Space Industrial Policy
Legislation
Launcher Policy
Procurement Guidelines
Trade Negotiations
Governance of Space in Europe
Member States
Commission
esa

EU Space Programmes

European Commission

Multiannual Financial Framework 2014-2020

~ 12.000 M€

~ 3.800 M€

Copernicus
The European Earth Observation Programme

~ 1.400 M€

~ 6.300 M€

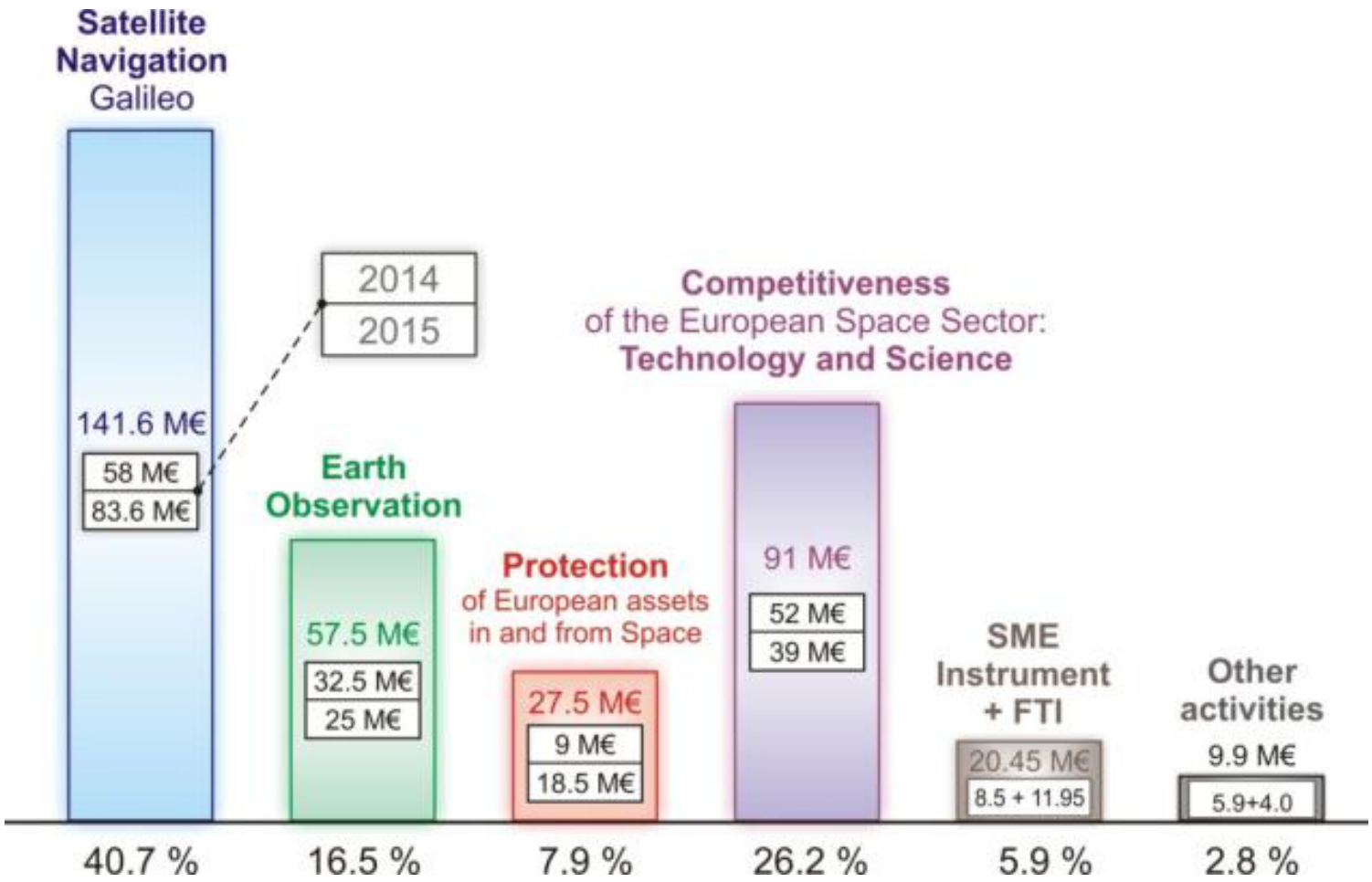
GALILEO EGNOS

Horizon 2020 Space
Work Programme 2014 and 2015

New approach to work programmes and calls

- **More strategic**
- **Two year work programmes**
- **Less prescriptive calls**
- **Two parts**
  - **Part A: Calls for proposals**
  - **Part B: Other actions**

WP 2014-2015 Overview



Horizon 2020 Space Work Programme 2014-2015

2015 Overview

■ **[25 M€] Applications in Satellite Navigation – Galileo**

[10-15 M€] EGNSS applications

[5-10 M€] Small and Medium Enterprise (SME) based EGNSS applications

[0-5 M€] Releasing the potential of EGNSS applications through international cooperation

■ **[25 M€] Earth Observation**

[9 M€] Bringing EO applications to the market

[11 M€] Stimulating wider use of Copernicus Sentinel Data

[5 M€] Technology developments for competitive imaging from space

■ **[6.5 M€] Protection of European assets in and from space**

[6.5 M€] Passive means to reduce the impact of Space Debris

■ **[39 M€] Competitiveness of the European Space Sector: Technology and Science**

[14 M€] Technologies for European non-dependence and competitiveness

[5 M€] Independent access to space

[7 M€] Bottom-up space technologies at low TRL

[6 M€] Space exploration – Habitat management

[6 M€] Scientific exploitation of astrophysics, planetary & comets data

[1 M€] International Cooperation in space science

■ **[8.55 M€] SME Instrument**

■ **Fast track to Innovation**

Part B - Other actions (not subject to calls for proposals):

■ [5.6 M€] GNSS Evolution, Mission and Services related R&D activities

■ [53 M€] GNSS evolution, infrastructure-related R&D activities

■ [2 M€] Space surveillance and tracking (SST)

■ [10 M€] Improving the performances of SST at European level

■ [1 M€] Studies & Communication

■ [2 M€] Horizon 2020 project evaluation, monitoring and audits (EGNSS)

■ [1 M€] Horizon 2020 project evaluation and project monitoring

Note: For "part B" the budgets shown above are indicative.

Galileo

GNSS 2015

2015

Galileo 1 - EGNSS applications

10-15 M€ Innov. Actions

Galileo 2 - SME based EGNSS applications

5-10 M€ Innov. Actions

Galileo 3 - Releasing the potential of EGNSS applications through international cooperation

0-5 M€ Innov. Actions

EGNSS offers various possibilities for the development of new space enabled applications based on continuous, real-time, reliable, accurate and globally available position, velocity and time.

The objective of all these 3 topics is to develop new and innovative GNSS-based applications.

2015

Other actions:

GNSS Evolution:
R&D for enhanced mission and services

R&D to achieve the best performance from the EGNSS infrastructure and to reap the full benefits of the initial services (2014-2020)

★ ***Prospective research in advanced GNSS mission concepts***

★ ***R&D for enhanced services***
- ***Ionosphere modelling and prediction***
- ***Commercial service performance***
- ***Safety of Life Service, EU-US collaboration***

★ ***R&D in GNSS signal evolution***

5.6 M€ Procurement

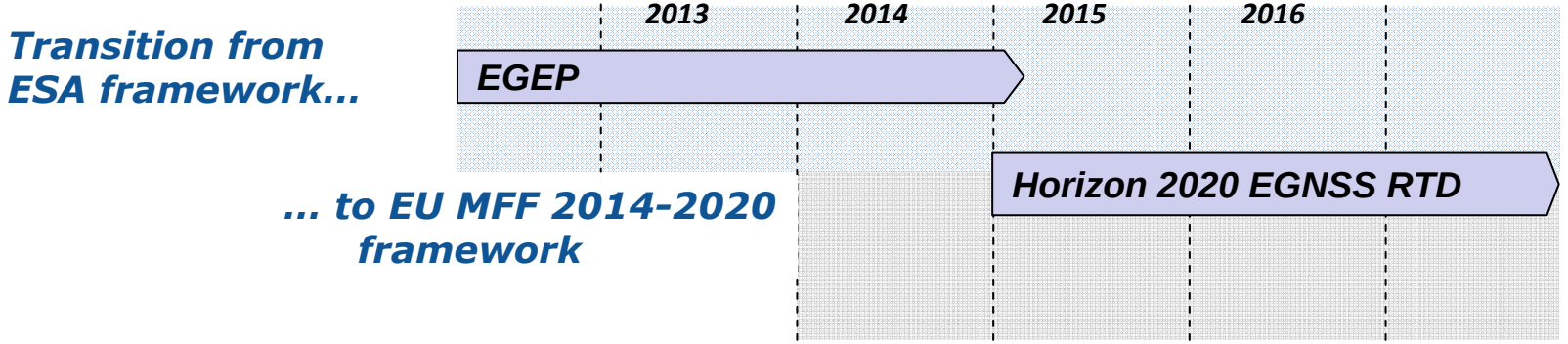
Other actions:

GNSS Evolution: infrastructure-related R&D activities

Prepare for 2nd generation of the Galileo system

R&D to have European state-of-the-art and cost-effective technologies for the development of the next generation Galileo system (beyond 2020).

53 M€
ESA Indirect Management



Earth Observation

2015

EO 1: Bringing EO applications to the market

9 M€
Innov. Actions

EO2: Stimulating wider research use of Copernicus Sentinel data

11 M€
R&I Actions

EO 3: Technology developments for competitive imaging from space

5 M€
R&I Actions

2015

EO 1: Bringing EO applications to the market

It is essential that EO products and information generation are taken out of the research environment and products are put into the market.

9 M€
Innov. Actions

The outcome of these innovation projects should be a commercial service platform, sustained by a production process capable to deliver to the user a product which is validated and accepted as a marketable product.

2015

EO 2: Stimulating wider research use of Copernicus Sentinel data

Europe's investment in the Copernicus Sentinel satellites will provide Europe with an unprecedented source of operational satellite data. Data streams are expected to amount to several terabyte per satellite orbit, thereby delivering unprecedented temporal and spatial resolution and data continuity. To utilise the high scientific potential of the Sentinel data, stable and predictable access methods need to be developed, such as:

- **Efficient data retrieval from repositories**
- **Software for reading/transforming data for access by scientific users**
- **Data fusion (various Sentinels/contributing missions)**
- **Advanced visualisation techniques**

11 M€ R&I Actions

Keyword: BIG DATA

2015

EO 3: Technology developments for commercial imaging

Research should be undertaken to review the emerging fractionated observation system concepts.

5 M€
R&I Actions

The required technology challenges as regards interfacing, formation flying, communication within the constellation or with ground stations are to be identified. Potential benefits for EO are to be examined.

Protection of European assets in and from Space

2015

PROTEC 1 - Passive means to reduce the impact of Space Debris

- *safe de-orbiting and disposal*

6.5 M€
R&I Actions

In OTHER ACTIONS:

Space surveillance and tracking (SST)

- ***Support to a consortium of MS preparing the SST support programme***

2 M€
Identified Beneficiary
CSA

Improving the Performances of the SST at European Level

- ***Actions to upgrade and develop new SST assets***

10 M€
Identified Beneficiary
CSA

Protec 1: Passive means to reduce the impact of Space Debris

2015

To develop and test concepts and technologies needed for

- safe de-orbiting and disposal of space objects
- planned end-of-life de-orbiting or safe disposal of new satellites and launch vehicle's upper stages
- non-technical issues including legal issues should be considered.

Alignment with international and European guidelines and legal requirements.

6.5 M€
R&I Actions

2015

Other actions:

Space surveillance and tracking (SST)

- H2020 Contribution to a consortium of MS preparing the SST support programme *(Commission proposal (COM (2013)107 final)*

2 M€
Identified Beneficiary
CSA

Improving the Performances of the SST at European Level

- Action plan (including scope and priorities) for future EU research and innovation
- Actions to upgrade and develop new assets which form the SST at European Level.

10 M€
Identified Beneficiary
CSA

Additional funds from Copernicus and Galileo Consistent with the proposal for establishing an SST support programme [COM (2013) 107].

Work Programme 2014-2015

Competitiveness of the European Space Sector

Non-dependence & technology development

2015

2015

Technology development

COMPET-1: Technologies for European non-dependence and competitiveness Urgent actions

14 M€ R&I Actions

COMPET-2: Independent access to space New solutions or improvement of conventional launch systems

5 M€ R&I Actions

COMPET-3: Bottom up space technologies at low TRL

7 M€ R&I Actions

2015

COMPET-1: Technologies for European non-dependence and competitiveness

"Independence" would imply that all needed space technologies are developed in Europe.

"Non-dependence" refers to the possibility for Europe to have free, unrestricted access to any required space technology.

The objective of this action is to contribute to ensure European Non-dependence.

A selection of the list of urgent actions for critical space technologies defined by the Joint EC-EDA-ESA Task Force will apply for this call.

2015

COMPET 1: Technologies for European non-dependence and competitiveness

Urgent actions in 2015:

1) Advanced materials and material technology for combustion chambers (U4)
2) Fiber Optic gyro (FOG) based Inertial Measurement Unit (U6)
3) Power amplification: Travelling Wave Tube (TWT) materials (U7)
4) High Capacity Field-Programmable Gate Array (FPGA) (U12)

A maximum of one proposal for each identified "urgent action" will be selected for funding.

14 M€
R&I Actions

2015

COMPET 2: Independent access to space

All possible complementary technologies not overlapping with on-going launcher developments. Proposals are expected in:

- Conventional launching systems
- Innovative systems to access to Space

5 M€
R&I Actions

The objective is to develop technology for relevant optimisation of the launch propulsion systems to foster the European capabilities of accessing space.

2015

COMPET 3: Bottom-up space technologies at low TRL

Spinning-in of new Enabling Technologies (e.g. **KETs***) with TRL 1-3 to space systems up to TRL 4-5. Lines targeted:

1) Energy storage
2) Energy production
3) Materials and structures
4) Mechanisms
5) Additive layer manufacturing techniques
6) High performance and reliable electronics to boost online power
7) Wireless power transmission
8) Thermal control management systems

7 M€
R&I Actions

Objective: mobilise the incorporation of non-space actors (SMEs, R&D groups) into the space landscape.

Up to two proposals will be financed on each of the 8 research lines foreseen.

* ***Key Enabling Technologies. See "H2020 Specific Programme".***

Work Programme 2014-2015

Competitiveness of the European Space Sector

Space exploration & science

International cooperation

2015

2015

Exploration and Science

COMPET 4: Space Exploration – Habitat management

- ***Support to scientific and technological utilisation of ISS for the preparation of the next steps in human exploration***
- ***Open for ESA participation***

6 M€ R&I Actions

COMPET 5: Scientific exploitation of astrophysics, planetary and comets data

- ***Tools for advanced processing and the generation of high-level data products***

6 M€ R&I Actions

COMPET 6: International cooperation

- ***Planetary science***
- ***Planetary protection guidelines***

1 M€ CSA Actions

2015

COMPET 4: Space Exploration – Habitat management

ISS is the current cornerstone of European activities in human spaceflight. Its scientific and technological utilisation should be strengthened as a platform for the preparation of the next steps in human exploration. Life support is one of technological priorities for Europe.

This call focuses on microbial quality control of indoor environment in space.

Synergies between space and non-space sectors actors is expected. Participation from SMEs and academia is encouraged.

Open to ESA participation.

6 M€
R&I Actions

2015

COMPET 5: Scientific exploitation of astrophysics, planetary and comets data

Supporting space astronomy observation proposals in Astrophysics and comets data based on European mission (namely ESA's science missions), possibly in combination with ground-based observations and non-ESA missions.

Planetary proposals should make use of European instruments on-board non-ESA missions.

Objective: the development of tools for advanced processing and the generation of high-level data products. These will be made available through appropriate archives (ESA, NASA, JAXA…)

6 M€
R&I Actions

2015

COMPET 6: International Cooperation in space science

Europe should continue to play a leading role in planetary science shaping the research in the field including the elaboration of planetary protection guidelines.

1 M€
CSA Actions

Work Programme 2014-2015

SME Instrument and Fast Track to Innovation

2015

ME instrument + Fast Track to innovation

2015

The **SME instrument** will be a major part of achieving the target of at least 20% of the combined budget of LEIT and Societal Challenges for SMEs

8.55 M€

- Initially 5% of LEIT and Societal Challenges budget
- Rising to at least 7% averaged over duration of programme
- Continuously open call with cut-off dates

Fast Track to Innovation pilot - launch in **2015**:

100 M€
For the whole H2020

- Maximum 5 partners, up to EUR 3 million per project
- Bottom-up logic
- Continuously open call with three cut-off dates per year
- Time to grant not exceeding 6 months
- Project will not require Programme Committee approval
- Covering all fields across LEITs and Societal Challenges

Horizon 2020 Space work programme

Bi-annual Work Programme 2014-2015

- ***Adopted in December 2013 (http://ec.europa.eu/research/participants/portal)***

- ***2015 Calls***
  - ***Opened on: 4 November 2014***
  - ***Deadline: 8 April 2015***


European
Commission
HORIZON 2020
Space