European Commission

Horizon 2020 Space Infoday

Opportunities in 2015
Preparing WP 2016

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HORIZON 2020

Space

Summary

Work Programme 2014-2015 (Overview)

Galileo 2015* (if needed)

- Galileo 1, Galileo 2, Galileo 3
- *Other actions*

Earth Observation (EO) 2015

- EO 1, EO 2, EO 3

Protection of European assets in and from space (PROTEC) 2015

- PROTEC 1
- *Other actions*

Competitiveness of the European Space sector (COMPET) 2015

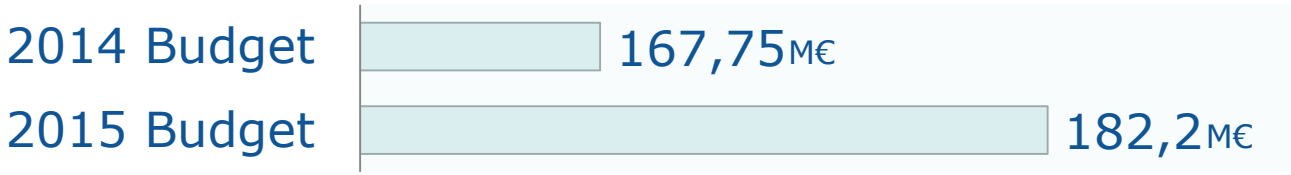
- Non-dependence and technology Development
  - COMPET 1, COMPET 2, COMPET 3
- **Space exploration & Science and International Cooperation**
  - COMPET 4, COMPET 5, COMPET 6, COMPET 7

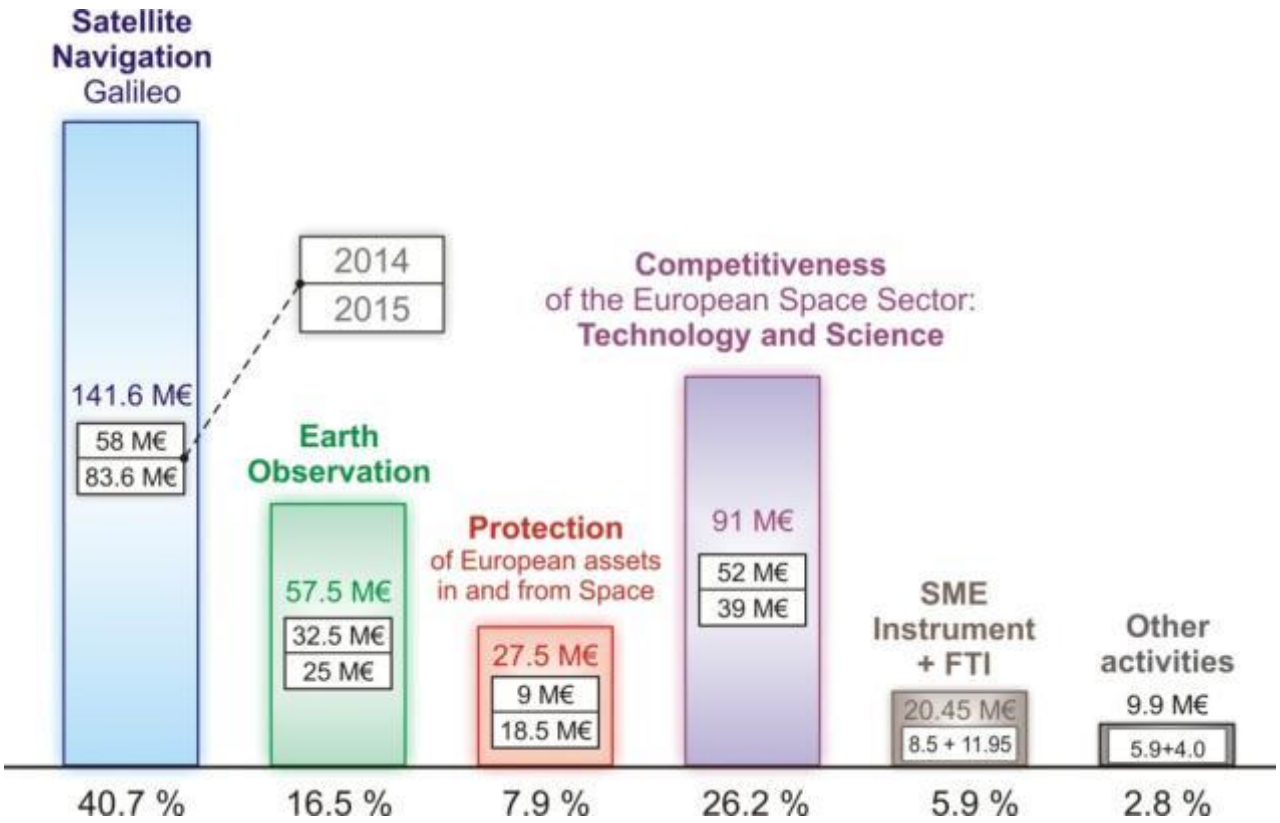
SME Instrument and Fast Track to Innovation 2015

Backup slides

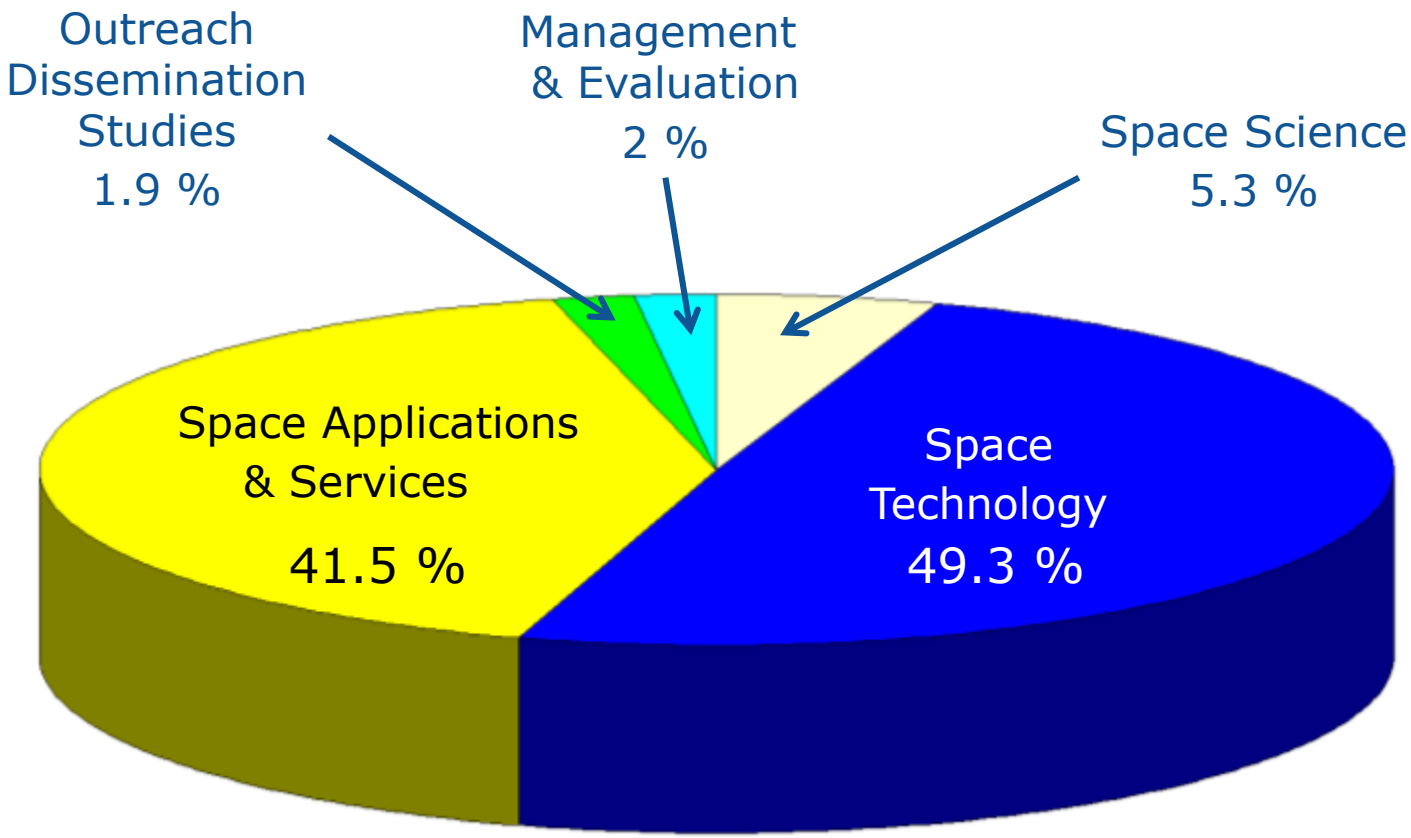
Work Programme 2014-2015

Overall budget for the Work Programme 2014-2015 per area





Overall budget for the Work Programme 2014-2015 per nature of activities



Horizon 2020 Space Work Programme 2014-2015

2014 Overview

■ [38 M€] Applications in Satellite Navigation – Galileo

[15-20 M€] EGNSS applications

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

[5-8 M€] Releasing the potential of EGNSS applications through international cooperation

[5-10 M€] EGNSS awareness raising, capacity building and/or promotion activities, inside or outside of the European Union

■ [21.5 M€] Earth Observation

[10 M€] New ideas for Earth-relevant space applications

[5.5 M€] Climate Change relevant space-based Data reprocessing calibration

[6 M€] Observation capacity mapping […] Atmosferic Climate change monitoring

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

[8 M€] Space Weather
Access technologies and characterisation for Near Earth Objects (NEOs)

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

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

[8 M€] Independent access to space

[4 M€] In-Space electrical propulsion and station keeping*

[4 M€] Space Robotics Technologies*

→ * Programme Support Actions for Strategic Research Clusters (SRCs)

[2 M€] In-Orbit demonstration/Validation (IOD/IOV)

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

[8 M€] Space exploration – Life support

[4 M€] Science in context: sample curation facility and […] data from Mars missions

[3 M€] Technology "demonstrator projects" for exploration

[4 M€] Outreach through education
Transnational and international cooperation among NCPs

■ [8.5 M€] SME Instrument

■ Fast track to Innovation

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

■ [20 M€] Research and Developments for a Galileo Public Regulated Service (PRS)

■ [1 M€] Space surveillance and tracking (SST) – Participation of the EU Satellite Centre in the SST Function

■ [1.5 M€] Studies & Communication

■ [2 M€] Horizon 2020 project evaluation (EGNSS)

■ [11 M€] Transition towards Copernicus

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

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

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.

Work Programme 2014-2015

Galileo

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

Main aim is to ensure that Galileo is going to be used in the future…

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

2015

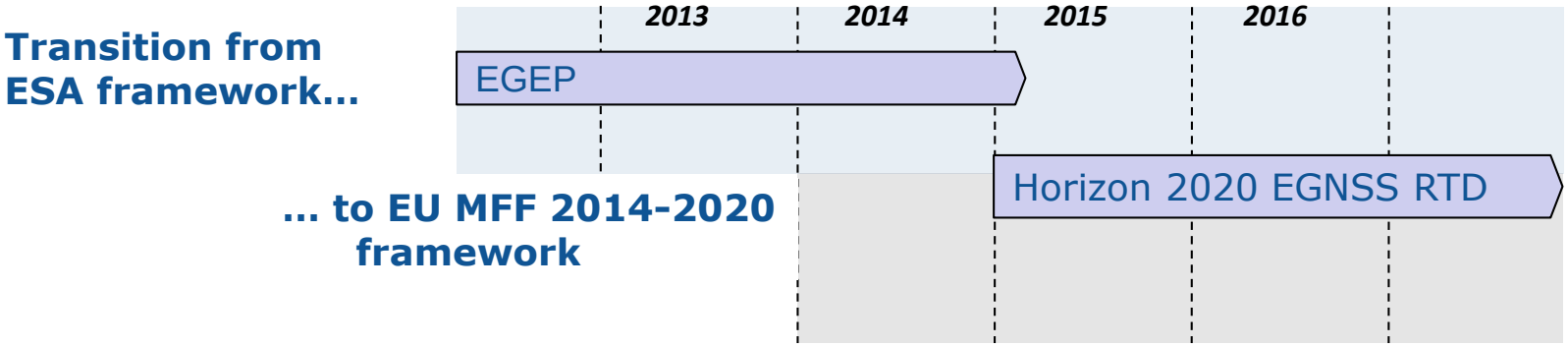
Other actions:

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



Work Programme 2014-2015

Earth Observation

2015

Earth Observation

2015

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.

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.

9 M€
Innov. Actions

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.

European Commission

Work Programme 2014-2015

Protection of European assets in and from Space

2015

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

2015

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

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:

7 M€
R&I Actions

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

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

A maximum of two of the eight identified lines will be selected for funding.

** 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€
R&I 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€
R&I Actions

Work Programme 2014-2015

SME Instrument and Fast Track to Innovation

2015

SME 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 programmes

Work Programme 2014-2015

- Published in 2013 (http://ec.europa.eu/research/participants/portal)

  - **2014 Calls**
    - **Closed – Grant negotiations**

  - **2015 Calls**
    - **Minor update of 2015 work programme: July 2014**
    - **Opening date: 4 November 2014**
    - **Call deadlines: 8 April 2015**

Work Programme 2016-2017

- Under planning: publication expected in Q3 2015.

Horizon 2020 Space Future Events

Third International Space Research Conference

The 3rd International Space Research Conference will take place on 15-16 September 2014 in Rome (Holiday Inn Rome - Eur Parco Dei Medic)

- **The 1st 'Let's Embrace Space' Conference took place in 2011 in Budapest, Hungary and covered the first two FP7 Space Calls**
- **The 2nd FP7 Space Research Conference was held in 2012 in Larnaca, Cyprus and presented the 3rd FP7 Space Call**

The conference will present the current status and results of the 4th and 5th FP7 Space calls and future options for European research in the space field will be discussed

- **https://letsembracespace.teamwork.fr/**

Horizon 2020 Space
Future events

Horizon 2020 Space Info Day

An Horizon 2020 Space Info Day will take place on 17 September 2014 in Rome (Holiday Inn Rome - Eur Parco Dei Medic)

- **https://letsembracespace.teamwork.fr/**

National Contact Points Space

Next Space NCPs meeting on 16 October 2014 in Brussels

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HORIZON 2020

Space

Backup slides

Horizon 2020 Space 2014 Call evaluated

Horizon 2020
1st space call

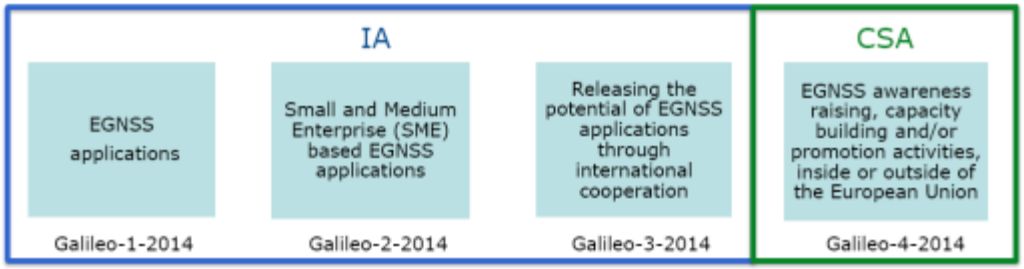
Evaluated proposals

Call	Topic	Indicative budget WP2014 (MEUR)	# proposals evaluated	# proposals shortlisted	success rate
H2020-EO-2014			**63**	**6**	
EO-1-2014	*New ideas for Earth-relevant space applications*	10	56	4	7%
EO-2-2014	*Climate change relevant space-based data reprocessing and calibration*	5.5	4	1	25%
EO-3-2014	*Observation capacity mapping in the context of Climate Change monitoring*	6	3	1	33%
H2020-PROTEC-2014			**27**	**3**	
PROTEC-1-2014	*Space Weather*	8	17	2	12%
PROTEC-2-2014	*Access technologies and characterisation for Near Earth Objects (NEOs)*		10	1	10%
H2020-COMPET-2014			**119**	**25**	
COMPET-01-2014	*Technologies for European non-dependence and competitiveness*	10	19	3	16%
COMPET-02-2014	*Independent access to space*	8	13	2	15%
COMPET-03-2014	*In-Space electrical propulsion and station keeping*	4	1	1	100%
COMPET-04-2014	*Space Robotics Technologies*	4	1	1	100%
COMPET-05-2014	*In-Orbit demonstration/Validation (IOD/IOV)*	2	11	4	36%
COMPET-06-2014	*Bottom-up space technologies at low TRL*	5	41	5	12%
COMPET-07-2014	*Space exploration – Life support*	8	5	2	40%
COMPET-08-2014	*Science in context: sample curation facility and scientific exploitation of data from Mars missions*	4	6	2	33%
COMPET-09-2014	*Technology "demonstrator projects" for exploration*	3	6	2	33%
COMPET-10-2014	*Outreach through education*	4	15	2	13%
COMPET-11-2014	*Transnational and international cooperation among NCPs*		1	1	100%
H2020-Ad-Hoc-2014 -SPACE			**3**	**3**	
Action 2	*Space Surveillance and tracking: participation of the EU Satellite Centre in the SST Service Function*	1	1	1	
Action 5	*Transition towards Copernicus*	11	2	2	
	TOTAL	**93.5**	**212**	**37**	17%

Applications in satellite navigation Galileo 2014
H2020-Galileo-2014-1 Call

Central evaluation in Prague **03/06/14 to 12/06/14**

Topic code	Total number of proposals received	Number of proposals found ineligible		Number of proposals evaluated		Number of proposals shortlisted	
GALILEO-1-2014:	**40**	**1**	2.5%	**39**	97.5%	**6**	15.4%
GALILEO-2-2014	**35**	**1**	2.8%	**34**	97.2%	**10**	29.4%
GALILEO-3-2014	**11**	**1**	9.1%	**10**	90.9%	**3**	30.0%
GALILEO-4-2014	**23**	**1**	4.3%	**22**	95.7%	**6**	27.3%
TOTAL	**109**	***4***	***3.7%***	***105***	***96.3%***	***25***	***23.8%***



SME Instrument Phase 1 proposal status on 18/06/2014

2666 proposals received (estimation was 2500) theoretical success rate: 6.2%

2507 single company applications, 119 consortia with 2 SMEs, 34 with 3 and 6 with 4 SMEs

Number of received proposals per topic, maximum number of fundable projects under this cut-off and theoretical maximum success rate per topic

European Commission

Topic	Proposals	Max. project fundable	Max. success rate
ICT 37: Open Disruptive Innovation Scheme	885	30	3.4%
NMP 25: Accelerating the uptake of nanotechnologies, advanced materials or advanced manufacturing and processing technologies by SMEs	305	14	4.6%
BIOTECH 5: SME boosting biotechnology-based industrial processes driving competitiveness and sustainability	73	2	2.7%
LEIT Space-SME	128	5	3.9%
PHC12 :Clinical research for the validation of biomarkers and/or diagnostic medical devices	213	44	20.7%
SFS8: Resource-efficient eco-innovative food production and processing	129	6	4.6%
BG12: Supporting SMEs efforts for the development - deployment and market replication of innovative solutions for blue growth	49	2	4.1%
SIE 1: Stimulating the innovation potential of SMEs for a low carbon and efficient energy system	372	22	5.9%
IT.1: Small business innovation research for Transport	229	24	10.5%
SC-5-20: Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials	241	11	4.6%
DRS17-Protection of urban soft targets and urban critical infrastructures	42	4	9.5%

Register as expert!

- For proposal evaluation
- For project reviews

At the participant portal:

https://ec.europa.eu/research/participants/portal/page/experts