



#InvestEUresearch

# Horizon 2020 Work Programme for Research & Innovation 2018-2020

## Infoday 2018

DG GROW – Internal Market, Industry  
Entrepreneurship and SMEs  
GROW/I1 - Space Policy and Research Unit  
[jean-michel.monthiller@ec.europa.eu](mailto:jean-michel.monthiller@ec.europa.eu)

Research and  
Innovation



## SUMMARY

1. EU Space programmes
2. Space research in Horizon 2020
3. Horizon 2020 Space Work Programme 2018-2020
4. Space in European Innovation Council (EIC) pilot
5. Space in Access to Risk Finance (ARF) - ISEP
6. Work Programme 2018-2020 Implementation calendar



# 1 EUROPEAN UNION SPACE PROGRAMMES

## MULTIANNUAL FINANCIAL FRAMEWORK

2014-2020



~1.479 M€



~4.291 M€



~7.071 M€



# 2 HORIZON 2020

*European Union programme  
for research and innovation  
for 2014-2020*

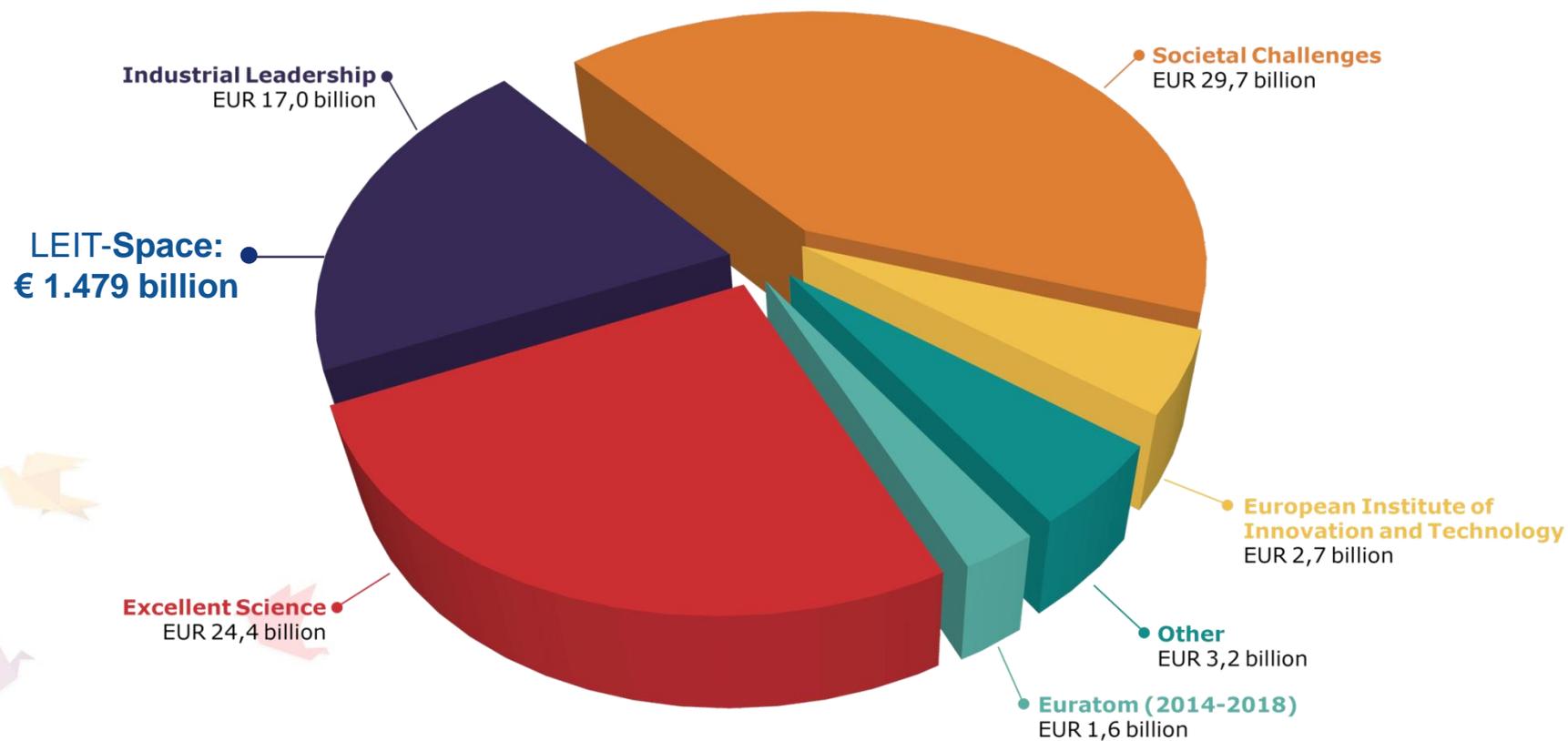
## WHAT IS NEW IN HORIZON 2020?

- **A single programme** bringing together three separate programmes/initiatives\*
- **Coupling research to innovation** – from research to retail, all forms of innovation
- **Focus on societal challenges** facing EU society, e.g. health, lean energy and transport
- **Simplified access**, for all companies, universities, institutes in all EU countries and beyond

\* The 7<sup>th</sup> Research Framework Programme (FP7), innovation aspects of Competitiveness and Innovation Framework Programme (CIP), EU contribution to the European Institute of Innovation and Technology (EIT)

## SPACE IN H2020

Horizon 2020 budget (in current prices): € 79 billion



## LINKS TO OTHER H2020 PARTS

### Priority 1

#### Excellent science

- European Research Council (ERC)
- Future and Emerging Technologies (FET)
- Marie Skłodowska-Curie Actions
- Research infrastructures

### Priority 2

#### Industrial leadership

- Leadership in enabling and industrial technologies (LEIT)
  - Information and Communication Technologies (ICT)
  - Nanotechnologies
  - Biotechnology
  - Advanced manufacturing and Processing
  - **Space**
- Access to risk finance
- Innovation in SMEs

### Priority 3

#### Societal challenges

- SC1 - Health, demographic change and well-being
- SC2 - Food security, sustainable agriculture and forestry, Marine, Maritime and Inland water research, and Bioeconomy
- SC3 - Secure, clean and efficient energy
- SC4 - Smart, green and integrated transport
- SC5 - Climate action, Environment, Resource efficiency and Raw materials
- SC6 - Europe in a changing world – Inclusive, Innovative and Reflective societies
- SC7 - Secure societies – Protecting freedom and Security of Europe and its citizens



- Enabling European **competitiveness, non-dependence** and **innovation** of the European space sector
  - Safeguard and further develop a competitive, sustainable and entrepreneurial space industry and research community and strengthen European non-dependence in space systems
  - Boost innovation between space and non-space sectors
- Enabling advances in **space technologies**
- Enabling the **exploitation of space data**
- Enabling European research in support of **international space partnerships**
- The application of space technologies shall be supported through the respective specific objectives of the priority "**Societal challenges**", where appropriate

For more information please consult **Council Decision of 3 December 2013, OJ L 347/993.**

## EU AGENCIES INVOLVED

- Research Executive Agency (REA)
- European GNSS Agency (GSA)
- Executive Agency for SMEs (EASME)

**TASKS include:** Handling of calls and submission of proposals, evaluation process, grant agreement preparation, grant agreements signature, handling submission of reports, reviews, payments, audits...

*Full detailed description can be found in the General Annexes 20 – part D of the Work Programme 2018-2020: <http://xxxx>*

# **3 HORIZON 2020 SPACE WORK PROGRAMME 2018-2020**

## Horizon 2020 Participants Portal:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/>

The screenshot shows the 'RESEARCH & INNOVATION Participant Portal' interface. On the left, there are navigation menus for 'EU Programmes 2014-2020' (with 'H2020' selected), 'FP7 & CIP Programmes 2007-2013', and 'Other Funding Opportunities'. The main content area is titled 'Calls for Proposals' and features a list of categories: 'Advanced materials', 'Biotechnology', 'Advanced manufacturing and processing', 'Space', 'Access to risk finance', 'Innovation in SMEs', 'Societal Challenges', and 'Health, demographic change and wellbeing'. The 'Space' category is highlighted with a red box. Below this is a 'Sort by' section with options for 'Call title', 'Call identifier', and 'Publication date', along with a 'Filter a call' input field and a 'FILTER' button. At the bottom, a grid of call cards is displayed, each with a title, description, and publication date. A red dashed box encloses this grid. Two red arrows originate from text boxes on the left: one points to the 'Space' category, and the other points to the call card grid.

Call Title	Publication Date
Industrial Leadership Applications in Satellite Navigation-Galileo 2014-2015	11-12-2013
Industrial Leadership Horizon 2020 dedicated SME Instrument Phase 1 and 2, 2014-2015	11-12-2013
Industrial Leadership H2020-LEIT-Space-Competitiveness of the European Space Sector-2014	11-12-2013
Industrial Leadership H2020-LEIT-Space-Competitiveness of the European Space Sector-2015	11-12-2013
Industrial Leadership Earth Observation-2014-LEIT SPACE	11-12-2013
Industrial Leadership Earth Observation-2015-LEIT SPACE	11-12-2013
Industrial Leadership Protection of European assets in and from Space-2014-LEIT SPACE	11-12-2013
Industrial Leadership Protection of European assets in and from Space-2015-LEIT SPACE	11-12-2013

H2020 Space  
Work Programme

Calls for  
proposals

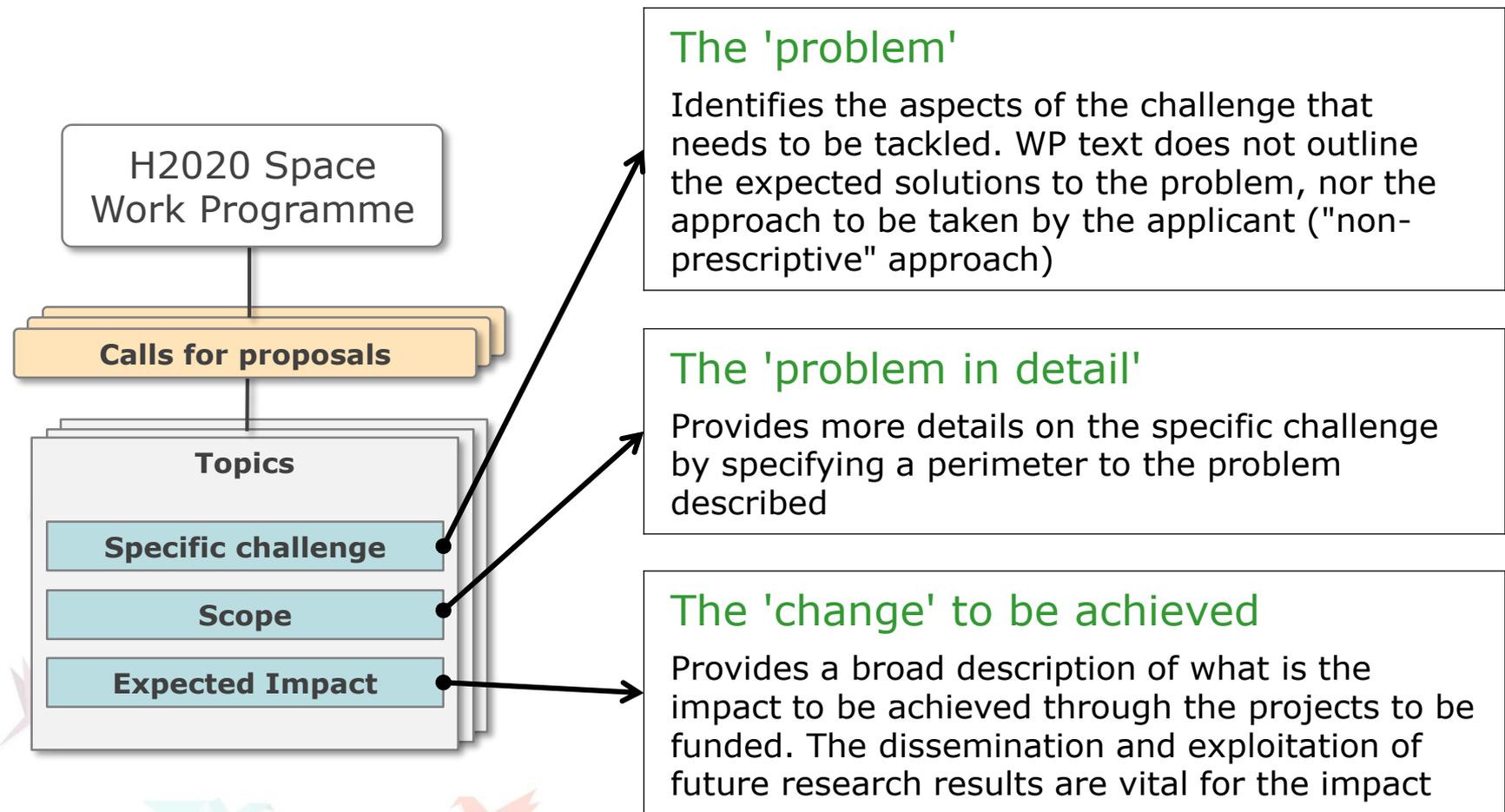
# H2020 Space Work Programme

**Calls for proposals**

**Other actions**

**Topics**

**Activities**



- **Research and innovation actions (Funding rate: 100%)**: Projects aiming to establish new knowledge, new or improved technology by possibly including basic and applied research, technology development, testing and validation on a small-scale prototype.
- **Innovation actions (Funding rate: 70% - exception: 100% for non-profit legal entities)**: Projects aiming to produce plans, arrangements or designs for a new or improved product, design, process or service by possibly including large-scale product validation and market replication.
- **Coordination and support actions (Funding rate: 100%)**: Projects consisting of accompanying/complementary measures (standardisation, awareness-raising, communication, policy dialogues, networking, studies, etc.)

## WP 2018-2020 BUILDING BLOCKS

### Maximising benefits of space for society and EU economy

#### SPACE-EO

- EO market uptake
- Copernicus mission and services evolution

#### SPACE-EGNSS

- EGNSS market uptake
- EGNSS infrastructure, mission and services evolution

#### SPACE-BIZ

- Support to space hubs
- Space outreach and education
- EIC Horizon Prize on "Low cost Space Launch"
- InnovFin Space Equity Pilot (ISEP)
- SME-instrument
- FTI – Fast Track to Innovation

### Globally competitive and innovative space sector

#### SPACE-TEC

- Technologies for European non-depend. and competitiveness
- Strategic research clusters
- Generic space technologies
- EO and SatCom technologies
- In-orbit validation/demonstration

#### SPACE-SCI

- Scientific instrumentation and technologies for exploration
- Scientific data exploitation

### Access to space & Secure and safe space environment

#### SPACE-TEC

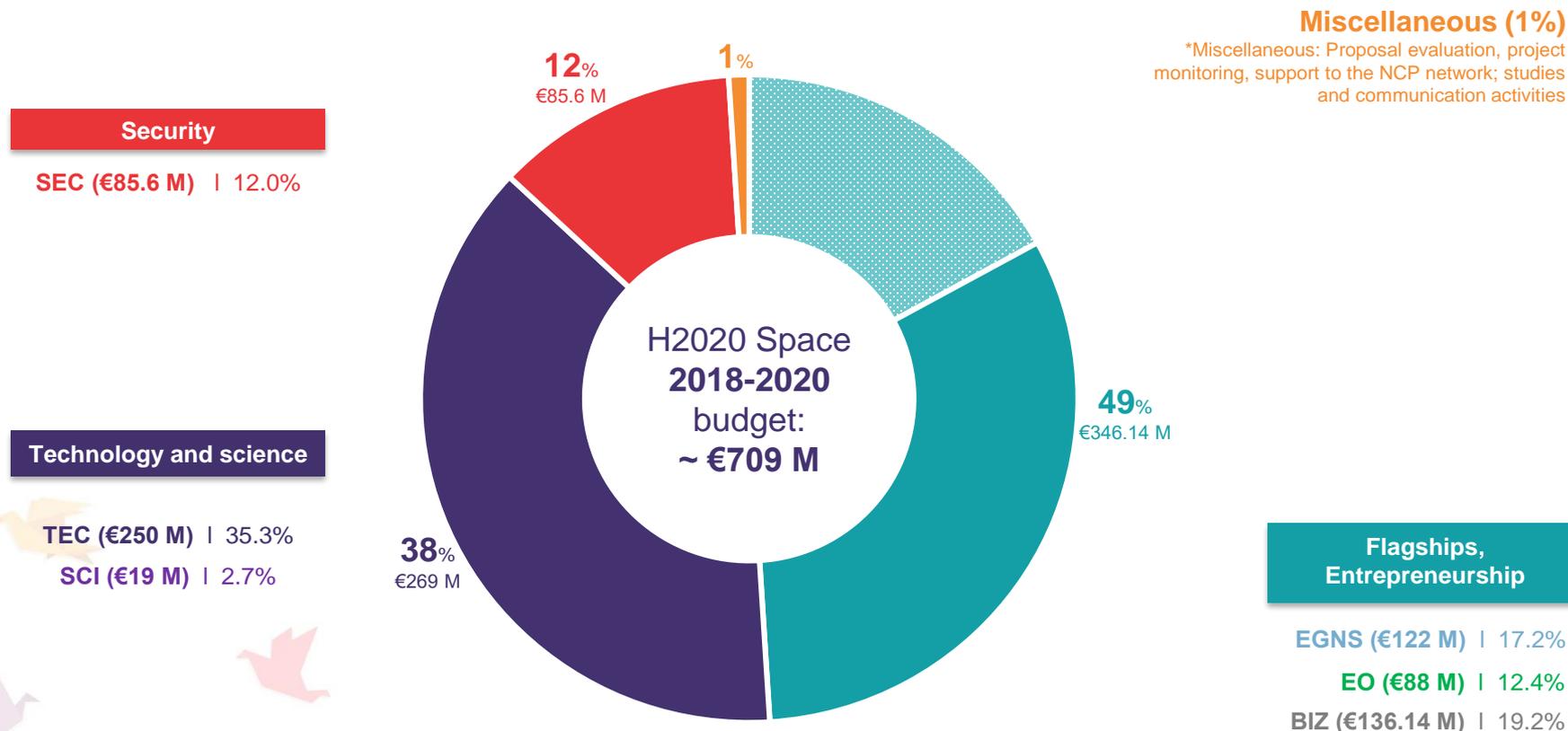
- Access to space

#### SPACE-SEC

- Space weather
- Exploring concepts for space traffic management
- Space Surveillance and Tracking (SST)
- Near Earth Objects (NEOs)

+ under "other actions": ESA engineering support, REA/GSA project monitoring, studies & communication and support to the Space NCPs network

## INDICATIVE BUDGET BREAKDOWN (2018-2020)





## EARTH OBSERVATION

**NOTE:**  
**Work programme update published 25 July 2018!**

Space call 2019: € 24 million;  
(2018-2020: € 88 million)

Deadline: 12 march 2019

## EARTH OBSERVATION

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
DT-SPACE-01-EO-2018-2020: <b>Copernicus market uptake</b>	IA	9.0	9.0	9.0
LC-SPACE-02-EO-2018: <b>Copernicus evolution – Mission exploitation concepts</b>	CSA	8.0		
LC-SPACE-03-EO-2018: <b>Copernicus evolution – preparing for the next generation of Copernicus Marine Service ocean models</b>	RIA	5.0		
LC-SPACE-04-EO-2019-2020: <b>Copernicus evolution – Research activities in support of cross-cutting applications between Copernicus services</b>	RIA		8.0	8.0

## EARTH OBSERVATION

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
<b>NEW topic: LC-SPACE-05-EO-2019: Copernicus evolution - a gap analysis to prepare future activities for Copernicus data.....</b>	CSA		2	
Old topic LC-SPACE-05-EO-2019 on CO2 monitoring will be moved to "other actions" (identified beneficiary action)	RIA		9.0	
LC-SPACE-06-EO-2019: <b>International Cooperation Copernicus – Designing EO downstream applications with international partners</b>	RIA		5.0	
LC-SPACE-24-EO-2020: <b>Copernicus evolution – Mission exploitation concepts</b>	RIA			8.0
LC-SPACE-25-EO-2020: <b>Copernicus big data algorithm factory</b>	RIA			10.0



## SPACE BUSINESS AND ENTREPRENEURSHIP

Indicative budget: 136 M€;  
Space call: 2 M€

Deadline: 12 march 2019

**NOTE:**  
**Work programme update published 25 July 2018!**

## SPACE BUSINESS, ENTREPRENEURSHIP, OUTREACH AND EDUCATION

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
DT-SPACE-07-BIZ-2018: <b>Space hubs for Copernicus market uptake</b>	<b>CSA</b>	<b>2.0</b>		
DT-SPACE-08-BIZ-2018: <b>Space outreach and education</b>	<b>CSA</b>	<b>2.0</b>		
DT-SPACE-09-BIZ-2019: <b>Space hubs – support to start-ups</b>	<b>CSA</b>		<b>2.0</b>	
DT-SPACE-26-BIZ-2020: <b>Space hubs – support to start-ups</b>	<b>CSA</b>			<b>2.0</b>

## SPACE BUSINESS, ENTREPRENEURSHIP, THROUGH THE EIC/ARF

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
<b>EIC Horizon prize "Low cost space launch"</b>	<b>RIA</b>			<b>10.0</b>
<b>InnovFin Space Equity Pilot (ISEP)</b>	<b>RIA</b>	<b>20.0</b>	<b>15.0</b>	<b>15.0</b>
<b>SME Instrument</b>	<b>RIA</b>	<b>&lt;--- 57.93 ---&gt;</b>		
<b>Fast-track to innovation</b>	<b>RIA</b>	<b>3.37</b>	<b>3.37</b>	<b>3.37</b>

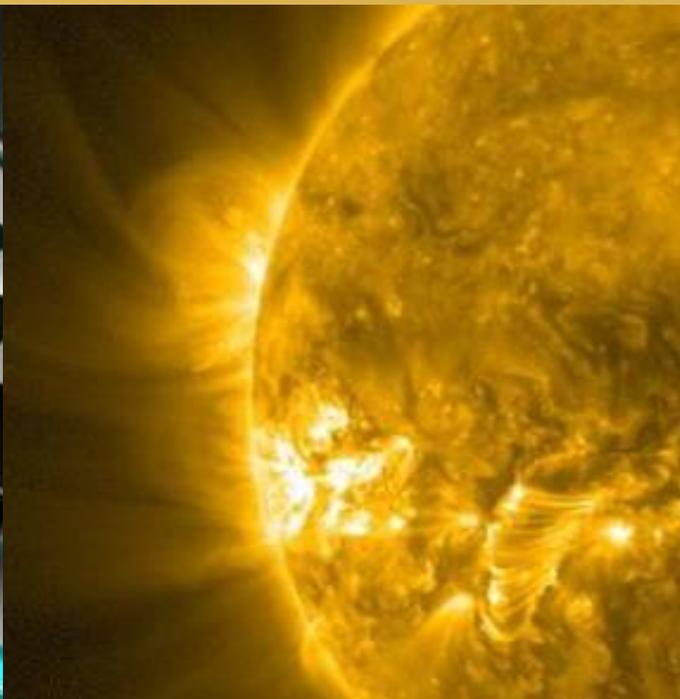
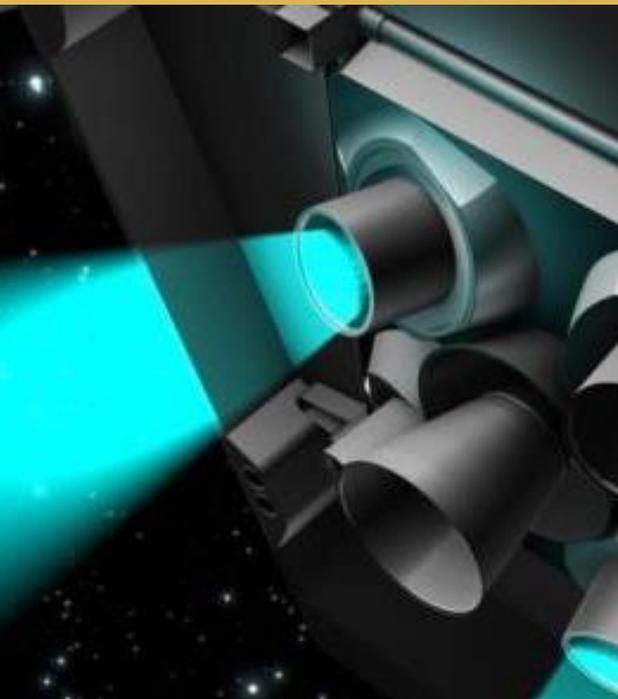


Image Credits: ESA

## COMPETITIVENESS OF THE EUROPEAN SPACE SECTOR TECHNOLOGY AND SCIENCE

**NOTE:**  
**Work programme update published 25 July 2018!**

Space call 2018: 59 M€;  
2018-2020: 269 M€

Deadline: 12 March 2019

## SPACE TECHNOLOGIES, SCIENCE AND EXPLORATION

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
SPACE-10-TEC-2018-2019-2020: <b>Technologies for European non-dependence and competitiveness</b>	RIA	12.0	12.0	12.0
SPACE-11-TEC-2018: <b>Generic space technologies</b>	RIA	11.0		
SPACE-12-TEC-2018: <b>SRC – Space Robotics Technologies</b>	RIA	18.0		
SPACE-13-TEC-2019: <b>SRC – In-Space electrical propulsion and station keeping</b>	RIA		10.0	
LC-SPACE-14-TEC-2018-2019: <b>Earth observation technologies</b>	RIA	8.0	8.0	
SPACE-15-TEC-2018: <b>Satellite communication technologies</b>	RIA	9.0		
SPACE-16-TEC-2018: <b>Access to space</b>	RIA	10.0		
SPACE-17-TEC-2019: <b>Access to space</b>	RIA		9.0	

## SPACE TECHNOLOGIES, SCIENCE AND EXPLORATION

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
<del>SPACE-18-TEC-2019-2020:—*** In-orbit validation/demonstration —Mission integration and implementation</del>	RIA		20.0	18.0
SPACE-27-TEC-2020: <b>SRC – Space Robotics Technologies</b>	RIA			9.0
SPACE-28-TEC-2020: <b>SRC – In-Space electrical propulsion and station keeping</b>	RIA			24.0
SPACE-29-TEC-2020: <b>Satellite communication technologies</b>	RIA			9.0
SPACE-20-SCI-2018: <b>Scientific instrumentation and technologies for exploration</b>	RIA	10.0		
SPACE-30-SCI-2020: <b>Scientific data exploitation</b>	RIA			9.0

**\*\*\* To be delegated to ESA.  
Calls/ITTs to be issued by ESA**

## SPACE TECHNOLOGIES

- **Roadmap-based approach** to support the identification of technology actions: COM-ESA-EDA JTF for critical space technologies; SRCs; other European roadmapping processes, as for instance the ESA Space Technology Harmonization
- Planning and sequencing of the calls for proposals mainstreaming **appropriate TRL levels**
- **Synergies** with other parts of the WP: Key Enabling Technologies; Future Emerging Technologies, especially at low TRLs



# TECHNOLOGIES FOR EUROPEAN NON-DEPENDENCE AND COMPETITIVENESS

- List of recommended actions for 2018-2020 was defined in the context of the Commission-ESA-EDA JTF
- Continue to implement the JTF model, improving its implementation at several levels:
  - Selection and monitoring mechanism involving MS experts
  - Support sustainable supply chains, ensure continuity and sequencing of actions



## 2018-2020

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
<b>SPACE-18-TEC-2019:</b> In-orbit validation/ demonstration – Mission design, integration and implementation  ***	RIA	--	20.0	18.0

## 2018-2020

Other actions	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
Activity 1 – <b>ESA engineering support</b>	<b>Contribution agreement with an implementing entity</b> ***	6.0	-	-
Activity 4 – <b>In-orbit demonstration/ validation – launch services</b>	<b>Contribution agreement with an implementing entity</b> ***	39.0	-	-
Activity 14 – <b>In-orbit demonstration/ validation – Mission design, integration and implementation</b>	<b>Contribution agreement with an implementing entity</b> ***	-	20.0	18.0

\*\*\* To be delegated to ESA.



## SAFE AND SECURE ENVIRONMENT

**NOTE:**  
**Work programme update published 25 July 2018!**

Space call 2018: 18 M€;  
2018-2020: 94.6 M€

Deadline: 12 March 2019

## SECURE AND SAFE SPACE ENVIRONMENT

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
SU-SPACE-21-SEC-2020: Exploring concepts for space traffic management	CSA			2.0
SU-SPACE-22-SEC-2019: Space Weather	RIA		9.0	
SU-SPACE-23-SEC-2019: NEO	RIA		6.0	
*** SU-SPACE-31-SEC Network of governmental users for secure satellite communications	CSA		3	

## OTHER ACTIONS FOR 2018-2020 (SUB-SET)

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
Activity 5 – Improving the Performance of SST at European Level	SGA - RIA		22.9	47.7

\*\*\* New activity

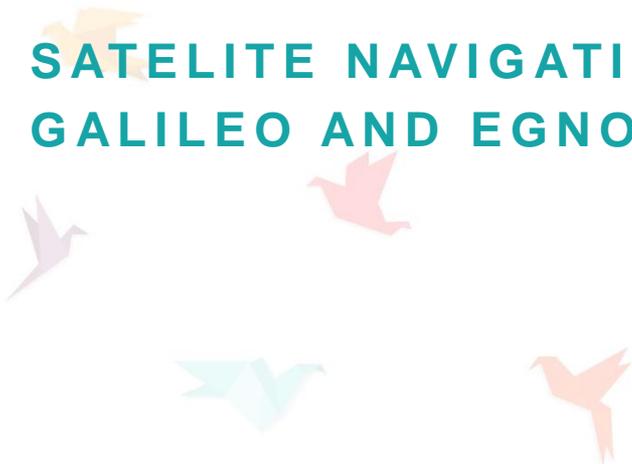
CALL — Space 2018-2020 and other actions for 2018-2020 (sub-set)



## SATELITE NAVIGATION — GALILEO AND EGNOS

Space call 2019: 20 M€;  
2018-2020: 123 M€

Deadline: **5 March** 2019



## CALL — EGNSS MARKET UPTAKE 2019-2020

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
SPACE-EGNSS-1-2019-2020: <b>EGNSS applications fostering green, safe and smart mobility</b>	IA		10.0	10.0
SPACE-EGNSS-2-2019-2020: <b>EGNSS applications fostering digitisation</b>	IA		4.0	5.0
SPACE-EGNSS-3-2019-2020: <b>EGNSS applications fostering societal resilience and protecting the environment</b>	IA		4.0	5.0
SPACE-EGNSS-4-2019: <b>Awareness raising and capacity building</b>	CSA		2.0	

## OTHER ACTIONS FOR 2018-2020 (SUB-SET)

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
Activity 6 – <b>Galileo Evolution, Mission and Service related R&amp;D activities</b>	Public Procurement		2.6	1.8
Activity 7 – <b>EGNOS Mission and Service related R&amp;D activities</b>	Public Procurement		0.4	0.2
Activity 8 – <b>GNSS evolution, infrastructure-related R&amp;D activities</b>	DA - ESA	36.0	31.0	10.0
Activity 12 – <b>Horizon 2020 project monitoring and audits EGNSS</b>	Expert Contracts		0.5	0.5

CALL — EGNSS market uptake 2019-2020  
and other actions for 2018-2020

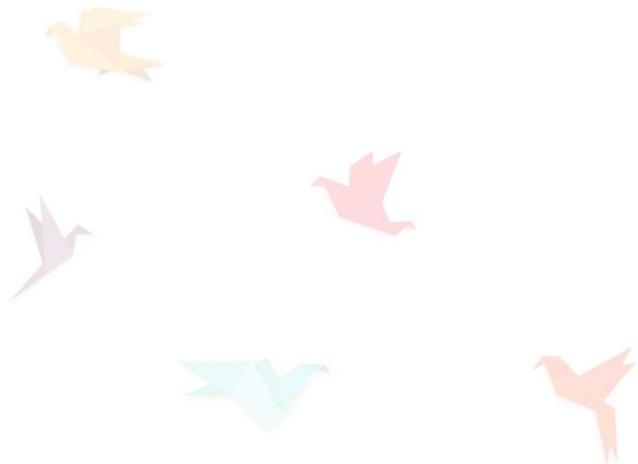
# 7 SPACE IN THE EUROPEAN INNOVATION COUNCIL (EIC) PILOT

## EIC PREPARATORY PHASE — WP 2018-20

- **Future & Emerging Technologies (FET-Open)**
  - To develop breakthrough technologies from research base
  - No predefined topics, collaboration required (> 3 partners)
  - Grants ~€3 million
- **SME instrument**
  - SMEs with business plans to roll out marketable innovations
  - 13 topics, no required collaboration, must comply with SME definition
  - Phase 1 (€50K lumpsum); Phase 2 (<€2,5 million grant)
- **Fast Track to Innovation (FTI)**
  - Accelerate market uptake of innovations
  - Small consortia (3-5, majority private)
  - < €3 million grant
- **Prizes**
  - Recognition Prizes (iCapital ~ €1.5 million, Women Innovators ~ €0.35 million)
  - EIC Prizes ~ €40 million

## EIC HORIZON PRIZES

- **Innovative Batteries for eVehicles** (€10 million)
- **Fuel from the Sun: Artificial Photosynthesis** (€5 million)
- **Early Warning for Epidemics** (€5 million)
- **Blockchains for Social Good** (€5 million)
- **Low-Cost Space Launch** (€10 million)
- **Affordable High-Tech for Humanitarian Aid** (€5 million)





# Space Launch Prize launched!

- [Space Launch EIC Horizon Prize](#)
- [Horizon 2020 Participant Portal](#)
- [EC-SPACE-LAUNCH-EIC-PRIZE@ec.europa.eu](mailto:EC-SPACE-LAUNCH-EIC-PRIZE@ec.europa.eu)

SPACE LAUNCH  
EIC HORIZON  
prize

SOLVE THE CHALLENGE  
**€ 10 million**  
Apply by 1 June 2021

#eicHorizonPrize

European Commission

#eicHorizonPrize  
#EUSpaceStrategy

# 8 SPACE IN ARF — INNOVFIN SPACE EQUITY PILOT (ISEP)

## CHALLENGE

Optimise benefits space can bring to European society and economy

- How?

- Better exploit possibilities of space data, space technologies, potential of Copernicus, EGNOS, Galileo
- Foster dynamic space innovation system, more favourable regulatory and business environment

- Leading to...

- Private sector has more appetite to invest in space domain
- Firms develop more innovative, space-related products and services

- Key element

- Better access to risk finance for innovative 'space' enterprises

- Approach

- Invest in VC funds focused on innovative SMEs/small midcaps aiming to commercialise new products / services linked to space data / spacetech

- EU investment pot of €50 mn combines:

- €20 mn from **'LEIT – Space'**
- €30 mn from 'Access to Risk Finance'

- €20 mn in 2018, €15 mn in 2019, €15 mn in 2020

# 10 WORK PROGRAMME 2018-2020

*Implementation calendar*

# Work Programme 2019-2020

DATE	
<b>25 July</b>	Work programme update published Check participant portal!
<b>16 Oct</b>	Space call opening
<b>5 March 2019</b>	EGNSS call deadline
<b>12 March 2019</b>	Space call deadline
<b>Mid 2019</b>	Work Programme update -- full 2020 topics

Important dates



## Space research and guidance documents

<http://ec.europa.eu/growth/sectors/space/research/horizon-2020/>

## Published work programme 2018-2020

<http://ec.europa.eu/research/participants/portal/>



# SME Instrument and Fast Track to Innovation

THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

HORIZON 2020

Research and  
Innovation

# SME Instrument phases

## PHASE 1

Concept & Feasibility Assessment  
*Idea to concept (6 months)*

The SME will draft an initial **business proposal**.

The European Union will provide **€50 000 in funding** and business coaching.

## PHASE 2

Demonstration, Market Replication, R&D  
*Concept to Market-Maturity (1-2 years)*

The SME will further develop its proposal through **innovation activities**, and draft a more developed **business plan**.

The EU may contribute between **€0.5 million** and **€2.5 million\*** and provide business coaching.

## PHASE 3

Commercialisation  
*Prepare for Market Launch*

The SME will receive extensive support to help polish its concept into a marketable product, and have access to **networking opportunities**.

The EU will not provide funding in this phase.



## Phase 1 - Concept & Feasibility Assessment



- **€50.000** in EU funding
- **Feasibility study**
- **Initial 10 page business proposal** to be drafted
- **6 months** in duration

## Phase 2 – Innovation Project



Between **€0.5M & €2.5M** of EU funding

Develop project through **innovation strategy**

Draft a more developed **30 pages business plan**

**1-2 years** in duration

## Phase 3 – «Commercialisation»



**No stand-alone phase!**

**No direct funding**

**Business coaching**

**Facilitate access to risk finance**

**Additional support & networking opportunities**

**SMEs “Business Club”**

# SME instrument: what's new

- **Fully bottom-up**, no predefined topics, so innovative projects that cut across sectors/technologies become eligible for support
- **Single budget line**, maintaining budgetary contributions from Societal challenge and LEIT
- **Larger pool of evaluators** with relevant technological/scientific expertise as well as financial/commercial backgrounds
- **Evaluation criteria phase 2 revised** to better target the scaling up of SMEs with the greatest potential for breakthrough, market-creating innovation (business capacity, international growth ambition)
- **Interviews** in phase 2
- **Coaching** for SMEs
- **Mentoring** introduced
- **Monitoring** of thematic coverage

# Fast Track to Innovation Pilot

THE ULTIMATE BOOST FOR OUTSTANDING BUSINESS INNOVATORS WITH A NEED FOR SPEED...

## PREPARE YOUR PROPOSAL

**Build your industry-intensive consortium\***  
minimum 3 partners - maximum 5 partners  
(all based in the EU and / or in Horizon 2020 associated countries)

Proposal



Outstanding Business Innovation Concept  
(high-readiness level / TRL 6, meaning demonstrated in a relevant environment)

Continuous open call  
until end 2016

6 months time-to-grant

## DEVELOP YOUR INNOVATION

Receive an EU grant of EUR 1 million to 3 million  
(70% of funding, 100% of funding for non-profit entities)

From Mature R&D  
Demonstration  
Market-Oriented  
R&D  
to Market-Mature Innovation

12-24 months for implementation

## HIT THE MARKET!

Start your commercial activities



The Market  
Market-Maturity to Market  
Launch



Market-ready result  
(finished product, service,  
process/ TRL 9)

At most 36 months from grant to market

\*In a consortium with 3 or 4 partners, at least 2 should be industry, and in a consortium with 5 partners, at least 3; alternatively at least 60% of the project budget should be allocated to industry (i.e. private for profit entities)

... AND EAGER TO COMPETE ON GLOBAL MARKETS...!

## ACTIVITIES SUPPORTED

Systems validation in real working conditions – Testing – Piloting – Business model validation – Standard setting – Pre-normative research – EU quality label