



#InvestEUresearch

# Horizon 2020 Work Programme for Research & Innovation 2018-2020 WP2020

58th European Space Sciences Committee  
Plenary Meeting

2<sup>nd</sup> of October, Académie Royale de Belgique

Remy DENOS

DG GROW – Internal Market, Industry  
Entrepreneurship and SMEs

GROW/I1 - Space Policy and Research Unit

Research and  
Innovation

# Outline

Policy context / EU Space programme(s)

Horizon 2020 Space Work Programme 2020

- Copernicus & Earth Observation
- Space Technologies, Science, Security, Business
- EGNSS

# Space Strategy

COM(2016)705

- Maximising the benefits of space for society and EU Economy
- Fostering a globally competitive and innovative European space sector
- Reinforcing Europe's autonomy in accessing and using space in a secure and safe environment
- Strengthening Europe's role as a global actor and promoting international cooperation

# Space Programmes and H2020 – MFF 2014-2020



~4.291 M€

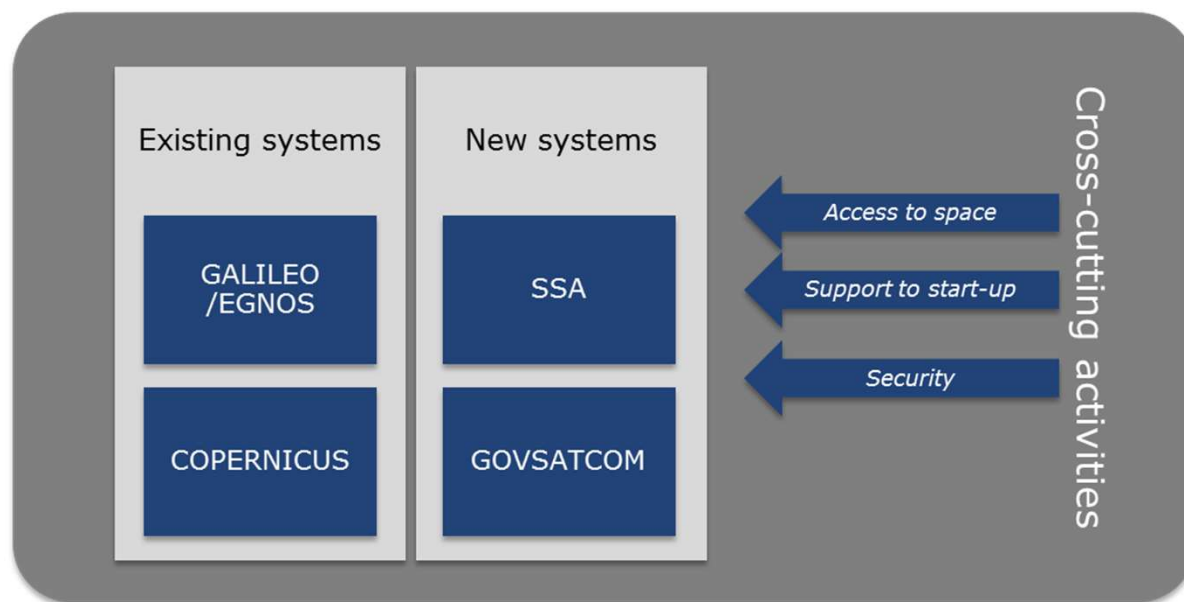


~7.071 M€



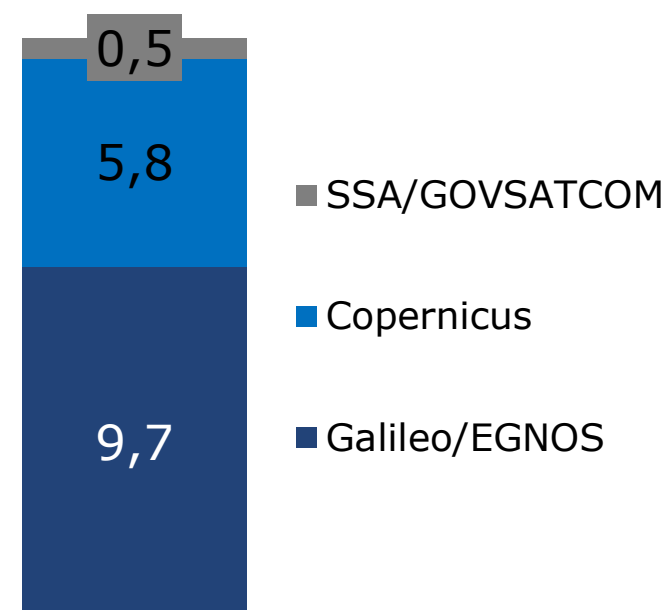
~1.479 M€

# Proposal for a EU Space Programme 2021-2027

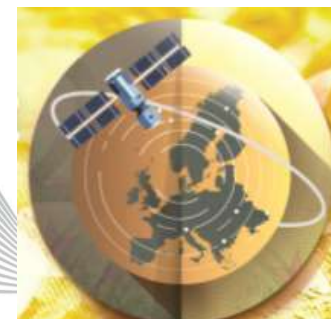


4 components – 3 horizontal activities

## Allocation of the €16bn



MFF 21-27



# Space in support of EU policies

Mapping of natural disturbances and weather-related challenges

Monitoring COP21 commitments and CO<sub>2</sub> emissions

Better execution of CAP due to policy monitoring and precision farming

Enabling technologies in automotive, aviation and maritime sectors

Supporting civil protection thanks to Emergency Management Service

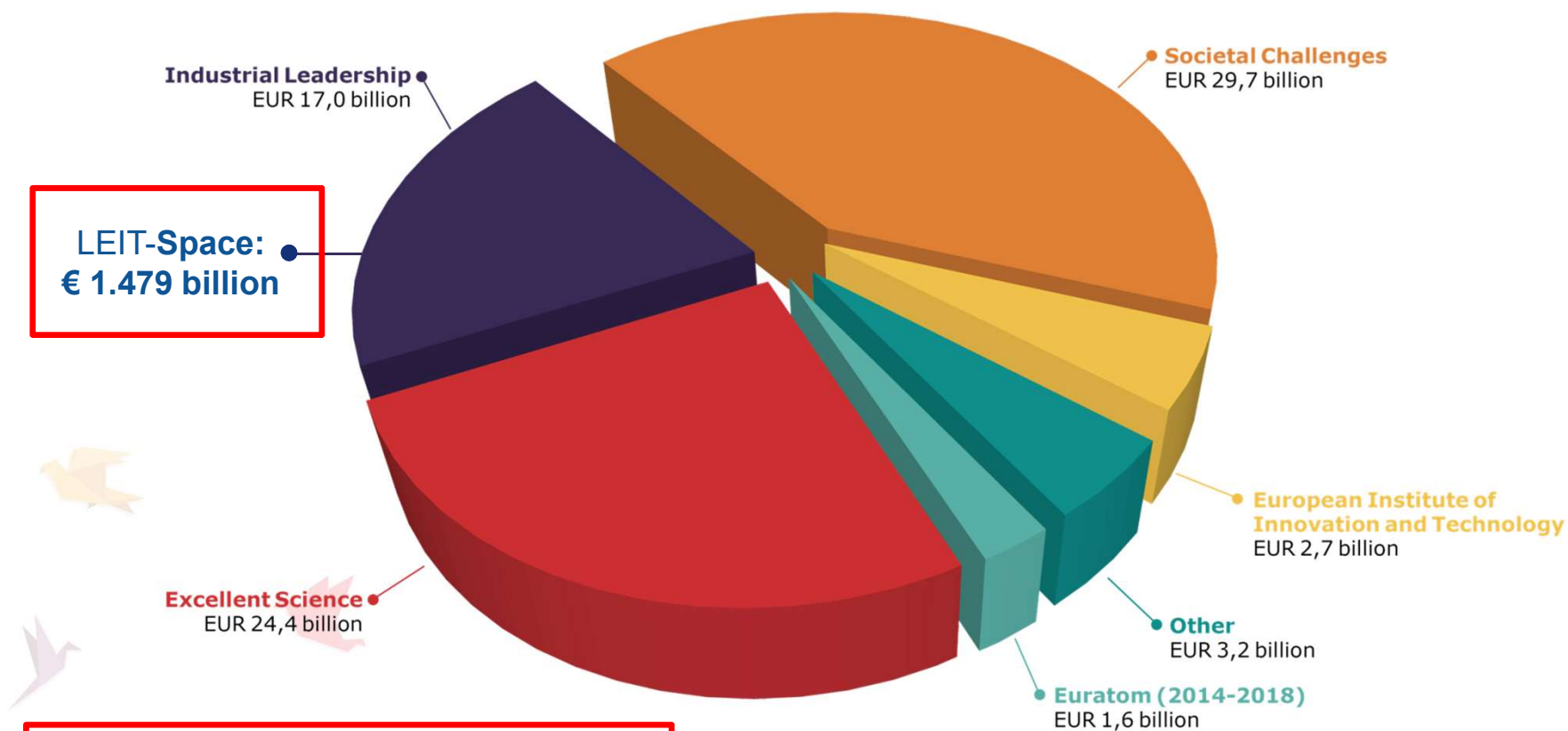
Aiding the digitalisation through space and satellite communication



# HORIZON 2020

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

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



WP 2020 Indicative budget:  
223 Meur  
out of which 66 MEur for Specific GA (SST)



# 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

# Earth Observation



**Space call 2020: € 43 million**  
Deadline: 5 March 2020

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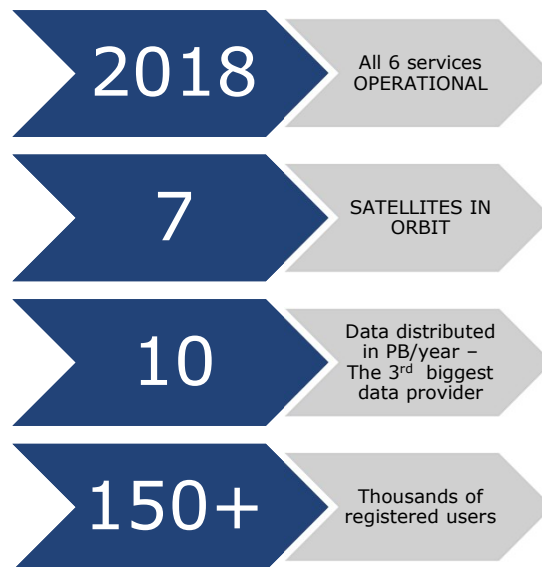
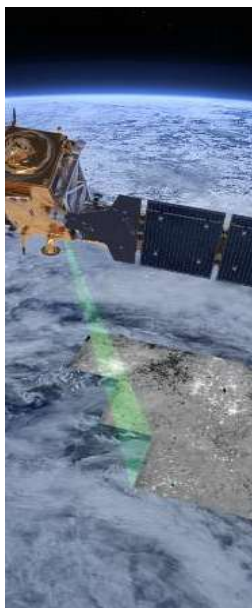
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### **Climate Change**

Support to mitigation strategies



### **Atmosphere**

Air quality, solar Radiation, Emissions monitoring



### **Natural/man-made disasters**

Floods, earthquakes, fires, hurricanes



### **Security**

Border surveillance, Maritime Surveillance, Support to EU external action



### **Agriculture and resources**

Precise farming, Forestry, Natural resources, Urban Planning



### **Marine Environment**

Fisheries, Transports, Tourism, Coastal and marine resources

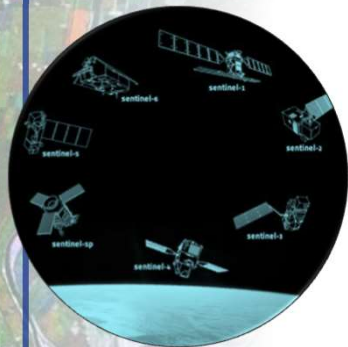
**The most advanced Earth observation system in the world**





Copernicus

# COPERNICUS ARCHITECTURE



Space Component  
Sentinels

Data

## 6 Services

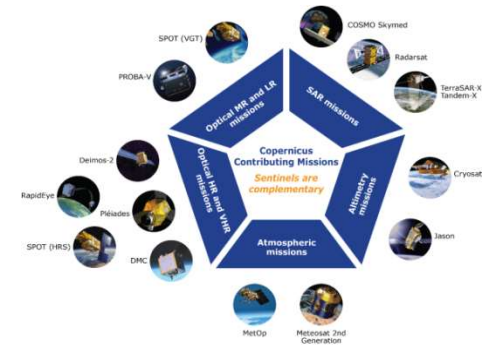


Products (free)



Applications

Downstream / Market Uptake



Contributing missions

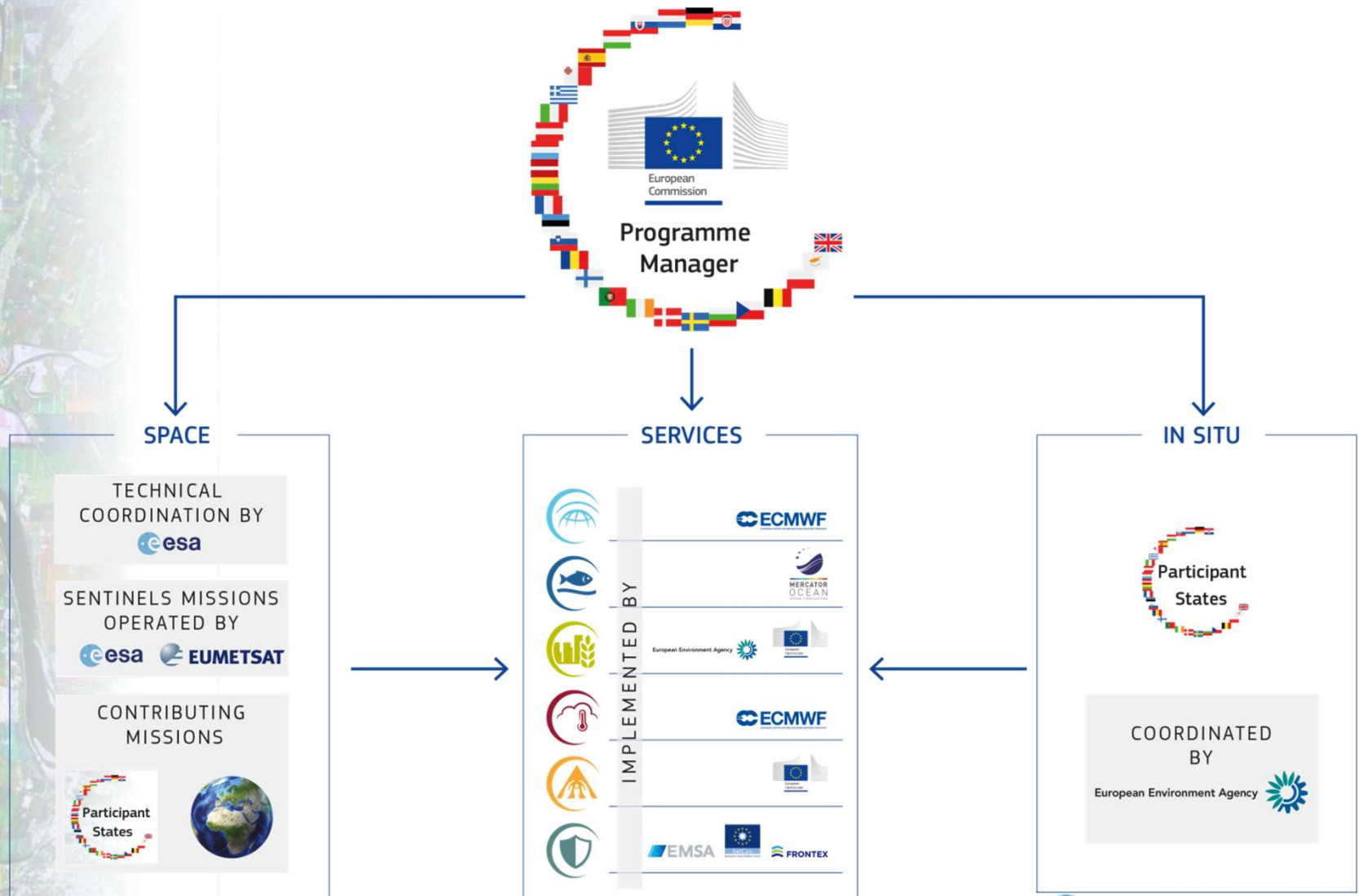






Copernicus

# COPERNICUS GOVERNANCE



Entrusted Entities



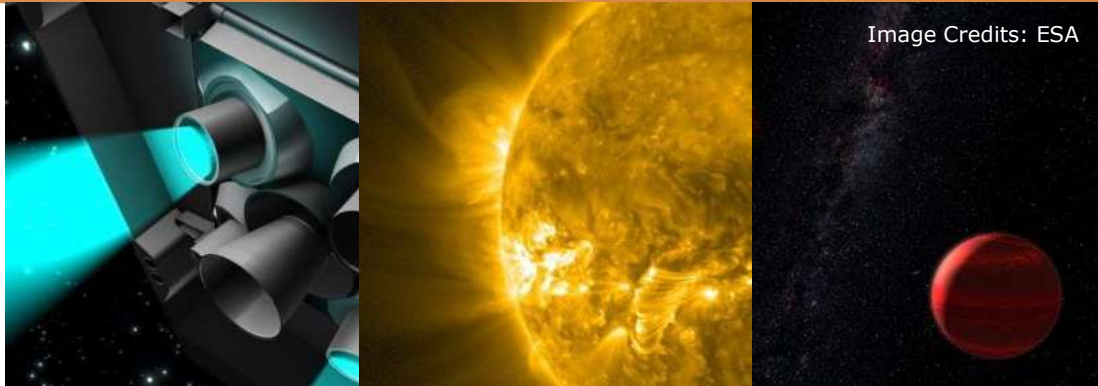


# Earth Observation

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

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
LC-SPACE-05-EO-2019: <b>Copernicus evolution - a gap analysis to prepare future activities for Copernicus data.....</b>	CSA		2	
LC-SPACE-06-EO-2019: <b>International Cooperation Copernicus – Designing EO downstream applications with international partners</b>	RIA		5.0	
LC-SPACE-18-EO-2019: <b>Copernicus evolution – Research activities in support of the evolution of the Copernicus services</b>	RIA			10.0
LC-SPACE-19-EO-2019: <b>Copernicus evolution: new concept of an innovative and holistic solution for Sentinels calibration &amp; validation</b>	CSA			3.0
LC-SPACE-24-EO-2020: <b>Copernicus evolution – Mission exploitation concept for WATER</b>	CSA			3.0
LC-SPACE-25-EO-2020: <b>Big data technologies and Artificial Intelligence for Copernicus</b>	RIA			10.0

# Globally competitive and innovative space sector



**Space call 2020: 65 M€**  
2018-2020: 269 M€

**Deadline: 5 March 2020**

## 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"
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## Globally competitive and innovative space sector

### SPACE-TEC

- Technologies for European non-depend. and competitiveness
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## Access to space & Secure and safe space environment

### SPACE-TEC

- Access to space

### SPACE-SEC

- Space weather
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# 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	14.0
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	

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
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



# IOD/IOV: In Orbit Demonstration / Validation

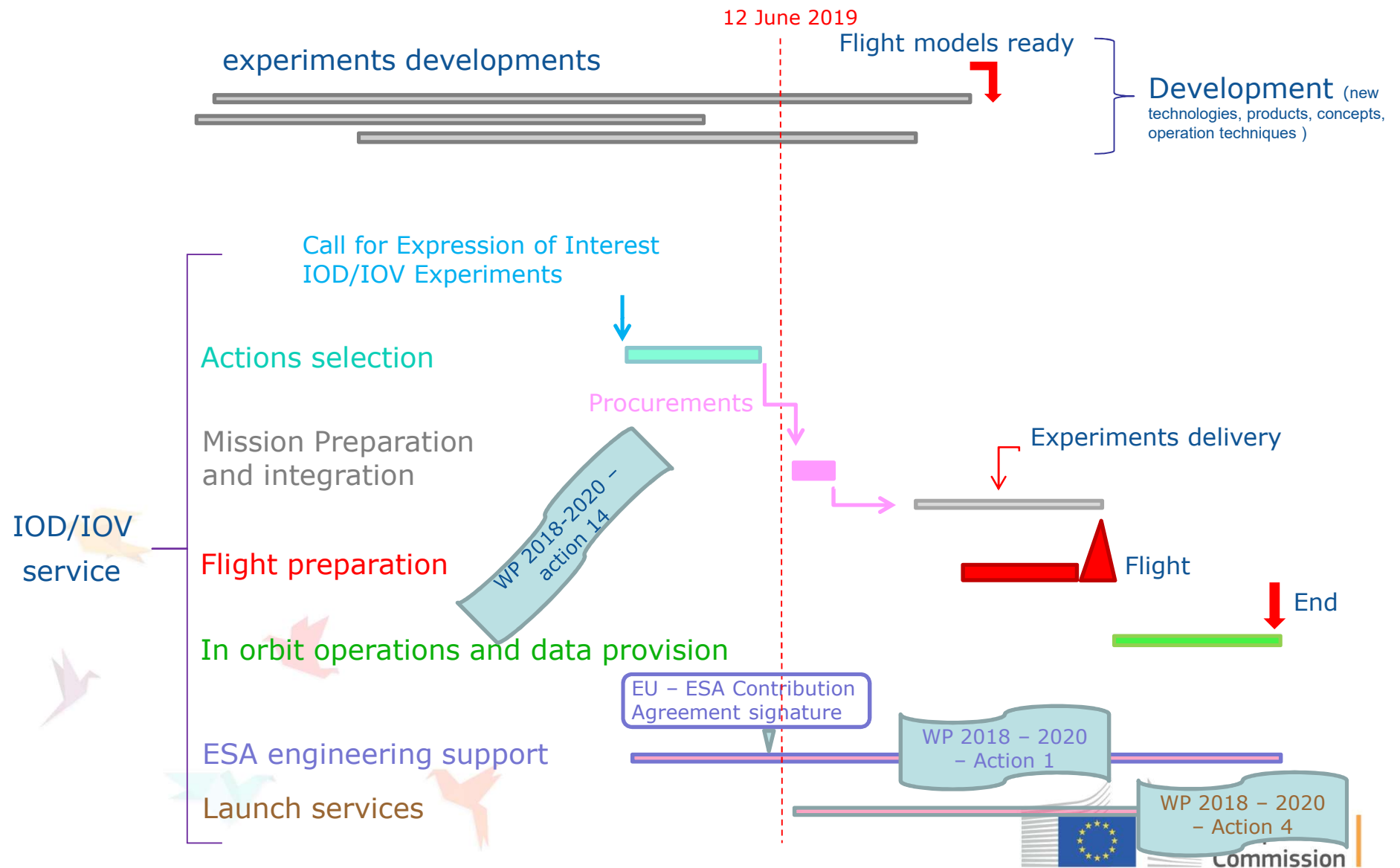
2018-2020

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 (ESA)</b>	<b>6.0</b>	-	-
Activity 4 – <b>In-orbit demonstration/ validation – launch services</b>	<b>Contribution agreement with an implementing entity (ESA)</b>	<b>39.0</b>	-	-
Activity 14 – <b>In-orbit demonstration/ validation – Mission design, integration and implementation</b>	<b>Contribution agreement with an implementing entity (ESA)</b>	-	<b>38.0</b>	-

Procurements by ESA (indirect management):

- Activities for aggregation of experiments
- Launch services for
  - Aggregated experiments
  - Experiments in the form of Complete systems

# IOD/IOV - Overall scheme - State of Play



# Safe and Secure Environment



**Space call 2020: 1.5 M€**

Deadline: 5 March 2020

## Maximising benefits of space for society and EU economy

### SPACE-EO

- EO market uptake
- Copernicus mission and services evolution

### SPACE-EGNSS

- EGNSS market uptake
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### SPACE-BIZ

- Support to space hubs
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# Secure and Safe Space Environment

## H2020 Call

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

## Other Actions

Topics	Type of Action	Indicative budget (€ million)		
		2018	2019	2020
Activity 5 – <b>Improving the Performance of SST at European Level</b>	<b>SGA - RIA</b>		<b>4.9</b>	<b>65.7</b>

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

# EGNSS



**Indicative budget: 20 M€;**  
**Deadline: 5 March 2020**

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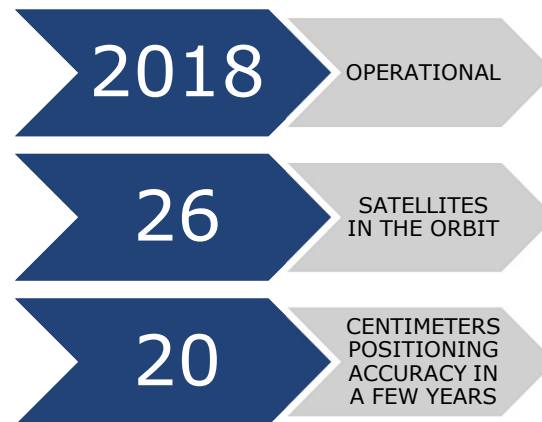
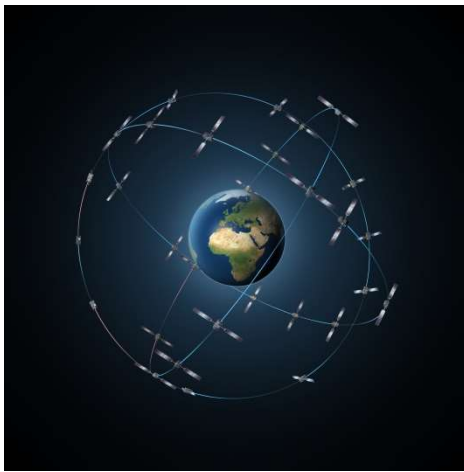
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Soon the most precise satellite  
navigation system  
in the world

Galileo Differentiators:  
Authentication – Search and Rescue –  
High Accuracy



### HIGH PRECISION

1-meter (or even less) signal precision)



### SMARTPHONES

All the latest models Galileo-compatible



### ROAD

From April 2018, Galileo in every new car model supporting the eCall initiative .



### AVIATION

275 airports in Europe are using EGNOS



### AGRICULTURE

Farmers using EGNOS for precision farming



### SEARCH AND RESCUE

Detecting a person in distress within 10 minutes

# New Call: EGNSS market uptake 2020

## H2020-SPACE-EGNSS-2020



Opening: 5<sup>th</sup> of November 2019  
Deadline: 5<sup>th</sup> March 2020

Type of Action*	Topic	Indicative budget (EUR mln)	Funding rate	Indirect costs
IA	EGNSS applications fostering green, safe and smart mobility	10	70% (except for non-profit legal entities, where a rate of 100% applies)	25% of the total eligible costs excluding: <ul style="list-style-type: none"> <li>• Subcontracting</li> <li>• Costs of resources made available by 3<sup>rd</sup> parties</li> <li>• Financial support to 3<sup>rd</sup> parties</li> </ul>
IA	EGNSS applications fostering digitisation	4		
IA	EGNSS applications fostering societal resilience and protecting the environment	4		
PCP	EGNSS applications for public authorities pilot	2		

**Overall indicative budget: 20 MEur**

**\*IA:** activities aimed at producing plans and arrangements or designs for new, altered or improved products, processes or services

**PCP:** Pre-Commercial Procurement actions aim to encourage public procurement of research, development and validation of new solutions that can bring significant quality and efficiency improvements in areas of public interest, whilst opening market opportunities for industry and researchers active in Europe. It provides EU funding for a group of procurers ('buyers group') to undertake together one joint PCP procurement, so that there is one joint call for tender, one joint evaluation of offers, and a lead procurer<sup>3</sup> awarding the R&D service contracts in the name and on behalf of the buyers group.

# Space Business and Entrepreneurship



**Indicative budget: 136 M€;**  
Space call: 2 M€  
Deadline: 5 March 2020

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# Space Business, Entrepreneurship, Outreach and Education

## EIC/ARF

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>

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>

**CALL — Space 2018-2020 & Other actions for 2018-2020**



Copernicus Cristina.Ananasso@ec.europa.eu  
TEC/SCI/SEC/BIZ Remy.Denos@ec.europa.eu  
EGNSS: Dafni.Dimoudi@gsa.europa.eu

**Call opening: 1st november 2019**

**Call closure: 5th of March 2020**

**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/>

**Pre-Publication**

[https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/space\\_h2020\\_draft\\_leit\\_wp\\_18-20.pdf](https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/space_h2020_draft_leit_wp_18-20.pdf)