

HORIZ N 2020 SPACE

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Paris, 12 October 2017



European Union Space Programmes



Multiannual Financial Framework 2014-2020



~ 1 479 M€



~ 4 291 M€



~ 7 071 M€

~ 12 841 M€

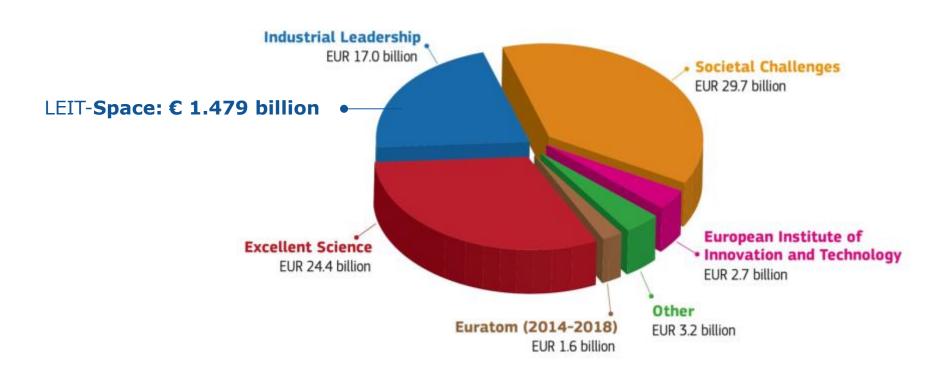


Space research in Horizon 2020



Space in H2020

HORIZON 2020 BUDGET (in current prices): € 79 billion





Links to other H2020 parts

Excellent science

Priority 1 – **Excellent science**

- European Research Council (ERC)
- Future and Emerging Technologies (FET)
- Marie Sklodowska-Curie Actions
- Research Infrastructures

Industrial leadership

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

Societal challenges

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

H2020 Space Specific Programme



- 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 "<u>Societal challenges</u>", where appropriate

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

Work Programme implementation



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...



Horizon 2020 Space Work Programme 2018 - 2020

Information and topic descriptions indicated in this draft presentation may not appear in the final work programme; and likewise, new elements may be introduced at a later stage. Any information disclosed by any other party shall not be construed as having been endorsed by or affiliated to the Commission.

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The content is indicative pending adoption by end October 2017

Work Programme 2018-2020



Important dates

DATE	
11 Oct	Draft work programme available https://ec.europa.eu/programmes/horizon2020/en/what-work-programme
27 Oct	Work programme adoption and publication
31 Oct	Space call opening
8-9 Nov	European Space Week, Tallin http://www.eusw2017.eu/
6 March 2018	Space call deadline
Mid 2018	Work Programme update (including details for 2020)

Horizon 2020 Space 2018-2020 'calls'

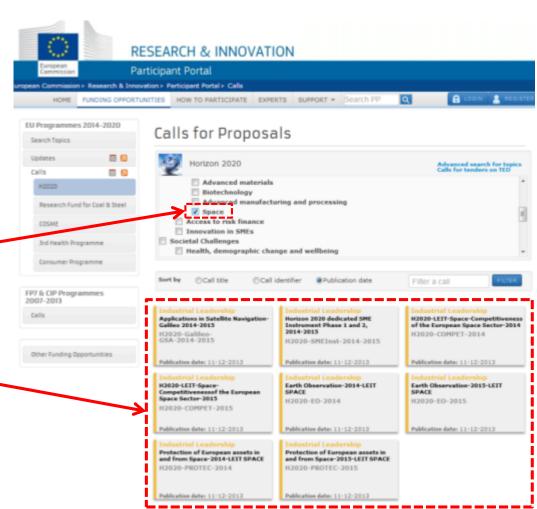


Horizon 2020 Participants Portal:

http://ec.europa.eu/research/p articipants/portal/desktop/en/o pportunities/h2020/

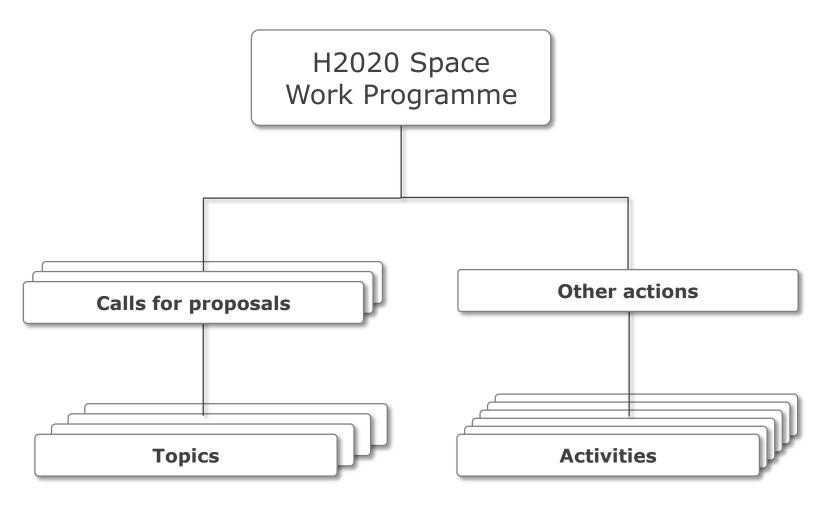
> H2020 Space Work Programme

> > Calls for proposals



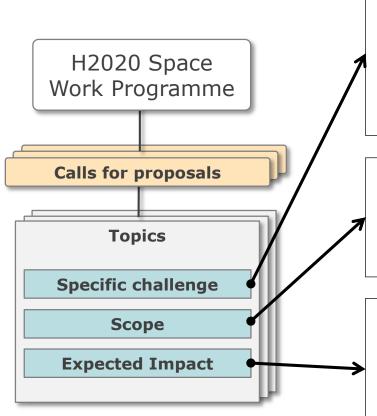
Horizon 2020 Space WP structure





WP 2018-20 structure of the 'calls' & 'topics'





The 'problem'

Identifies the aspects of the challenge that needs to be tackled. WP text does not outline the expected solutions to the problem, nor the approach to be taken by the applicant ("nonprescriptive" approach)

The 'problem in detail'

Provides more details on the specific challenge by specifying a perimeter to the problem described

The 'change' to be achieved

Provides a broad description of what is the impact to be achieved through the projects to be funded. The dissemination and exploitation of future research results are vital for the impact

Types of actions and Funding rates



- 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/complementrary measures (standardisation, awareness-raising, communication, policy dialogues, networking, studies, etc.)

Full detailed description can be found in the **General Annexes 20 – part D** of the Work Programme 2016-2017: http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-ga_en.pdf



WP 2018-2020 building blocks

Maximising benefits of space for society and EU economy

SPACE-EO

- EO market uptake
- Copernicus mission and services evolution
- Interrnational coop.
- Big data

SPACE-EGNSS

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

Globally competitive and innovative space sector

SPACE-TEC and SPACE-SCI

- Technologies for European non-dependence and competitiveness
- Strategic research clusters
- Generic space technologies
- EO and SatCom technologies
- In-orbit validation/demonstration
- Scientific instrumentation and technologies enabling space science and exploration

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

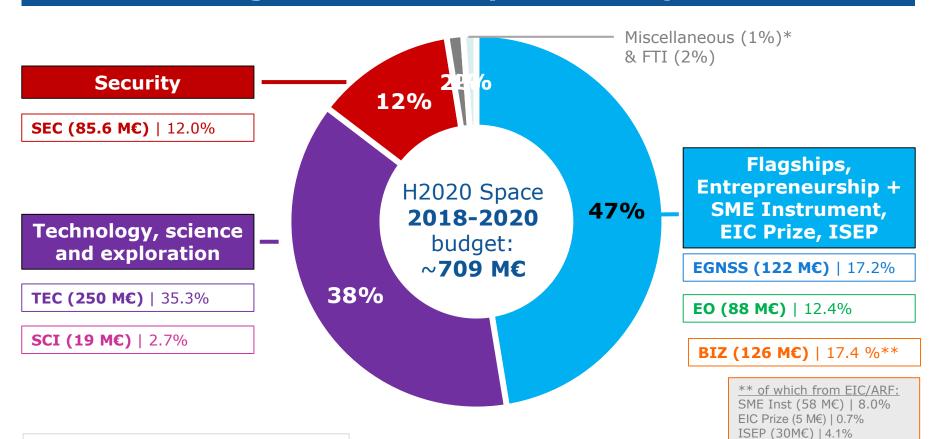
SPACE-BIZ

- Support to space hubs
- Space outreach and education
- Horizon Prize for European low-cost space launch
- Innovfin Space Equity Pilot (ISEP)
- SME Instrument
- Fast-track to Innovation

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



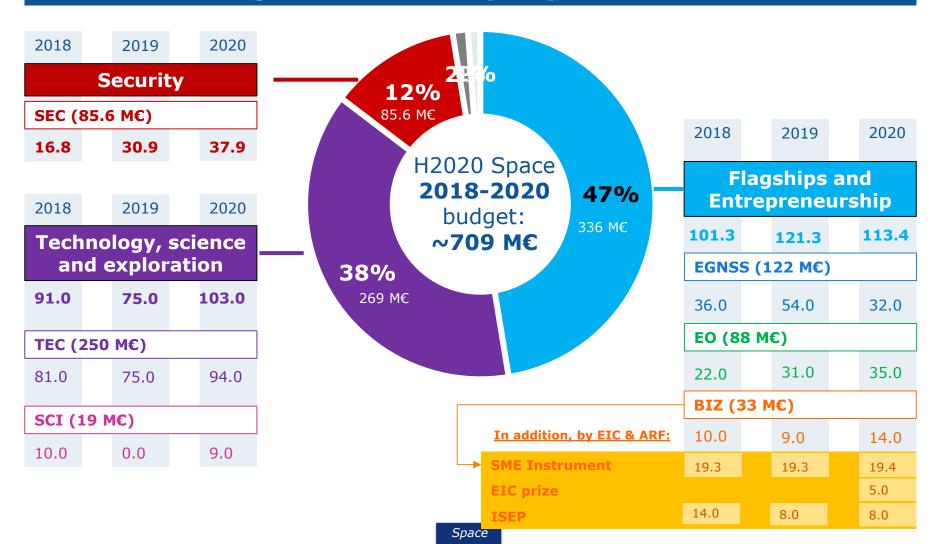
Indicative budget breakdown (2018-2020)



*Miscellaneous: Proposal evaluation, project monitoring, support to the NCP network; studies and communication activities

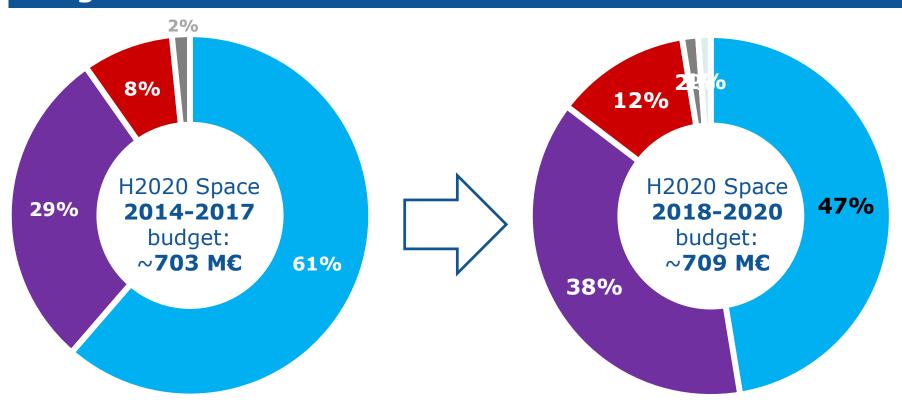


Indicative budget breakdown per year





Budget breakdown: from 2014-2017 to 2018-2020



- Flagships and Entrepreneurship (EGNSS, EO, SME Inst & FTI)
- Technology, science and exploration (COMPET)
- Security (PROTEC & SST)
- Miscellaneous

- Flagships and Entrepreneurship (EGNSS, EO, BIZ) + SME instrument, EIC Prize and ISEP
- Technology, science and exploration (TEC, SCI)
- Security (SEC)
- Miscellaneous & FTI



Earth observation



Space call 2018: €22 million;

(2018-2020: €88 million)

Deadline: 6 March 2018



Earth Observation				
Topics	Type of Action		udget n)	
		2018	2019	2020
SPACE-01-EO-2018-2020: Copernicus market uptake	IA	9.0	9.0	9.0
SPACE-02-E0-2018: Copernicus evolution – Mission exploitation concepts	CSA	8.0		
SPACE-03-E0-2018: Copernicus evolution – preparing for the next generation of Copernicus Marine Service ocean models	RIA	5.0		
SPACE-04-E0-2019-2020: Copernicus evolution – Research activities in support of cross-cutting applications between Copernicus services	RIA		8.0	8.0

Earth Observation						
Topics			Type of Indicative budge Action (€ million)			
		2018	2019	2020		
SPACE-05-EO-2019: Copernicus evolution – Research activities in support to a European operational monitoring system for fossil CO2 emissions	RIA		9.0			
SPACE-06-E0-2019: International Cooperation Copernicus – Designing EO downstream applications with international partners	RIA		5.0			
SPACE-24-EO-2020: Copernicus evolution – Mission exploitation concepts	RIA			8.0		
SPACE-25-EO-2020: Copernicus big data algorithm factory	RIA			10.0		



Earth Observation					
Topics	Type of Action		ative bu € millior		
		2018	2019	2020	
SPACE-01-EO-2018-2020: Copernicus market uptake	IA	9.0	9.0	9.0	
SPACE-02-EO-2018: Copernicus evolution – Mission exploitation concepts	CSA	8.0			
SPACE-03-E0-2018: Copernicus evolution – preparing for the next generation of Copernicus Marine Service ocean models	RIA	5.0			
SPACE-04-E0-2019-2020: Copernicus evolution – Research activities in support of cross-cutting applications between Copernicus services	RIA		8.0	8.0	



Earth Observation				
Topics	Type of Action		icative bud (€ million)	
		2018	2019	2020
SPACE-05-EO-2019: Copernicus evolution – Research activities in support to a European operational monitoring system for fossil CO2 emissions	RIA		9.0	
SPACE-06-E0-2019: International Cooperation Copernicus – Designing EO downstream applications with international partners	RIA		5.0	
SPACE-24-EO-2020: Copernicus evolution – Mission exploitation concepts	RIA			8.0
SPACE-25-EO-2020: Copernicus big data algorithm factory	RIA			10.0



Space business and entrepreneurship



Indicative budget Space call 2018: 4 M€ (2018-2020: 136 M€)

Deadline: 6 March 2018



Call - Space 2018-2020 & Other actions for 2018-2020

Space business, entrepreneurship, outreach and education

Topics	Type of Action		ative bu million	
		2018	2019	2020
DT-SPACE-07-BIZ-2018: Space hubs for Copernicus market uptake	CSA	2.0		
DT-SPACE-08-BIZ-2018: Space outreach and education	CSA	2.0		
DT-SPACE-09-BIZ-2019: Space hubs – support to start-ups	CSA		2.0	
DT-SPACE-26-BIZ-2020: Space hubs – support to start-ups	CSA			2.0

Space business, entrepreneurship, through the EIC/ARF

Actions	Type of Action		icative bud (€ million)	
		2018	2019	2020
EIC Horizon prize "Low cost space launch"	Inducement Prize			10.00
InnovFin Space Equity Pilot (ISEP)	Financial Instrument	20.0	15.0	15.0
SME Instrument	Grants			
Fast-track to innovation	Grants	3.37	3.37	3.37



Call - Space 2018-2020 & Other actions for 2018-2020

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



Call - Space 2018-2020 & Other actions for 2018-2020

Space business, entrepreneurship, through the EIC/ARF Indicative budget (€ million) **Actions** Type of Action 2018 2019 2020 **EIC Horizon prize "Low cost Inducement Prize** 10.00 space launch" **Financial InnovFin Space Equity Pilot** 20.0 **15.0 15.0** (ISEP) **Instrument** 57.93 **SME Instrument Grants Fast-track to innovation Grants** 3.37 3.37 3.37



Competitiveness of the European Space Sector Technology and Science



Space call 2018: 78 M€; Deadline: 6 March 2018

(2018-2020: 269 M€)



Space technologies, science and exploration

expiora	ition			
Topics	Type of Action		cative bu € million	
- P	ACCION	2018	2019	2020
SPACE-10-TEC-2018-2019-2020: Technologies for European non-dependence and competitiveness	RIA	12.0	12.0	12.0
SPACE-11-TEC-2018: Generic space technologies	RIA	11.0		
SPACE-12-TEC-2018: SRC - Space Robotics Technologies	RIA	18.0		
SPACE-13-TEC-2019: SRC - In- Space electrical propulsion and station keeping	RIA		10.0	
SPACE-14-TEC-2018-2019: Earth observation technologies	RIA	8.0	8.0	
SPACE-15-TEC-2018: Satellite communication technologies	RIA	9.0		
SPACE-16-TEC-2018: Access to space	RIA	10.0		
SPACE-17-TEC-2019: Access to space	RIA		9.0	

Space technologies, science and exploration

Topics	Type of		ative bu € millior	
Topics	Action	2018	2019	2020
SPACE-18-TEC-2019-2020: In- orbit validation/demonstration – Mission integration and implementation	RIA		20.0	18.0
SPACE-27-TEC-2020: SRC - Space Robotics Technologies	RIA			9.0
SPACE-28-TEC-2020: SRC - In- Space electrical propulsion and station keeping	RIA			24.0
SPACE-29-TEC-2020: Satellite communication technologies	RIA			9.0
SPACE-20-SCI-2018: Scientific instrumentation and technologies for exploration	RIA	10.0		
SPACE-30-SCI-2020: Scientific data exploitation	RIA			9.0



Space technologies, science and exploration				
Topics	Type of Action		Indicative budget (€ million)	t
13,713		2018	2019	2020
SPACE-10-TEC-2018-2019-2020: Technologies for European non-dependence and competitiveness	RIA	12.0	12.0	12.0
SPACE-11-TEC-2018: Generic space technologies	RIA	11.0		
SPACE-12-TEC-2018: SRC - Space Robotics Technologies	RIA	18.0		
SPACE-13-TEC-2019: SRC - In-Space electrical propulsion and station keeping	RIA		10.0	
SPACE-14-TEC-2018-2019: Earth observation technologies	RIA	8.0	8.0	
SPACE-15-TEC-2018: Satellite communication technologies	RIA	9.0		
SPACE-16-TEC-2018: Access to space	RIA	10.0		
SPACE-17-TEC-2019: Access to space	RIA		9.0	



Space technologies, science and exploration

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



Other actions for 2018-2020

Other actions for 2018-2020 (sub-set)					
Other actions	Type of Action	In	dicative bu (€ million		
		2018	2019	2020	
Activity 1 – ESA engineering support	Grant to Identified Beneficiary	4.0		2.0	
Activity 3 - Programmatic Support Actions for the Strategic Research Clusters (Space Robotics; Electric Propulsion)	2 Grants to Identified Beneficiary		6.0		
Activity 4 – IOD/IOV – launch services	Public Procurement	9.0	10.0	20.0	



Safe and secure environment



No call in 2018;

Budget 2018-2020: 85.6 M€



Call - Space 2018-2020 and Other actions for 2018-2020 (sub-set)

Secure and safe space environment							
Topics	Type of Action	2018	2019	2020			
SPACE-21-SEC-2020: Exploring concepts for space traffic management	CSA			2.0			
SPACE-22-SEC-2019: Space Weather	RIA		9.0				
SPACE-23-SEC-2019: NEO	RIA			4.0			

Other actions for 2018-2020 (sub-set)							
Other actions	Type of Action						
		2018	2019	2020			
Activity 5 - Space surveillance and tracking SST	Grant to Identified beneficiary	1.8	1.9	1.9			
Activity 6 – Improving the Performance of SST at European Level	SGA - RIA	15.0	20.0	30.0			

Space Surveillance and Tracking



http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014D0541&from=EN



... Council recalled that space assets have become indispensable for our economy and that their security must be ensured. It underlined the 'need for Europe [...] to develop a European capability for the monitoring and surveillance of its space infrastructure and space debris, initially based on existing national and European assets...

Space Surveillance and Tracking



Two strands of SST activities funded by Horizon 2020:

 SST services: activities within the SST support framework, which relate to the networking and using of existing national SST assets (activity)

These activities are funded by four budget lines (H2020/Space, H2020/Secure societies, Copernicus, GNSS)

 SST evolution: activities outside the SST support framework, which relate to the upgrade of existing and development of new SST sensors (activity)

These activities are funded exclusively by H2020/space



Satellite Navigation – Galileo and EGNOS



No call in 2018;

Budget 2018-2020: 123 M€



Call - EGNSS market uptake 2019-2020 & Other actions for 2018-2020

Call – EGNSS market uptake 2019-2020					
Topics	Type of Action				
T	ACCION	2018	2019	2020	
SPACE-EGNSS-1-2019-2020: EGNSS applications fostering green, safe and smart mobility	IA		10.0	10.0	
SPACE-EGNSS-2-2019-2020: EGNSS applications fostering digitisation	IA		4.0	5.0	
SPACE-EGNSS-3-2019-2020: EGNSS applications fostering societal resilience and protecting the environment	IA		4.0	5.0	

CSA

2.0

SPACE-EGNSS-4-2019:

building

Awareness raising and capacity

2018-2020 (sub-set)					
Other actions	Type of Action				
		2018	2019	2020	
Activity 7 - Galileo Evolution, Mission and Service related R&D activities	Public Procurement		2.6	1.8	
Activity 8 - EGNOS Mission and Service related R&D activities	Public Procurement		0.4	0.2	
Activity 9 - GNSS evolution, infrastructure-related R&D activities	DA - ESA	36.0	31.0	10.0	
Activity 13 – Horizon 2020 project monitoring and audits EGNSS	Expert Contracts		0.5	0.5	

Other actions for



Miscellaneous

Miscellaneous				
Other actions	Type of Action	Indicative budget (€ million)		get
		2018	2019	2020
Activity 10 - Cooperation among NCPs	Grant to Identified beneficiary	0.6		
Activity 11 – Studies and Communication	Grant to Identified Beneficiary	1.5	0.5	1.0
Activity 12 – Horizon 2020 project monitoring	Public Procurement	1.16	0.96	1.28

WP 2018-2020 Implementation calendar



Themes	Opening dates	Deadlines
EO, BIZ, TEC, SCI	31 October 2017	6 March 2018
EO, BIZ, TEC, SEC, EGNSS	31 October 2018	12 March 2019
EO, BIZ, TEC, SCI, SEC, EGNSS	TBD	TBD

The associated **guidance documents** will be available at:

http://ec.europa.eu/growth/sectors/space/research/horizon-2020/ And on the participant portal



THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION HORIZON 2020



SME Instrument phases

PHASE1

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.

PHASE2

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.

PHASE3

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



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)



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



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

12-24 months for implementation

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

SME Instrument and Fast Track to Innovation



SME Instrument and Fast Track to Innovation: summary

WP 2018/2020				
	2018	2019	2020	
Call for proposals	Indicative budget (€ million)	Indicative budget (€ million)	Indicative budget (€ million)	
SME instrument	Indicative*: €57.93 million			
Fast Track to Innovation	3.37	3.37	3.37	

* While these amounts are indicatively dedicated to the respective domain concerned, the SME Instrument will operate bottom-up and its budget will, as a whole, support firms developing the breakthrough, market-creating innovations that can occur, in particular, at the intersection between different technologies, industry sectors and scientific disciplines.





HORIZON 2020

Thank you for your attention

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/