

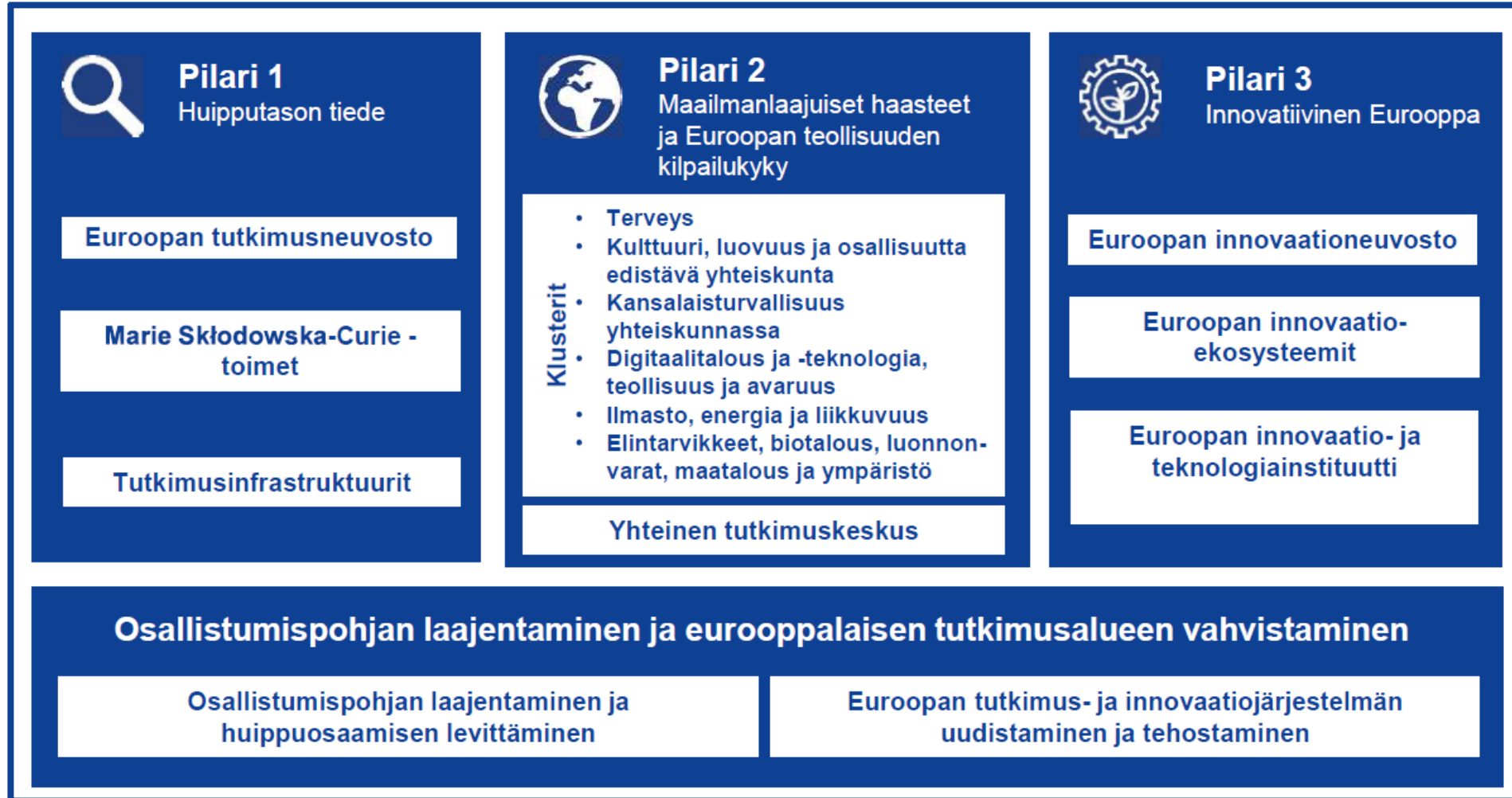
Introduction to HEU Cluster 4

Digital, Industry and Space

or "Life, the Universe and Everything" (©Douglas Adams)

- Horizon Europe overall picture and Cluster 4 in short form
- Schedule overview
- Orientations
- Expected Impacts
- Intervention areas, space

Horisontti Eurooppa: alustava rakenne



Lähde:

https://ec.europa.eu/info/sites/info/files/research_and_innovation_strategy_on_research_and_innovation
3.6.2020

Horizon Europe

Cluster 4: Digital Industry and Space 15 bEur

Cluster 4 'Digital Industry and Space': Intervention areas

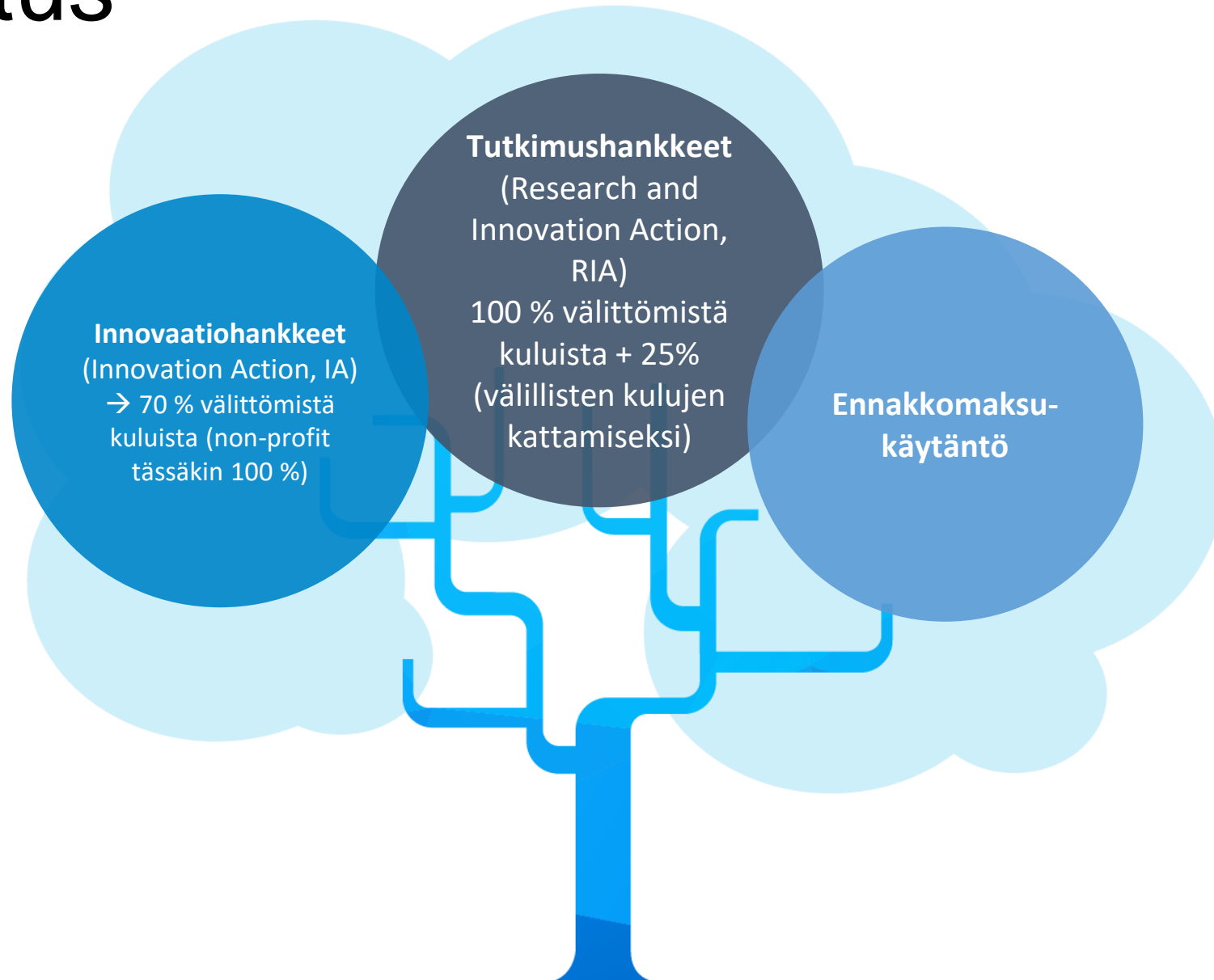
1. Manufacturing technologies
2. Key digital technologies
3. Emerging enabling technologies
4. Advanced materials
5. Artificial intelligence and robotics
6. Next generation internet
7. Advanced computing and big data
8. Circular Industries
9. Low-carbon and clean industries
10. Space, including Earth Observation

Candidate Partnerships (examples)

1. Made in Europe Partnership (Co-Prog)
2. Key Digital Technologies (Inst.)
3. Photonics (Co-Prog)
4. Interaction technologies (augmented/virtual reality – (Co-Prog)
5. Artificial Intelligence, data and robotics (Co-Prog)
6. Smart Network Services - beyond 5 G (Inst.)
7. EuroHPC (Inst.)
8. Circular and Climate-neutral industries (Co-Prog)
9. Clean Steel (Co-Prog)*
10. Metrology (Inst. art.185)
11. Partnership on Global Competitive Space Systems (Co-Prog)*

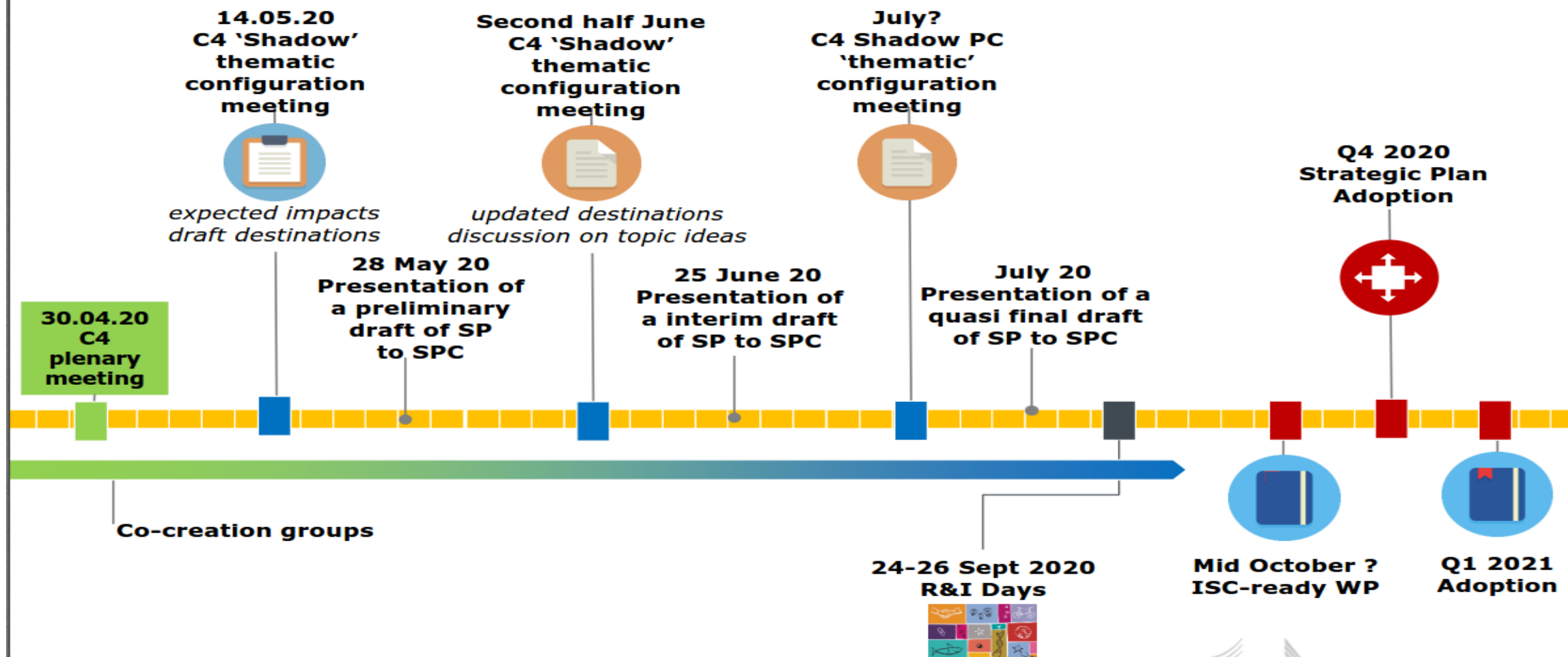
* No previously existing Partnership

Avustus



Work Programme 2021-2022

TIMELINE



Key Strategic Orientations

Highlighted for Cluster 4

1. Preserving and restoring ecosystems and biodiversity and managing sustainably natural resources on land and sea, and achieving climate neutrality and adaptation
2. Ensuring food and nutrition security through sustainable food systems from farm to fork
- 3. Transforming the EU industry for a clean, more bio-based, climate-neutral, circular and competitive economy**
4. Delivering clean, sustainable, competitive, secure, safe and smart energy and mobility for climate neutrality
- 5. Securing EU global industrial leadership and strategic autonomy in key technologies**
6. Enhancing the health, and well-being of all citizens and tackling inequalities
7. Strengthening EU democracies and empowering all citizens to act in the transitions
- 8. Shaping technologies and innovations that work for people**
9. Stepping up EU resilience, inclusiveness and preparedness to respond to disasters, security challenges, emerging threats and improved border management
10. Leading the way and joining forces internationally for the transition to sustainability

EXPECTED IMPACTS – CLUSTER 4

KEY STRATEGIC ORIENTATION	EXPECTED IMPACT
Transforming the EU industry for a clean, more bio-based, climate-neutral, circular and competitive economy	Global leadership in clean and climate-neutral industrial value chains, circular economy and climate-neutral digital systems and infrastructures (networks, data centres) , through innovative production and manufacturing processes and their digitisation, new business models, sustainable-by-design advanced materials and technologies enabling the switch to decarbonisation in all major emitting industrial sectors, including green digital technologies.
Securing EU global industrial leadership and strategic autonomy in key technologies	<p>Industrial leadership and increased autonomy in key strategic value chains with security of supply in raw materials, achieved through breakthrough technologies in areas of industrial alliances, dynamic industrial innovation ecosystems and advanced solutions for substitution, resource and energy efficiency, effective reuse and recycling and clean primary production of raw materials, including critical raw materials.</p> <p>Sovereignty in digital technologies and in future emerging enabling technologies by strengthening European capacities in key parts of digital and future supply chains, allowing agile responses to urgent needs, and by investing in early discovery and industrial uptake of new technologies.</p> <p>Globally attractive, secure and dynamic data-agile economy by developing and enabling the uptake of the next-generation computing and data technologies and infrastructures (including space infrastructure and data), enabling the European single market for data with the corresponding data spaces and a trustworthy artificial intelligence ecosystem.</p> <p>Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data, by reinforcing the EU's independent capacity to access space, and securing the autonomy of supply for critical technologies and equipment.</p>
Shaping technologies and innovations that work for people	A human-centred and ethical development of digital and industrial technologies , through a two-way engagement in the development of technologies, empowering end-users and workers, and supporting social innovation.

Space, including Earth observation

Sections	Objective
Foster Competitiveness of space systems	<i>New competitive technologies for space and ground systems e.g. high throughput satellites, very high resolution sensors, onboard-AI, optical and quantum communication with contributions from robotics, AI and space science - Future space ecosystems with modular, flexible and intelligent satellites - EU sovereignty by securing strategic non-dependence in specific critical space technologies</i>
Reinforce our capacity to access and use space	<i>New concepts for reducing the production and operation costs e.g. reusability of launcher components; low cost, high thrust and green propulsion, micro launchers - Opportunities for in-orbit validation ("IOV") and in-orbit demonstration ("IOD") to de-risk new technologies - Modern and flexible launch facilities</i>
Evolution of space and ground infrastructures for the EU Space Programme components	<i>R&D for innovative mission concepts, technology and systems for the two EU owned space infrastructures for precise positioning, navigation and timing (Galileo/EGNOS) and for Earth observation with global coverage (Copernicus) – Addressing challenges and threats posed by the international context, the increasing global competition, and the rapid evolution of the technologies, components and systems</i>
Evolution of services of the EU Space Programme components	<i>Copernicus Services evolution to better respond to new and emerging policy needs e.g. anthropogenic CO2 monitoring, climate change, EU arctic policy, coastal area, sustainable development goals, environmental compliance, protection, ecosystems and biodiversity, food security and agriculture - Galileo services evolution to adapt to user needs and market trends by introducing new services and capabilities, so that EGNSS remains at the fore front of the provision of satellite navigation services.</i>
Development of applications from the EU Space Programme components	<i>Development of EGNSS downstream applications and promote their adoption in the EU and worldwide in long lead-time markets (e.g. maritime, rail, aviation), make best use of differentiators (high accuracy, authentication, Search and Rescue, PRS). Development of Copernicus applications based on Copernicus Services - Synergies between Galileo/EGNOS and Copernicus and with non-space programmes</i>
Innovative space capabilities	<i>Novel architectures and technical solutions for ground/space sensors for Space Situational Awareness (SSA) to reinforce the protection and resilience of European space and ground infrastructure – European satcom security related technologies for Secured Governmental Communications GOVSATCOM - Development and use of EU sourced space qualified Quantum components, including mission design, integration and in-orbit demonstration and validation.</i>
Space entrepreneurship ecosystems (incl. New Space, SMES, startups) and skills	<i>Development, incubation and upscaling of start-ups in the space sector. Encourage a business and innovation-friendly ecosystems, including space related skills. Support innovative startups in the EU doing business using Copernicus and Galileo data and/or developing space technologies. Improve their ability to work with customers and capacity to expand. Make them investment-ready and able to secure VC funding.</i>