SRC 2.0 – The Evolution of the SRC into Horizon Europe

"An advanced SRC for Horizon Europe, which guides Europe towards a sustainable, highly-automated, flexible and economical viable space infrastructure, enhancing manifold commercial opportunities in space and on earth :

the new space ecosystem*."*

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 640026
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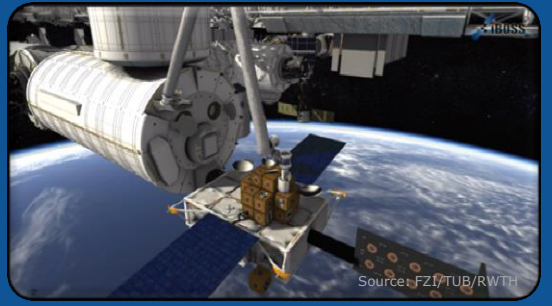
Outline

- Scheme of the evolved SRC in Horizon Europe
- General objectives of the SRC
- Mission of the SRC
- Visionary wrap-up (videos)



Identified improvements for PSA & SRC2.0

- PSA involvement opened to new actors
  - Associations (e.g. euRobotics, EUROSPACE, SME4SPACE, ESOA)
  - More interested and qualified member states
- Increased reflection of industry position, especially in the short and mid term
  - Definition of collaborative activities with associations
  - Higher number of and more efficient stakeholder consultations
  - Increased use of synergies with terrestrial sector
- More flexibility in roadmap/activities definition (disruptive approaches, competitions,..)
- Enhance exploitation of SRC developments/products
- Dealing with recommendations for law & decision makers

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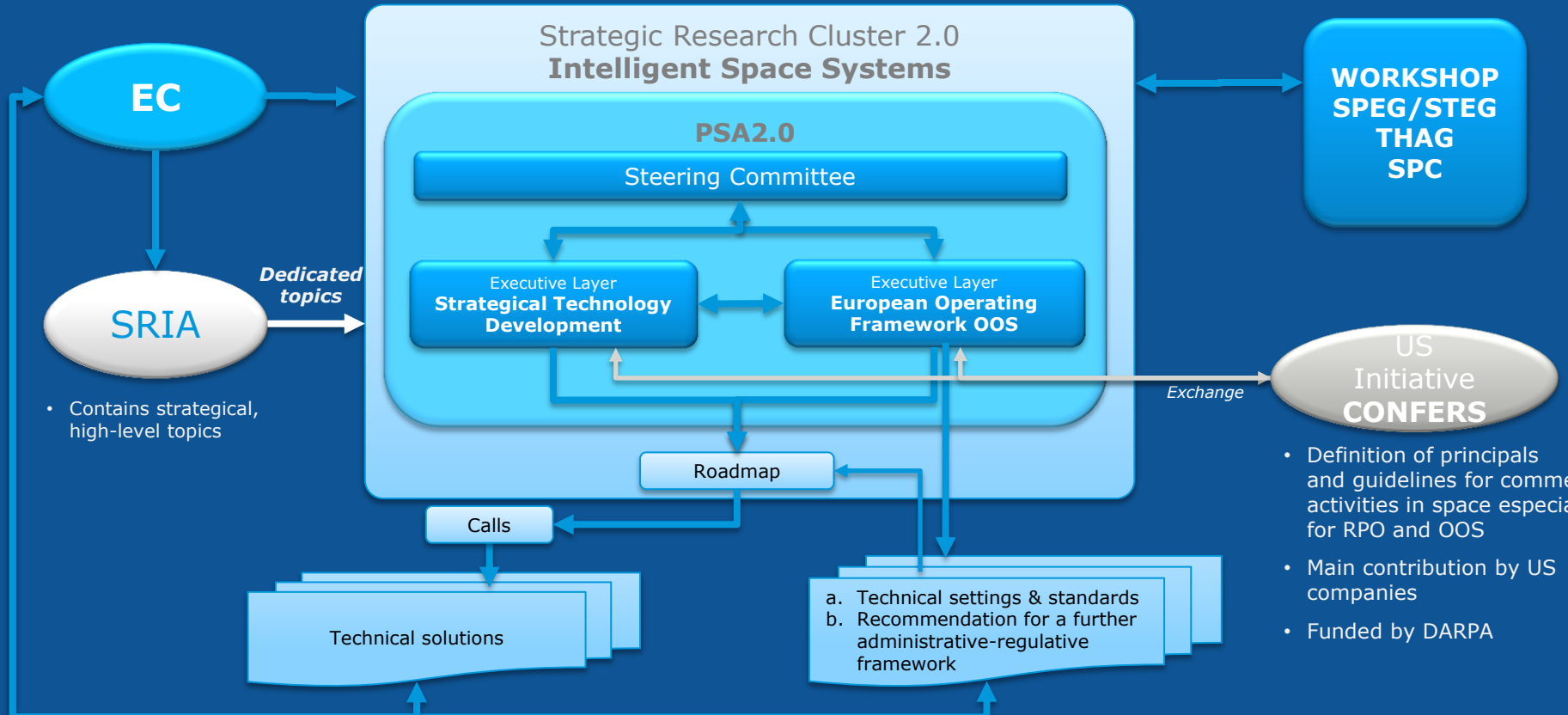
Proposed scheme of the evolved SRC in Horizon Europe



SRC2.0 Objectives

Demonstration

- Demonstrate capabilties & business enablers
  - represent a risk-taking, disruptive approach to enable new commercial opportunities in space (satisfying short-term and mid-to-long-term)
  - improve exploration capabilities by innovative technologies & concepts for all disciplines of robots

Strategical Roadmapping

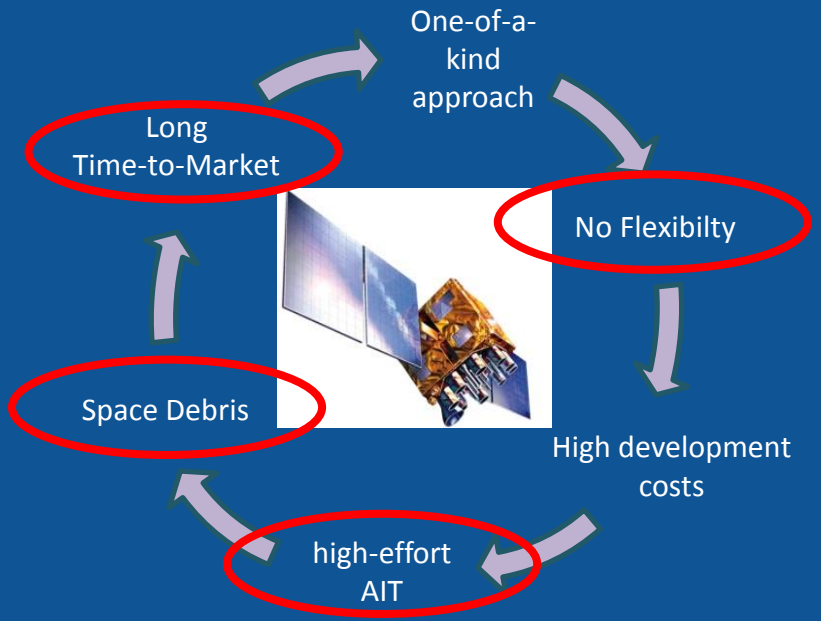
- Enable a paradigm shift together with stakeholders towards a sustainable, highly-automated, flexible and economical viable space infrastructure, enhancing manifold commercial opportunities in space and on earth
- Generate new market opportunities
- Enable business in Space
- Strengthen European industry and institutions
- Setting technology standards and define principles & guidelines for commercialization of space
- Protection of the space ecosystem

Strengthen the European position in the space sector by applying

- *breakthrough disruptive technologies*
- *artificial intelligence*
- *digitalisation*
- *new industrial processes and innovative approaches for design production, AIT, logistics and operations*

How robotics will matter in space…

Classic monolithic system



Demands of future Spacecraft

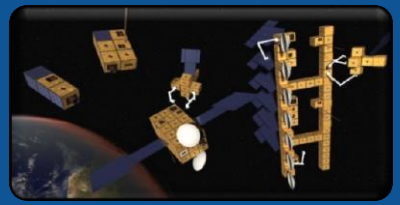
- Adjustable to cust s desires
- Ad stable to m sion need
- sy to ain
- har om on
- R ource-savin
- Debri g
- efficient
- Rapid Development
- Production on Demand
- Design-to-Production

cooperative/ robotic compatible design

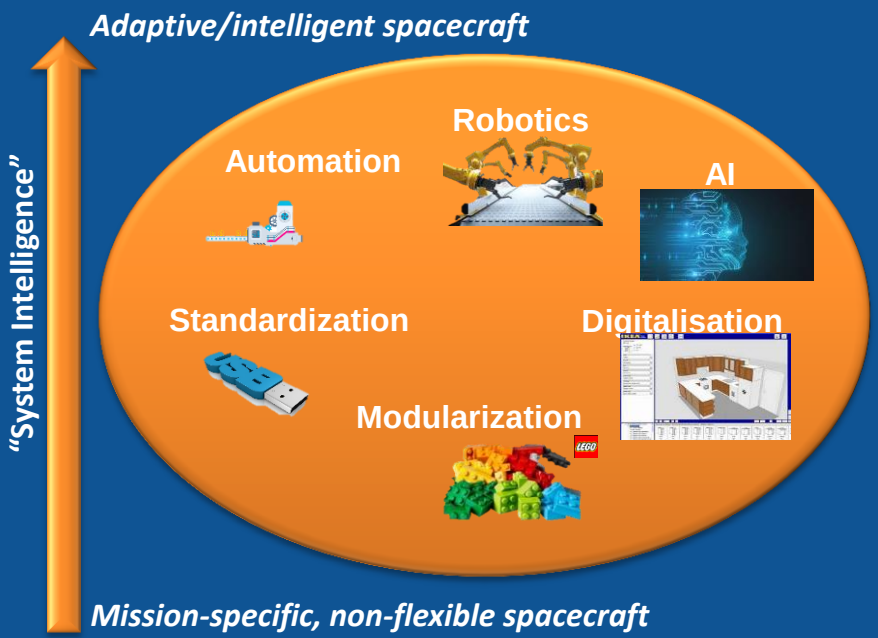
new prod on, new logistics and operations philosophy

Mission of SRC2.0: Enabling industrialization and business in Space

„Develop building blocks independently from applications“



Long-term objective:
Highly-automated, flexible, sustainable and economical viable space infrastructure



Building Set/App Store Paradigm

- Introduces new commercial possibilities ”build your business”
- Reduction of mission costs while keeping product/system diversity
- Increasing flexibility
- Independent development (platform/application)
- Rapid development, Rapid production and Rapid AIT
- Simplified introduction of innovations
- Digitalisation of building set supports flexibility at customer level

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Expected evolution of space infrastructure

Short term

- Life extension
- Inspection
- Orbit change & debris removal

Mid term

+ Hosted payload/ IOD-V services
+ Exchange of components
+ Debris mitigation
+ Robotised deployment & assembly

Long term

+ Manufacturing in Space
+ Re-configuration
+ In-orbit Recycling
+ Logistics/assembly platforms
+ .....

Paradigm shift

Non-automated, non ...xible space infrastructure based ...monolithic, individual design of spacecraft

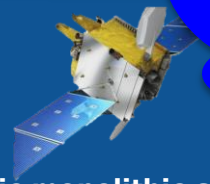
Auto...ated, flexible space infrastructu...sed on modular, adaptable ...ign of spacecraft

Terrestrial Robotics

building blocks/set methodology, industrial processes and tools

AI

Big data, enhance system autonomy



Classic monolithic systems

...aptive/intelligent systems

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Expected evolution of planetary robotics

Short term

- Rover autonomy extension
- Rover mobility enhancement
- Improved data fusion capabilities

Mid term

- Long range autonomy
- Access to difficult sites
- Opportunistic science
- Cooperative exploration

Long term

- ISRU
- Cooperative building assembly
- Human base construction
- Crews of robotic agents

Paradigm shift

limited autonomy rov… single-agent mission,
limited operating ran…

Fully auto…nous robot,
flexible robotic agent… of robots,
Human-Rob… operation

Terrestrial Robotics

Agriculture, Construction, Health, Mining,
Rescue, Maritime, Nuclear

AI

Deep learning, Big Data

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International activities and trends

Short term | Mid term | Long term

Horizon Europe
SRC2.0 – Intelligent Space Systems

Horizon 2020
SRC – Space Robotics Technologies

trend visible

Effective Space

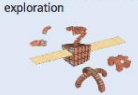
Orbital ATK

INTELSAT General Corporation

SSL A MAXAR COMPANY

NovaWurks

Table 1: Preliminary Roadmap for On-Orbit Assembly Ventures

	Phase			
	Crawl	Walk	Jog	Run
Goal	Human-in-the-loop on-orbit servicing and assembly 	Inter-vehicle on-orbit assembly (i.e., servicing) 	Intra-vehicle on-orbit assembly 	Space fleets for planetary exploration 

2020 2022 2024 2026 2028 2030 2032 2034

Using synergies in Space & Terrestrial Sector

euRobotics

Spin-In/-Out

Coordination Actions
Building Blocks
Idea challenges
Competitions

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Orbital Track

Common Track

Planetary Track

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Thank you for your attention!