

OUR CONCEPT & AMBITION

The Horizon 2020 Space Strategic Research Cluster (SRC) on Space Robotics Technologies is the approach adopted by the European Union to achieve this paradigm shift by gradually **increasing the maturity of space robotics technologies** for on-orbit servicing and assembly and validating them in the 2023-2027 timeframe with sizeable demonstration missions.

On Orbit Services (OOS) and In Space Manufacturing & Assembly (ISMA) is the way to increase functionality, capacities & resilience of space assets while reducing costs

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PERIOD is proposing as baseline an ambitious demonstration concept that will allow **building a functioning satellite in a robotized orbital “Factory”** including antenna fabrication, satellite assembly, reconfiguration and verification.

This will be the precursor to future assembly of large structures in orbit. Producing directly in orbit will **revolutionize the way space systems are designed, built and operated**, moving from mission-specific solutions to modular spacecraft fully optimized for their mission in orbit, and freed from the constraints and requirements of launch.

OUR TEAM

AIRBUS

SENER
Aeroespacial

gmv
INNOVATING SOLUTIONS

space applications

DFK
German Research Center for Artificial Intelligence

ISISPACE

easn
Technology Innovation Services

PERIOD
PERASPERA In-Orbit Demonstration

Preparing the paradigm shift for changing the way space systems are designed, built and operated

CONNECT WITH US

PERIOD



PERIOD_H2020



period-project



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PROJECT OBJECTIVES



Define an orbital demonstrator concept along with its system technical requirements for satellite manufacturing & assembly and for refueling experiment



Develop the core space robotic technologies of the previous Operational Grants (OGs): ESROCOS, ERGO and InFuse to TRL5



Evaluate the available Standard Interconnect (SI) components for the specific demonstration scenario in a benchmark



Evaluate ESROCOS, ERGO, InFuse, I3DS and SIs for assembly capability in a breadboard

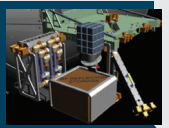


Implement communication and dissemination activities to inform the space community and potential customers on the In Space Manufacturing & Assembly (ISMA) capabilities and provide transparency on risks and mitigations

DEMONSTRATION MISSION CONCEPT

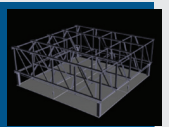
Commissioning & Initialization

- Commissioning of factory (providing service) with manufacturing material and satellite kit (receiving service)
- Experiments with the robotic subsystem (finalize validation like characterization of joints in space, ...)



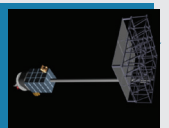
Manufacturing

- Build antenna reflector (fabrication)
- Inspection and verification of build antenna (quality control)



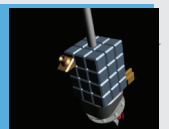
Assembly & Integration

- Assembly of cubesat bus and cubesat payload through Standard Interconnect (EO / science payload)
- Assembly of integrated cubesat with antenna
- Inspection, test and validation of integrated cubesat (quality control)



Reconfiguration & Upgrade

- Reconfiguration of the integrated cubesat with the other cubesat payload (exchange of EO / science payload)
- Inspection, test and validation of integrated cubesat (quality control)



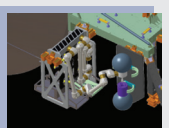
Release & Operation

- Release of integrated cubesat with deployer
- Operation of integrated cubesat (reception of EO / science operational data)



Attachment & Refueling

- Test of attachment with ASSIST (separate experiment, no cubesat)
- Test of refueling / propellant transfer for life extension (separate experiment, no cubesat)



KEY FEATURES OF THE PARADIGM SHIFT



New capabilities



Flexibility



Cost savings



Increased value



Time to market