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PERASPERA



# EPIC WORKSHOP

9-12 May, Naples, Italy

# Outline

- **H2020 Space Strategic Research Cluster : concept and composition**
  - PSA and Operational Grants
- **EPIC PSA**
  - Introduction
  - Main tasks
  - General work logic
  - SRC roadmap work logic
  - Objectives of the workshop
- **Conclusions**

# H2020 Space SRC Concept and Composition

- In the frame of Horizon 2020 Work Programme 2014, two Strategic Research clusters (SRC) were initiated in the fields of:
  - *In-Space electrical propulsion and station keeping*
  - *Space Robotics Technologies*
- A multi-annual structured approach is needed to achieve a long-term objective
- SRC implementation → **system of grants connected among them:**

## Programme Support Activity (PSA):

- Elaborates an SRC roadmap and implementation plan
- Provides advice to the Commission for the SRC calls documentation for Operational Grants
- Contributes to the assessment of progress and results of the Operational Grants
- Supports on the general SRC implementation

PSA is a Coordination and Support Action

## Operational Grants (OG):

- Address the different technological challenges contained in the SRC roadmap
- Perform the necessary developments that, when put together, achieve the overall SRC objectives

Operational Grants can be:

- Research and Innovation Grants (100%)
- Innovation Grants (70%)

# EPIC PSA: Introduction

- **EPIC** (grant n. 640199) and PERASPERA (grant n.640026) are the PSA projects funded as part of the H2020 Space WP 2014.
- 5 years duration, starting October 2014 and finalizing in December 2019. A 3 years extension is currently going on.



- Most partners have been and are funding already through ESA or National Programmes more than substantial research and development in technology and space missions involving electric propulsion.
- All partners are already since many years harmonising (together with all ESA member states) R&D in Technology through the European **Technology Harmonisation Advisory Group (THAG)** → roadmapping and consultation exercises.
- Knowledge, experience and expertise to support the H2020 SRCs.

# EPIC PSA: Introduction

- **SRCs challenges:**
  - **EPIC** → to enable major advances in Electric Propulsion (EP) for in-space operations and transportation, in order **to contribute to guarantee the leadership through competitiveness and non-dependence of European capabilities** in electric propulsion at world level within the 2020-2030 timeframe, always in coherence with the existing and planned developments at national, commercial and ESA level.

# EPIC PSA: main tasks

EPIC PSA is producing number of deliverables that will allow, mainly:

- Evaluation on the state of the art and needs of stakeholders
- Definition and refinement of SRC roadmap and master plan for implementation
- Risk management
- Definition of the collaboration aspects between SRC grants, including the PSA
- Assessment of the progress and results of the Operational Grants, in the context of the SRC objectives
- Dissemination and education activities



# Long-term SRC Roadmap

To promote European innovation and competitiveness in Electric Propulsion and its use, the SRC roadmap addresses two lines of developments:

## INCREMENTAL LINE

- To enable incremental advances in already known technologies, currently under development, in order to **increase substantially their TRL** and allow them in-orbit in the **short-to-medium timeframe**
- Addressing the whole Electric Propulsion (EP) system
- Physics of the technology are well understood



Hall Effect Thruster (HET), Gridded Ion Engines (GIE), HEMP thruster-based EP systems

## DISRUPTIVE LINE

- To promote the **Research, Technology and Development (RTD)** of very promising and potentially disruptive concepts in the field of EP, in order to allow the increase of the **currently low TRL** of breakthrough concepts which in the **long term** could change the EP landscape.
- Addressing mainly disruptive thruster technologies and EP-system transversal technology concept
- Physics of the technology are not well understood

# Objectives of the EPIC 2023 Workshop

- PSA and SRC Activities presentations
- OGs Presentation (objectives, proposed approach, team, progress, and results)
- Stakeholders interaction (Round tables, papers,...)
- New developments on EP Incremental Technologies and EP Disruptive Technologies (promising thrusters and transversal technologies)
- Dissemination of SRC activities



# Conclusions

- ❑ PSA is a Programme Support Activity, producing the SRC roadmap to be implemented through the Operational Grants.
- ❑ The EPIC PSA has, since October 2014 worked on the definition of the SRCs roadmap and all call documents for Operational grants.
- ❑ The PSA follows the SRC implementation, monitor the state of the art and redefine the roadmap and subsequent SRC phases (calls) as necessary.
- ❑ The monitoring of the several SRCs, the risk analysis, the plan for the exploitation of the results of the SRCs, the dissemination and the preparation of the next calls will be the main activity until end 2023.
- ❑ Several workshops were done and will be done with different purposes until now (Brussels, Stockholm, Madrid, London, ESTEC, Cologne, Naples).
- ❑ An extension of the work of the PSA for the last period between 2020 and 2023 is currently ongoing.