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# Strategic Research Clusters on Electric Propulsion and Space Robotics General Information

## EPIC and PERASPERA PSAs

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# Outline

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# H2020 Space SRC Concept and Composition (1/2)

- 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

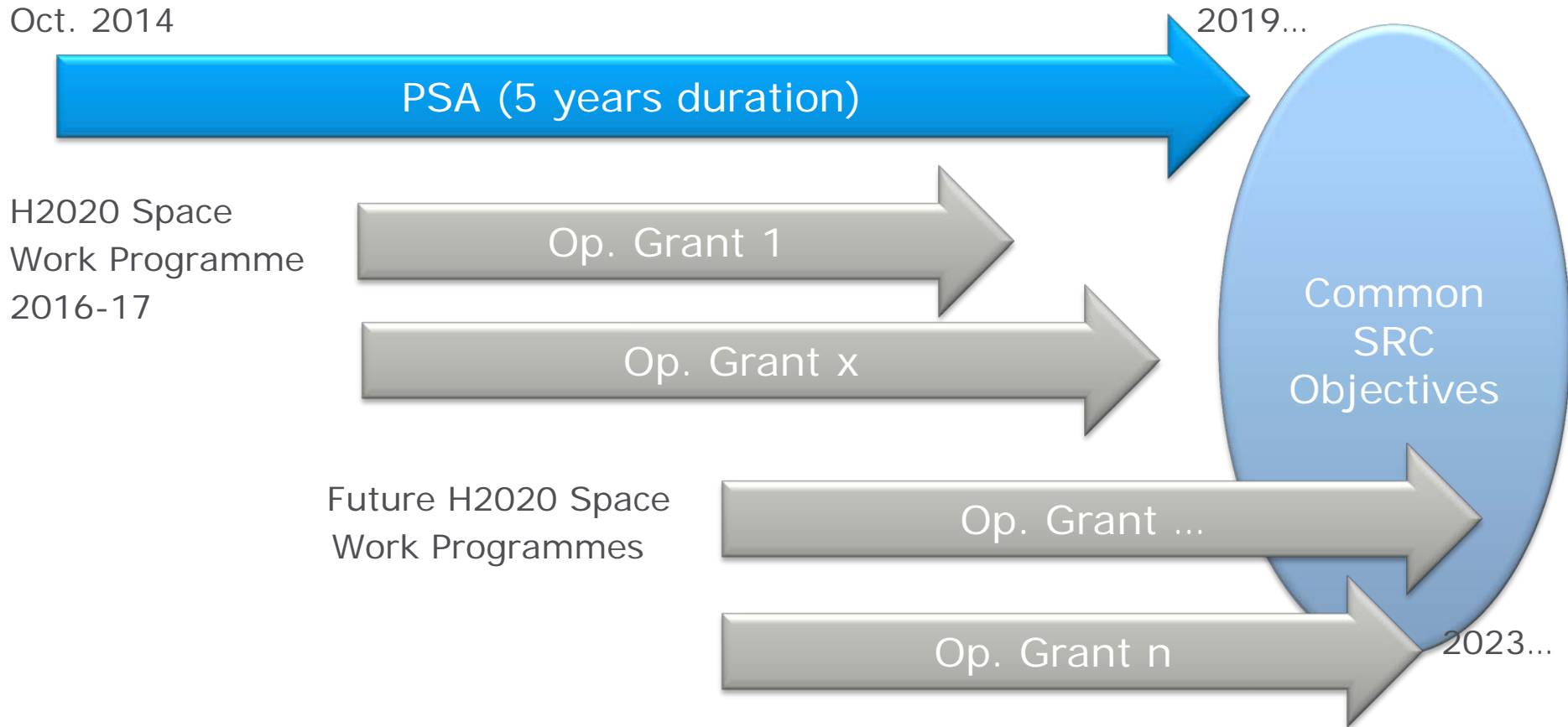
## Operational Grants (OG):

- 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%)

# H2020 Space SRC Concept and Composition (2/2 )



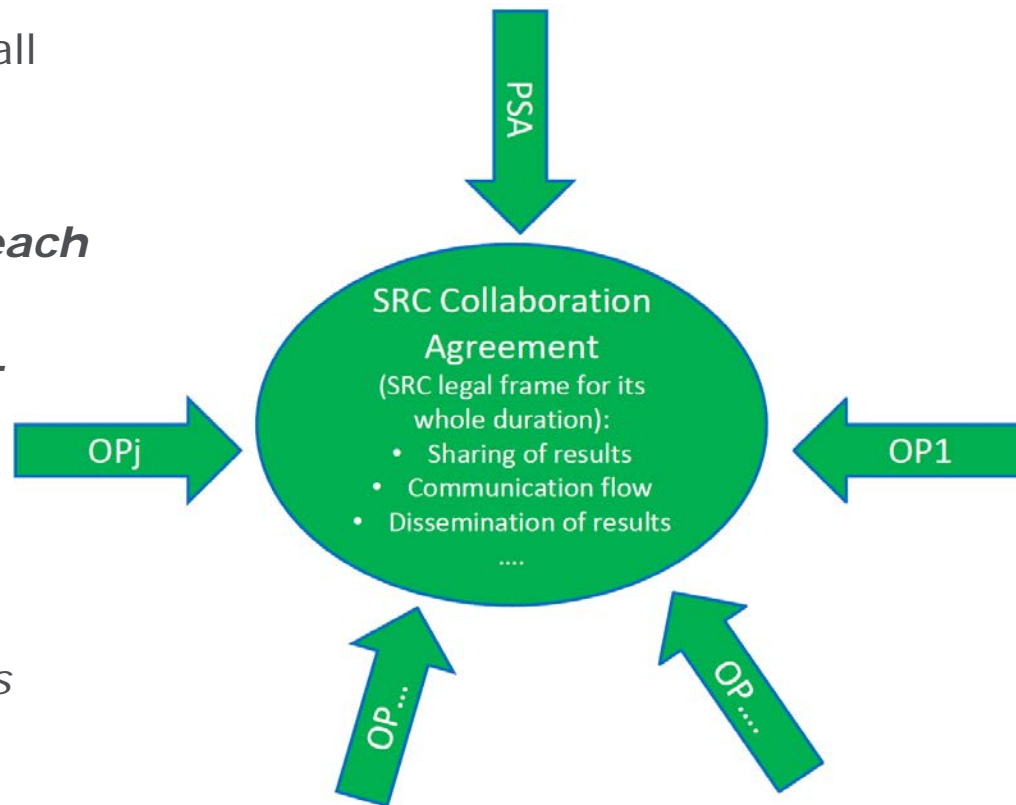
Within each SRC **the beneficiaries** of each awarded grant **will collaborate** for the **purposes of the cluster** with the beneficiaries of the other awarded grants.

# The SRCs Collaboration Agreement

Work Programme text for both SRC call topics:

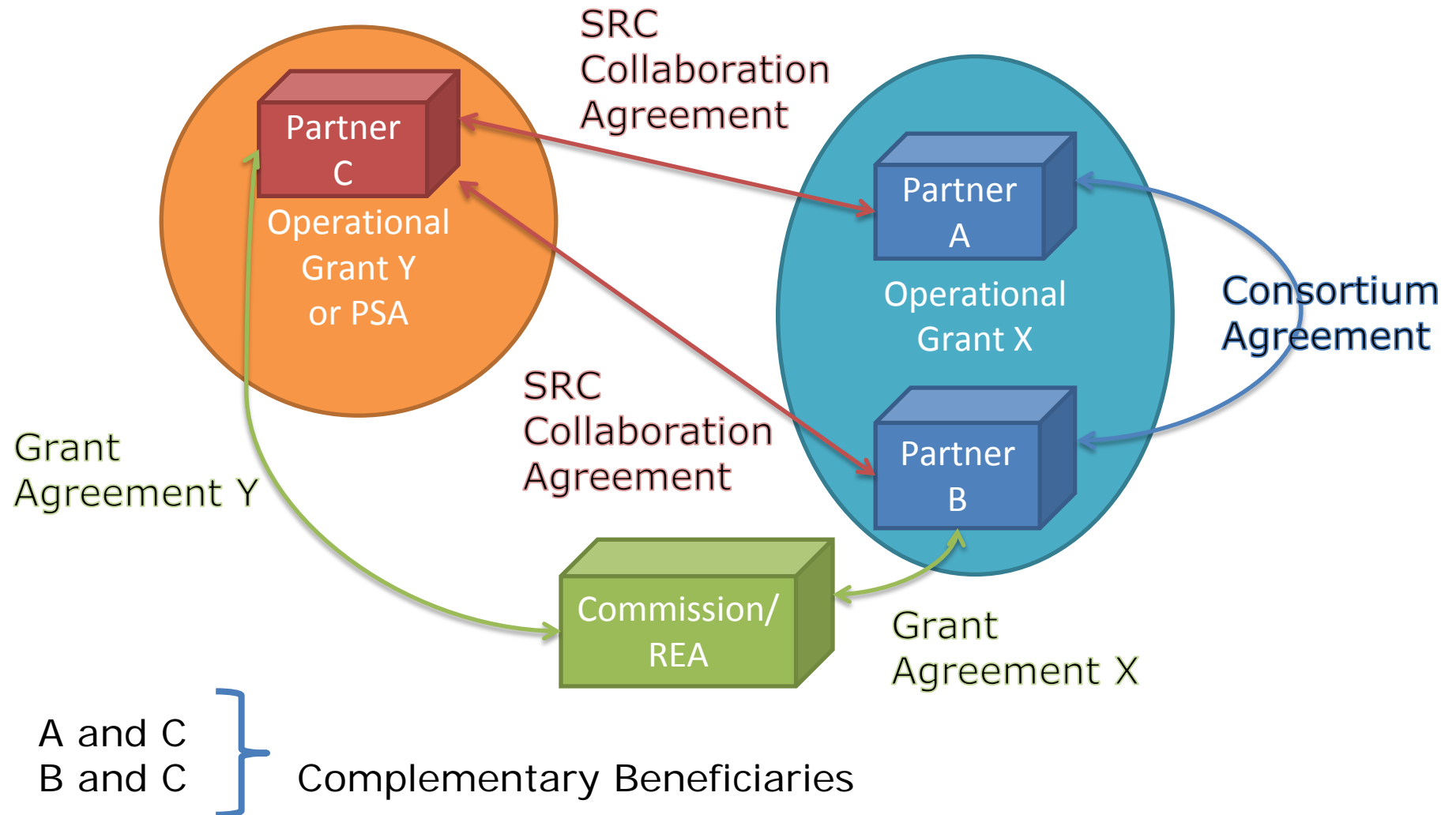
*"Grants awarded under **COMPET-3-2016-a** will be **complementary to each other** and complementary to grants awarded under sub-topic **COMPET-3-2016-b**; and vice versa.*

*In order to ensure a smooth and successful implementation of this Strategic Research Cluster (SRC), the beneficiaries of complementary grants ("complementary beneficiaries") shall conclude a written "**collaboration agreement**". The respective options of Article 2, Article 31.6 and Article 41.4 of the Model Grant Agreement will apply."*



PSA = Programme Support Activity  
OP = Operational Project

# Relationship between the beneficiaries of an SRC



# EPIC and PERASPERA PSAs: Introduction (1/2)

- **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.

- **EPIC = Electric Propulsion Innovation and Competitiveness**



- **PERASPERA (AD ASTRA) = "Through Hardship to the Stars"**



- Most partners in both projects 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 and space robotics.
- 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 and PERASPERA PSAs: Introduction (1/2)

- **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.
  - **PERASPERA** → to design, manufacture and test reliable and high performance common **robotic building blocks for operation in space environments (orbital and/or planetary)**, which will be useful for the SRC (demonstrations of on-orbit satellite servicing and planetary surface exploration). This can also be useful for:
    - the wider European space robotics goals; and
    - potential spin-off and spill-over effects to other areas of robotic activity on Earth (such as automotive or underwater but not limited to those)



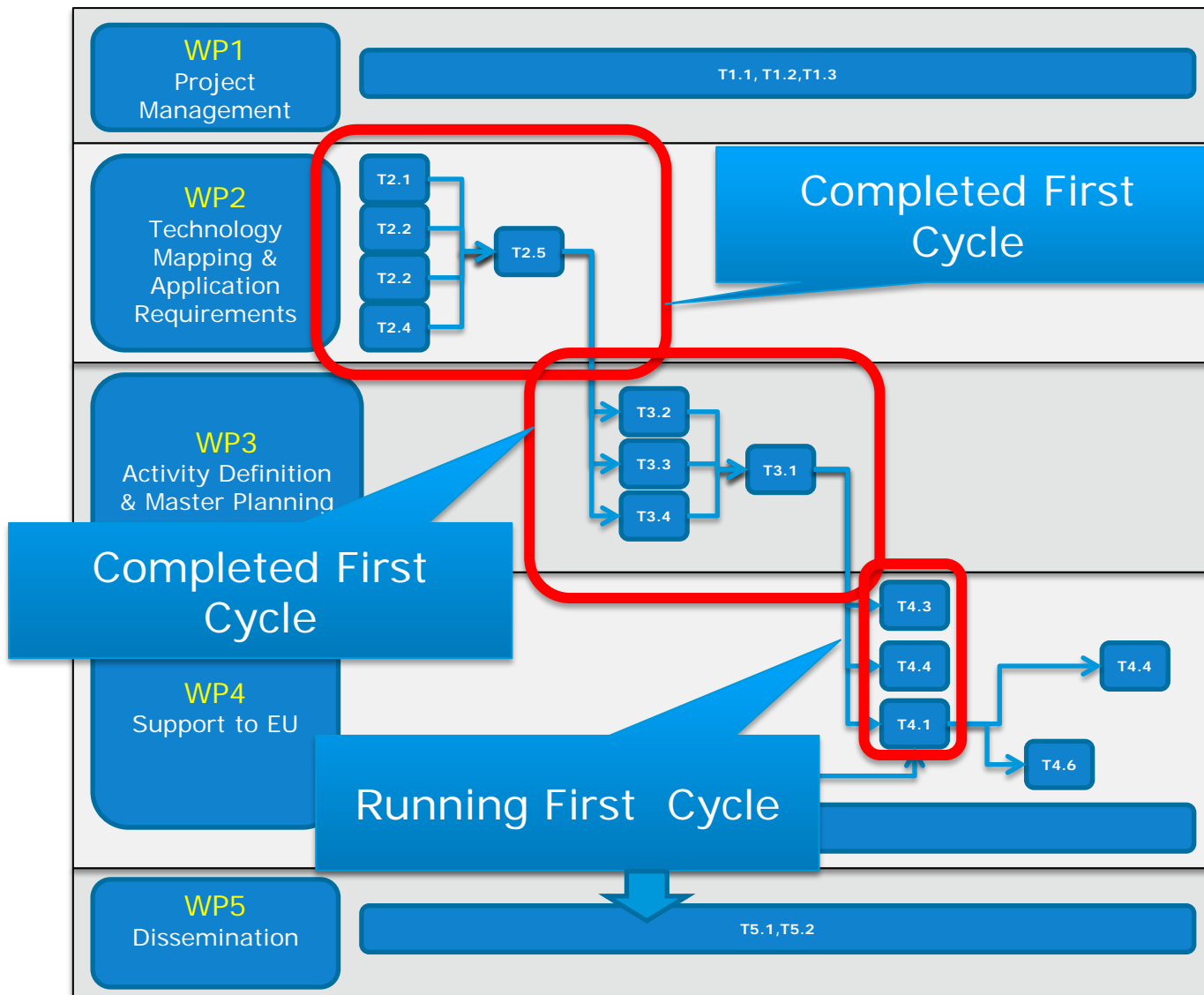
# EPIC and PERASPERA PSAs: main tasks

Both PSAs are producing number of deliverables that will allow, mainly:

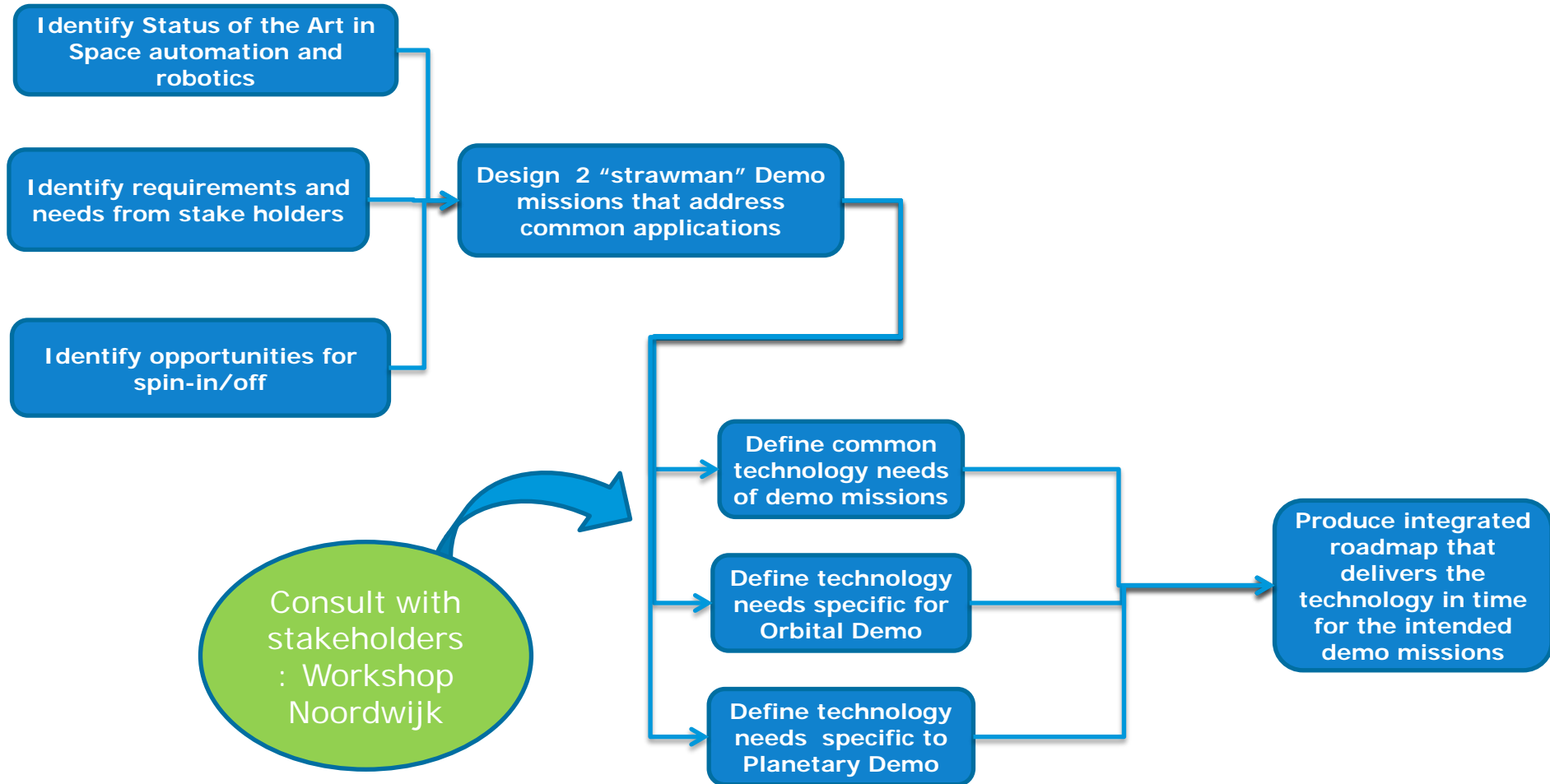
- Evaluation on the state of the art and needs of stakeholders
- Definition and refinement of SRC roadmap and master plan for implementation
- Risk management
- Definition of the collaboration aspects between SRC grants, including the PSA
- Assessment of the progress and results of the Operational Grants,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



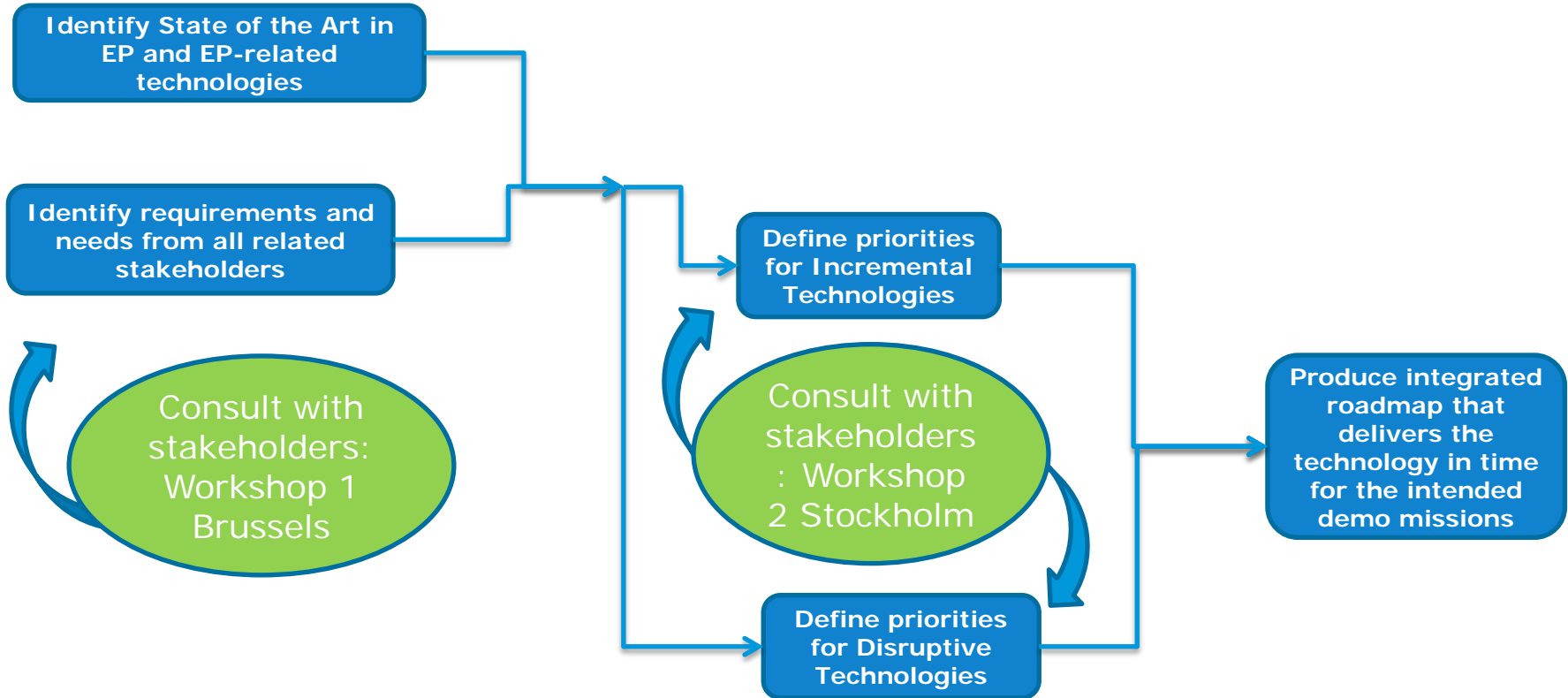
# EPIC and PERASPERA PSAs : general work logic



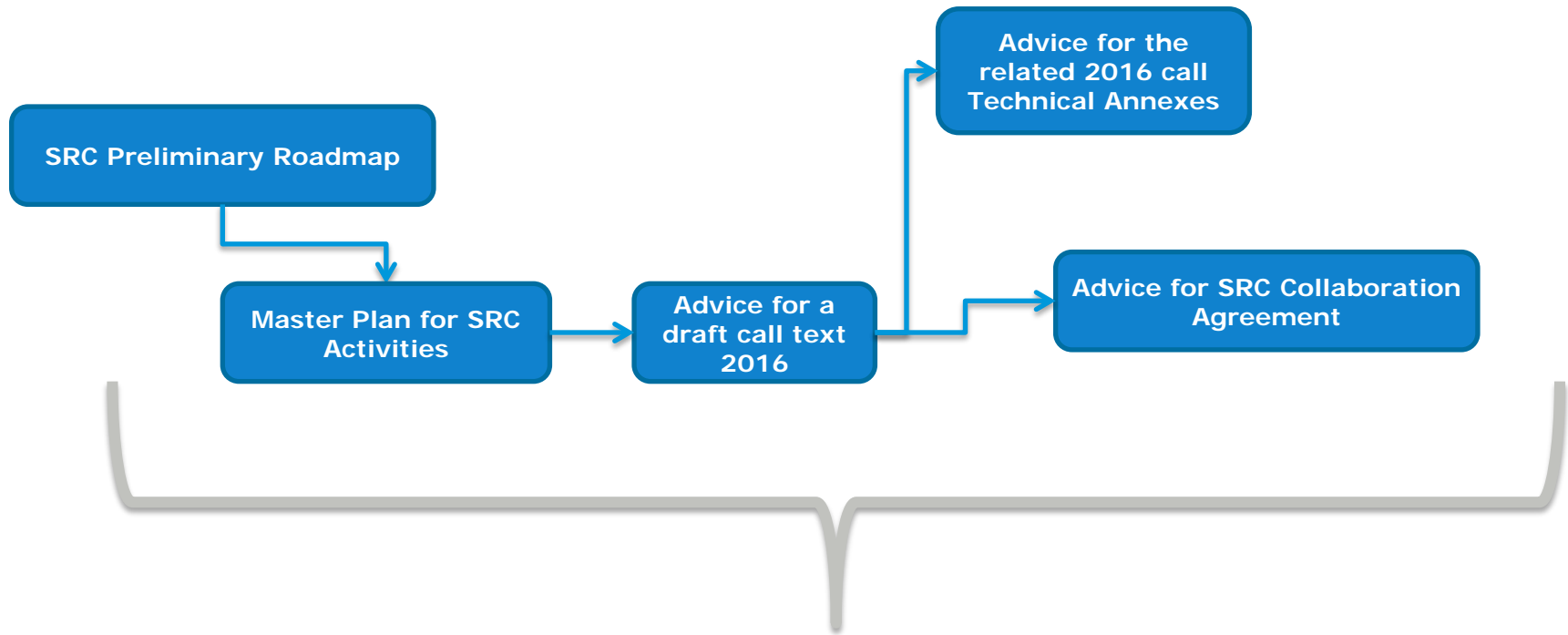
# PERASPERA: the SRC roadmap work logic



# EPIC: the SRC roadmap work logic



# EPIC and PERASPERA: from the SRC roadmap to the 2016 SRC call



## European Commission 2016 SRC call + call related documents

This process, together with a continuous monitoring of the state of the art and the assessment of the progress of the first SRC op. grants (2016 call), will be repeated for the subsequent SRC phases.

# Conclusions

- ❑ The SRC is a system of connected grants with common high level objectives, to be reached when the results of all the grants are put together.
- ❑ PSA is a Programme Support Activity, producing the SRC roadmap to be implemented through the Operational Grants.
- ❑ All grants within one SRC are “complementary” grants to all the other SRC grants, including the PSA, and as such their interactions are regulated through the SRC Collaboration Agreement.
- ❑ The EPIC and PERASPERA PSAs have, since October 2014 worked on the definition of the SRCs roadmap and 2016 call documents for Operational grants
- ❑ The PSAs will follow the SRC implementation, monitor the state of the art and redefine the roadmap and subsequent SRC phases (calls) as necessary.
  
- ❑ The Commission has pre-published in **DRAFT** form the **H2020 Space Work Programme 2016-17**, containing the SRC on Electric Propulsion call topic **COMPET-3-2016 (a & b)**, together with its **Guidelines** document.
  - ❑ These two documents are essential for potential proposers and expert evaluators



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# Many thanks for your attention