Activities of the Strategic Research Cluster In-Space Electric Propulsion

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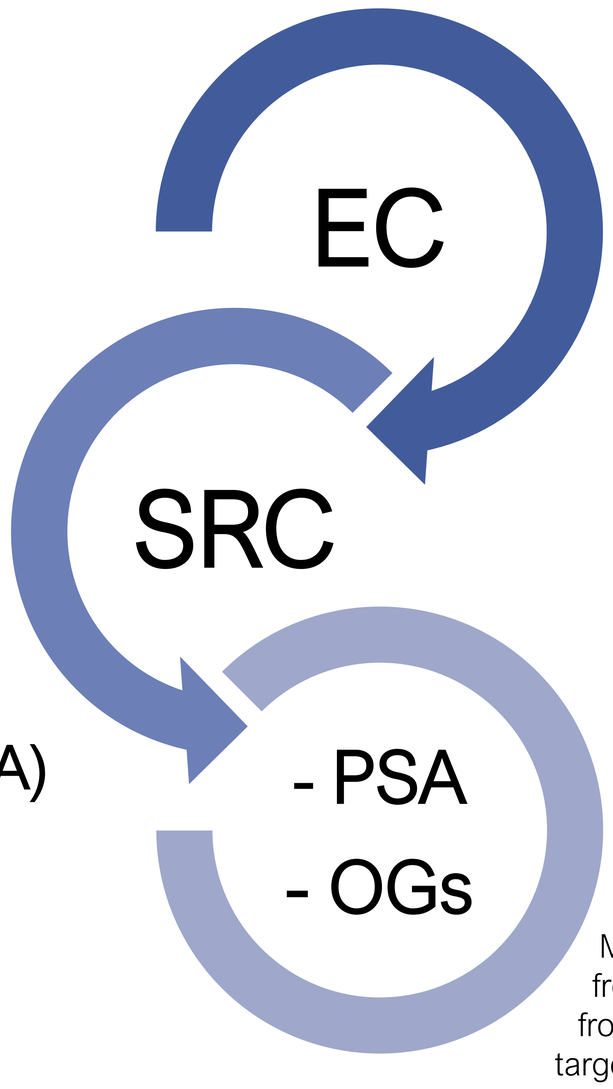
The **European Commission**, within the European Union's Horizon 2020 research and innovation programme, introduced a new instrument: the **Strategic Research Clusters**. The idea was to enable the EC to target mid- to long-term objectives in their research programmes.

The **SRCs goal is to enable major advances in Electric Propulsion for in-space operations and transportation**, to guarantee the leadership of European capabilities in EP.



European Commission

Electric Propulsion technology is a strategic interest for Europe. Mass savings, high Isp, high-thrust power units, etc., makes EP very attractive for several markets.

Simple, reliable and cost-efficient EP systems are in great demand for satellite constellations.

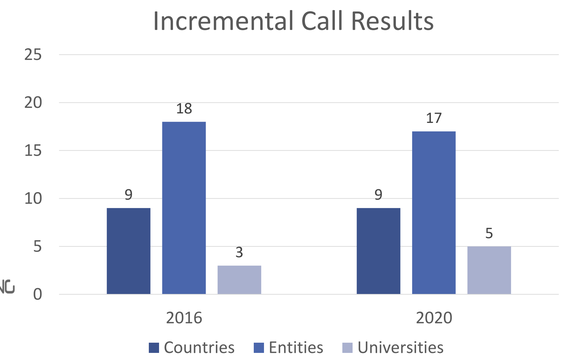
Programme Support Activity (PSA)

EPIC

Operational Grants (OGs)

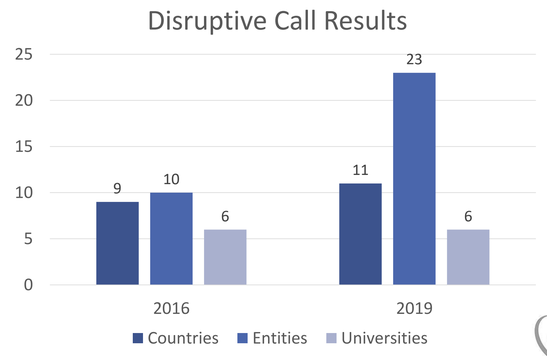
The 5 projects (1 High, 2 Medium and 2 Low power) from 2020 are continuation from the 3 selected in 2016, targeting commercial interest.

ASPIRE · CHEOPS (Medium Power) · GIESEPP (Medium Power) · CHEOPS (Low Power) · HEMPT-NG



Electric Propulsion Innovation and Competitiveness

esa · asi Agenzia Spaziale Italiana · belspo · CDTI INNOVACIÓN · cnes CENTRE NATIONAL D'ÉTUDES SPATIALES · DLR German Space Agency at DLR · UK SPACE AGENCY · ASD-EUROSPACE The Space group in ASD · SME4SPACE

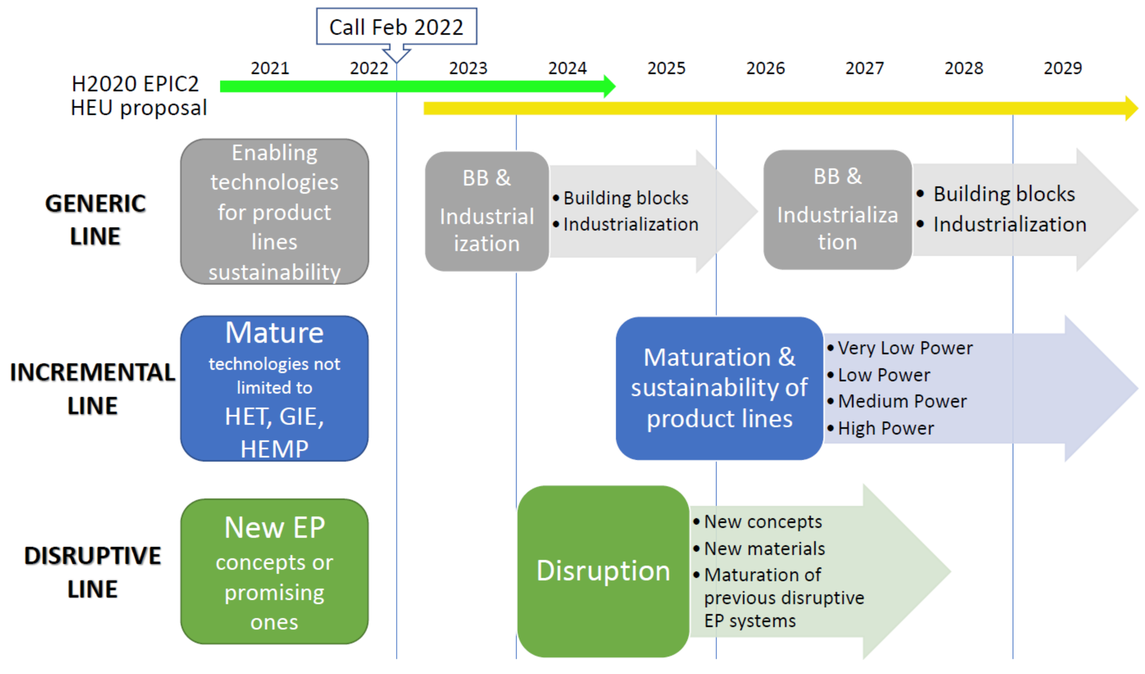


The increase shows the industry consolidation.
Several small-medium entities and start ups are dedicated now to develop new Electric Propulsion concepts and they are making very interesting proposals.

HiperLoΣ · GaNMIC · MINOTOR · NEMESIS · AETHER · EDDA · HIPATIA · PlasmaJetPack · iFACTO

Main activities:

- ❖ Roadmap & Master plan
  - ✓ Total budget dedicated – 66 M€ (until 2022)
  - ✓ Target – increase the european EP competitiveness.



Technological lines:

Incremental	Disruptive*	Generic
Form by the most **mature technologies targeting the commercial market**: Hall Effect Thruster, Gridded Ion Engine, and High Efficiency Multistage Plasma Thruster. Main actions: • Advance the current state of the art • Improve the performances • Reduce the cost.	Form by **very promising EP technologies** in their early stages of development. Main actions: • Promote the Research and Development • Increase the currently low or medium TRL • Explore breakthrough concepts aside from the thruster (PPUs, materials, propellants, etc.).	Added to cover other important areas as standardization and diagnostics, characterization of EP systems on orbit and next generation industrial manufacturing processes. Main focus: • Mature technologies at mid TRLs. • Building blocks towards products • Enable IOD/IOV opportunities.

*The difference between Incremental and Disruptive Technologies is that the second one has not defined a specific market or application.

- ❖ Dissemination

Workshops → present H2020/HE Electric Propulsion activities to the community and stakeholders and to collect and assess the latest developments in Europe.

Lectures series → provide to students a selection of master classes on Space Electric Propulsion.

Education → promote the interest in science and engineering in grade and high-school students.

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