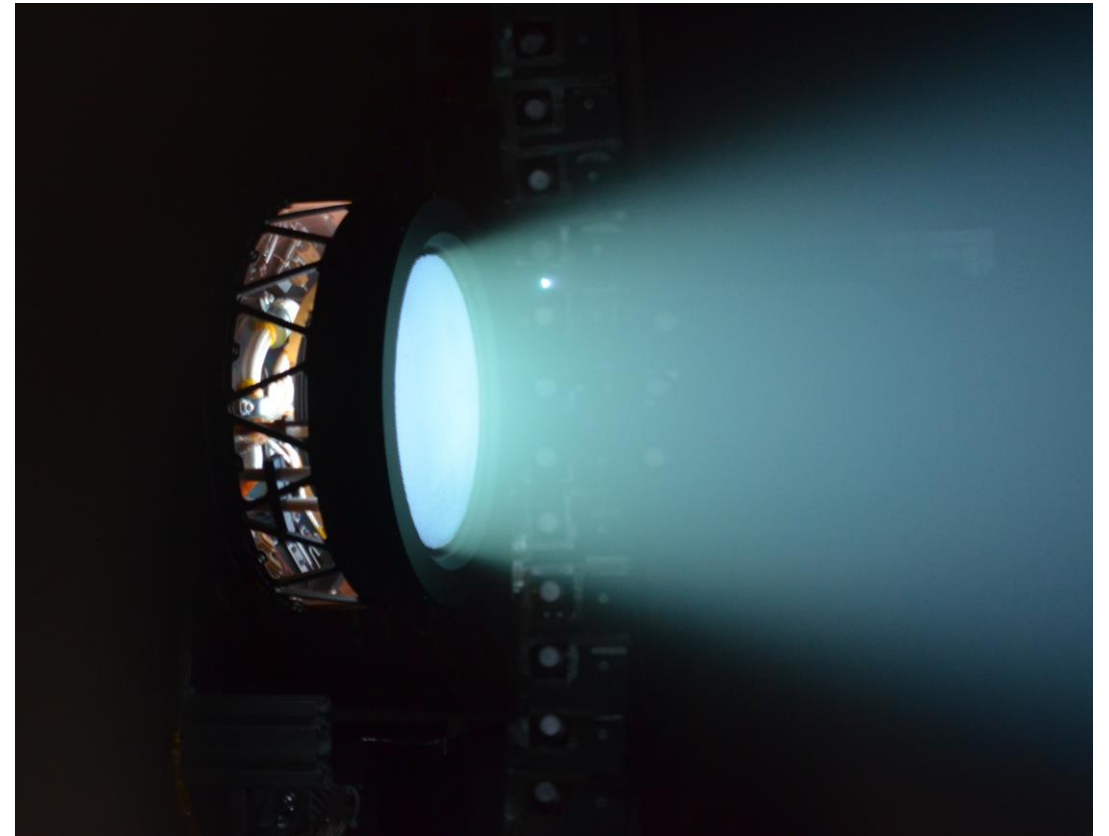


GIESEPP

Medium Power

Horizon 2020 project GIESEPP MP

First European Plug and Play
Gridded Ion Engine Standardised
Electric Propulsion Platform

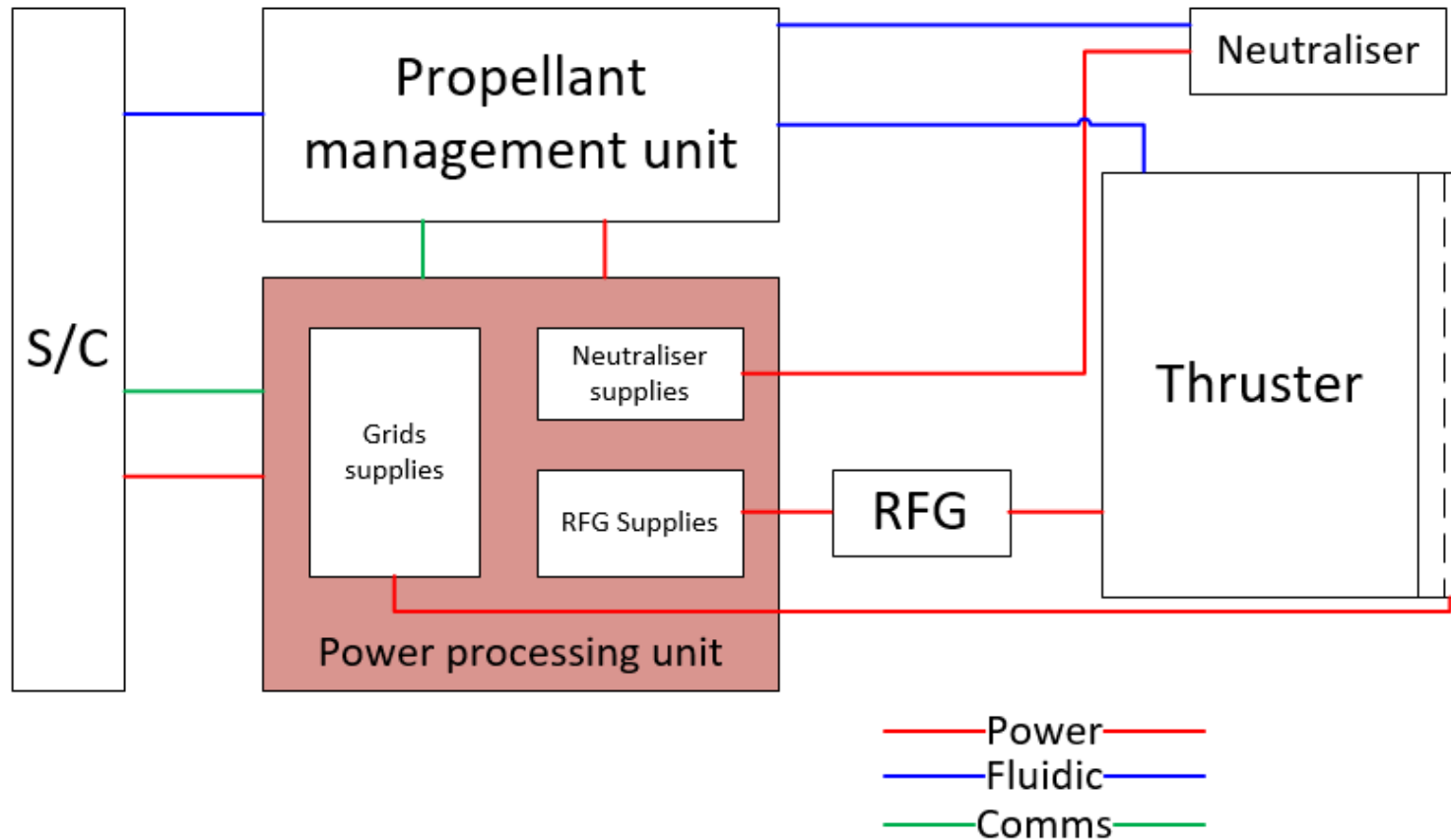


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Agenda

1. Objectives reminder
2. Consortium and Competencies
3. GIESEPP MP Concepts & Focus
4. RIT-2X Characteristics
5. Project Achievements
6. What's next?

Objectives reminder



1. Develop **Gridded Ion Engine Standardized Propulsion Platforms (GIESEPP)**
2. Platform for GEO consisting of thruster, propellant Management, Power Processing Unit – non-single sourced
3. Technology leadership in the fields of high ISP EP
4. High competitiveness through
 - a) 30% cost reduction,
 - b) high quantity industrialization,
 - c) alternative propellant
5. European Independence

Impact & Ambition



Technology

- Standardised all European solution
- Improve European technological EP capabilities
- Multiple OPs
- Strengthened EP core competences



Market

- Market solutions ready for sale
- Most economic EPS
- Industrialisation w/o optimised production capacities
- Address worldwide highly competitive markets
- Cope with the paradigm change in sat business through high quantity production



Environment

- Green deal / lowest environmental impact
 - high efficiency
 - use of harmless noble gas
 - minimize launcher impact by reducing the relevant wet mass
- GIE as best suited solution for high-Delta-V missions like space debris removal ("clean sky")

Consortium & Competences

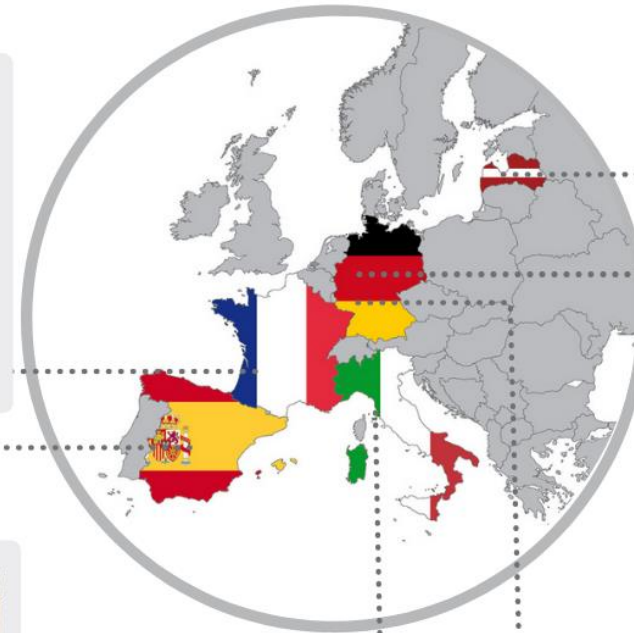
The project team consists of experts in the engineering of space and orbital propulsion, aerospace industry and industry-oriented science as well as project management, marketing and communication.



AIRBUS
Mission requirements & systems engineering



Crisa
In charge of the power processing unit




AEROSPAZIO
Experts at system testing



arianeGROUP
Project coordination and will provide thruster engineering



WITBerry
Responsible for project communication & dissemination activities



JUSTUS-LIEBIG-UNIVERSITÄT GIESSEN
Tests and scientific support at thruster level

Concept

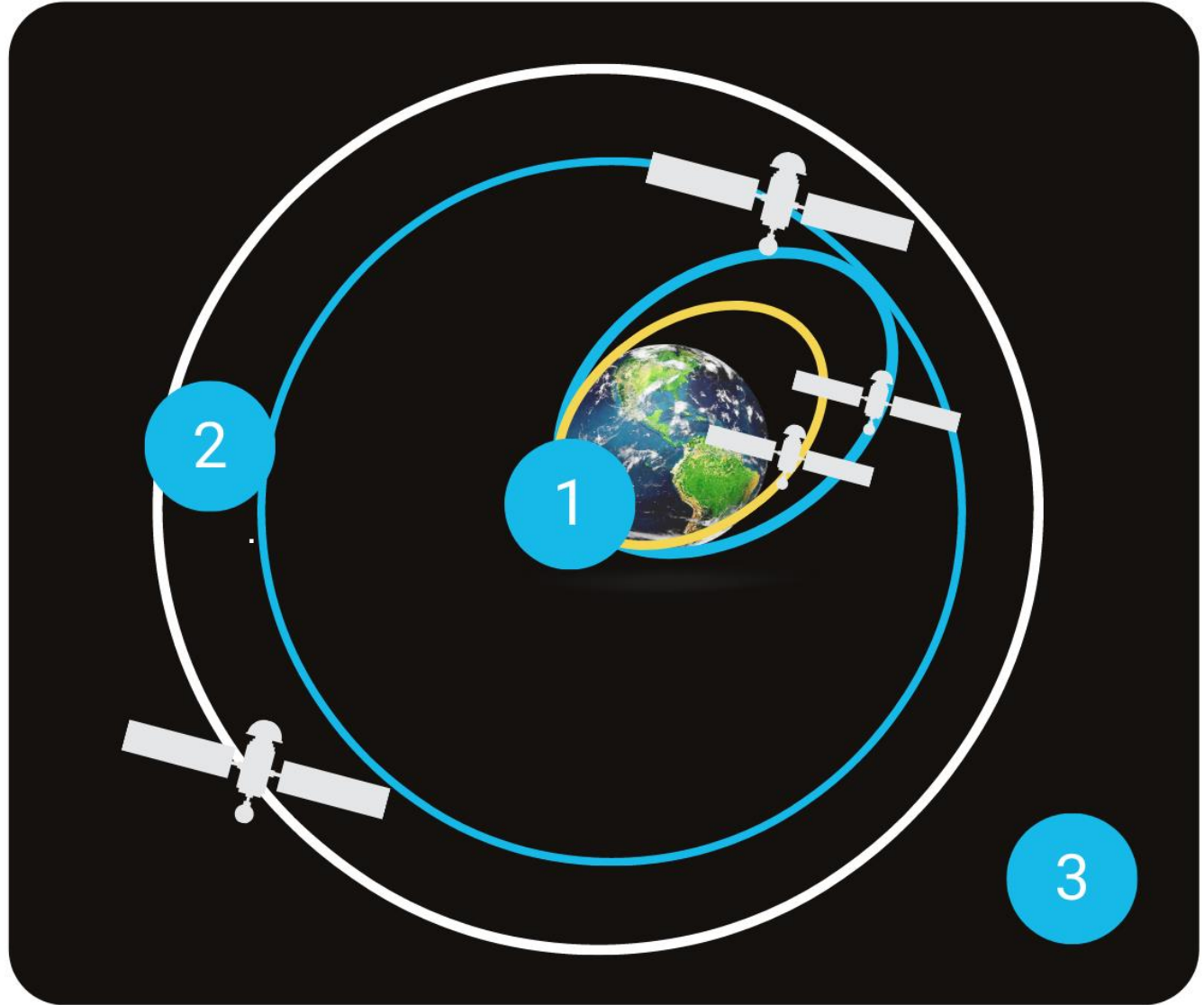
3 different platforms

1. 500+ W class
Not part of GIESEPP MP

2. 5+ kW class (GIESEPP MP)

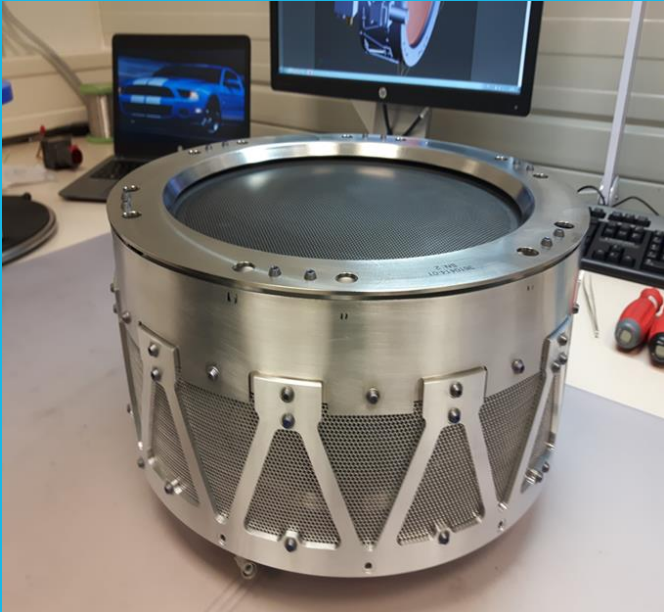
- MEO Navigation (2 t)
- GEO Communication (SmallGEO (2-3 t), Medium to Large GEO (4-6t))

3. 20 kW class
Not part of GIESEPP MP



RIT-2X

Characteristics



ArianeGroup qualifies a multi-mode gridded ion thruster for contemporary geo satellites and science missions

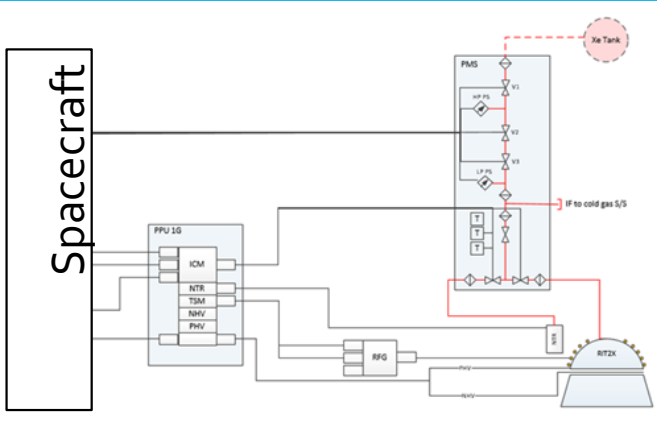
Operational range:

- Thrust 80 – 260 mN
- I_{sp} 2.500 – 4.000 s
- Power 2,2 – 8 kW

• Typical modes:

Station Keeping	Orbit Raising
Priority: I_{sp}	Priority: F and I_{sp}
I_{sp} 3.000 s F 80-120 mN	I_{sp} 4.000 s F 260 mN

EPS Achievements



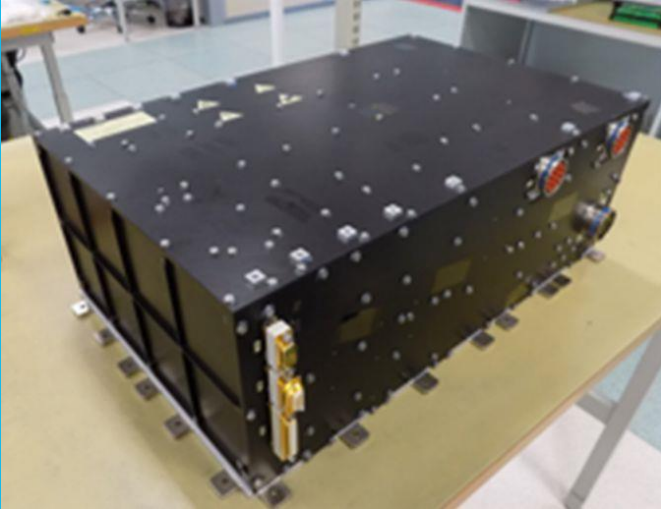
- Specifications adapted in order to ensure standardised plug and play electric propulsion platform
- FMS manufactured, tested and aligned on EPS level
- Test concept and setup defined
- Test planning started

RIT-2X Achievements



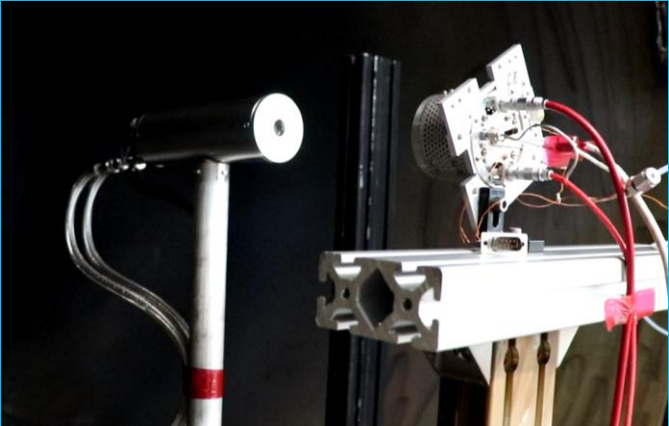
- Design evolution towards industrialised product defined
- Component level validation started
- Assembly level validation defined and planning started
- Industrialisation simulation model defined

PPU / PHV Achievements



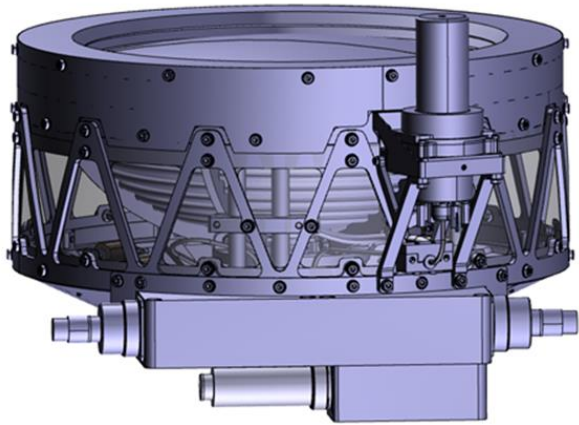
- Scalable modular PHV design defined
- Component CDR status reached
- Parts and PCB procurement started
- Started PHV module manufacturing preparation
- Started test plan preparation and alignment

Scientific & Test Support Achievements



- Additional test instrumentation has been developed, built and validated
- Setup of RIT-2X test facility has started
- Grid erosion model is under development – preliminary results have been presented

What`s next?



- Implementation and validation of RIT-2X improvements
- RIT-2X Critical Design Review
- RIT-2X thruster unit standalone validation resp. testing
- PHV manufacturing and module validation
- Integrated EPS level testing

GIESEPP MP partner presentations

09/05 15:20

Fabrizio Scortecci

10/05 17:30

Javier Torres

12/05 9:30

Peter Jens Klar

Thank you!

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2023-05-10

