

NON-HUMAN + HUMAN DEEP SPACE EXPLORATION: BY THE NEP INPPS FLAGSHIP



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DEMOCRITOS, MEGAHit, DiPoP



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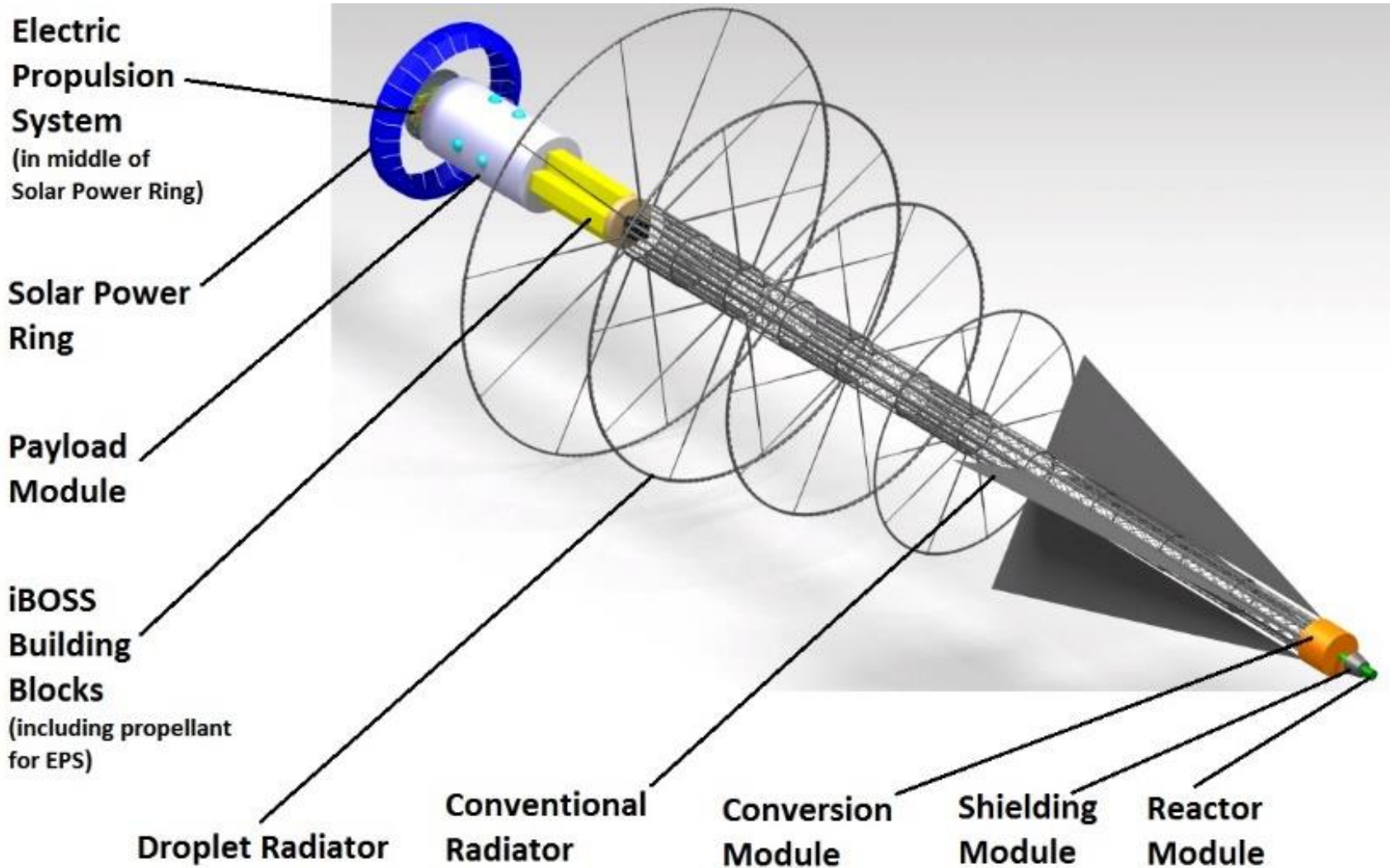


Georg Schmidt et al.,
 Glenn Research Center,
 Cleveland, USA

Knowledge for Tomorrow

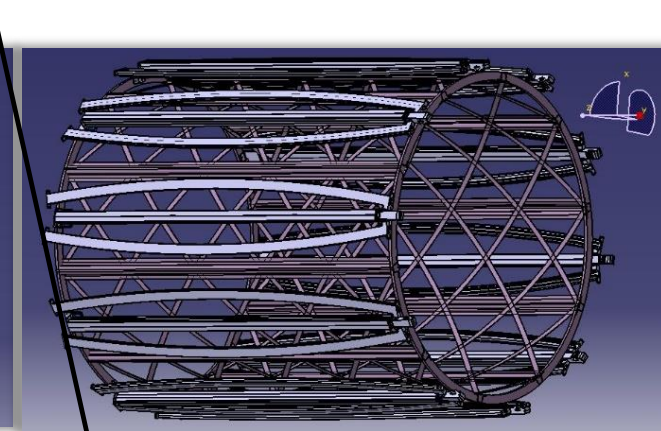
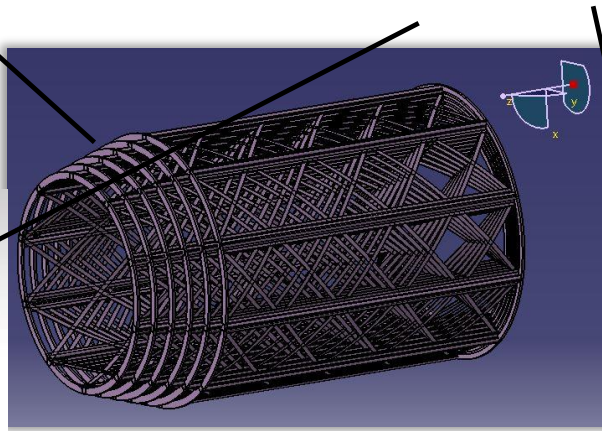
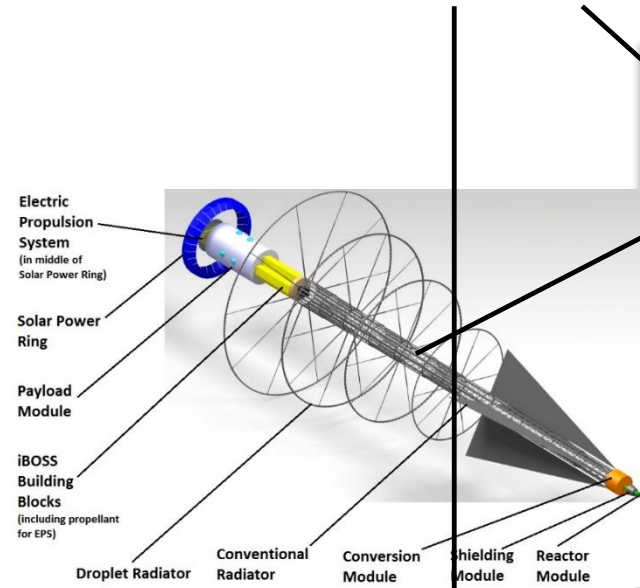
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INPPS Flagship Structure & Subsystems – YES WE CAN.

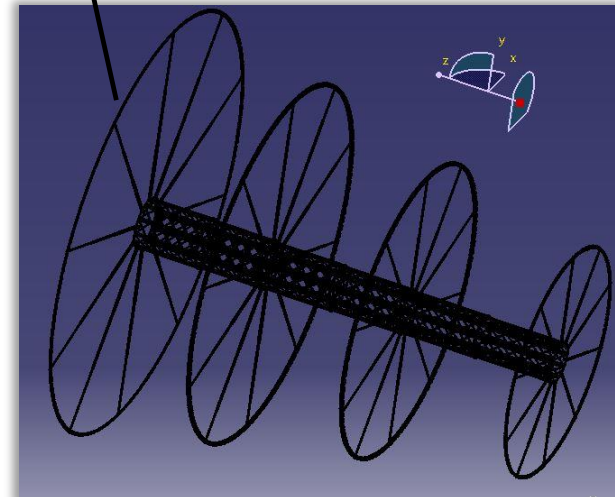
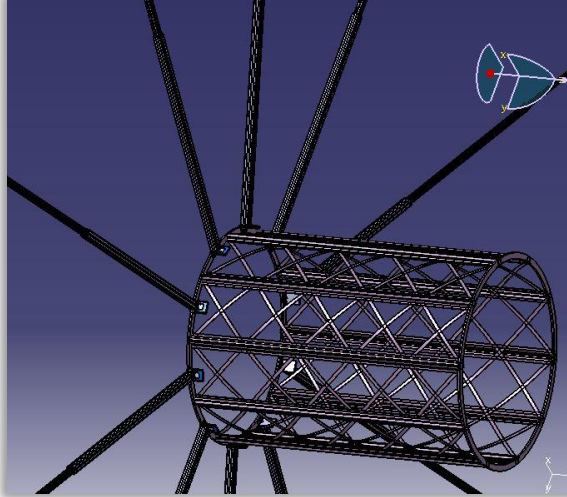
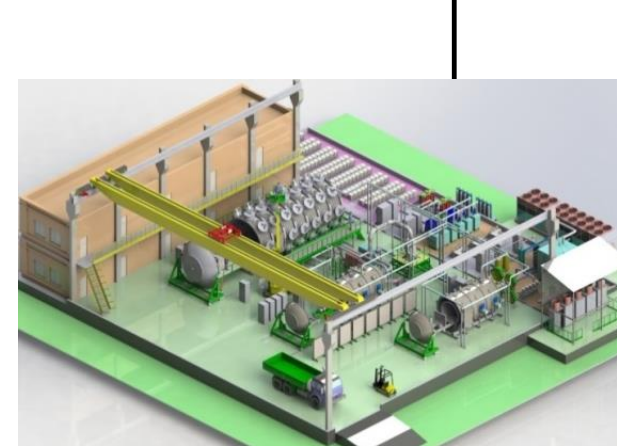


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Ground Based Tests, example - deployable boom and droplet radiators. YES WE CAN.

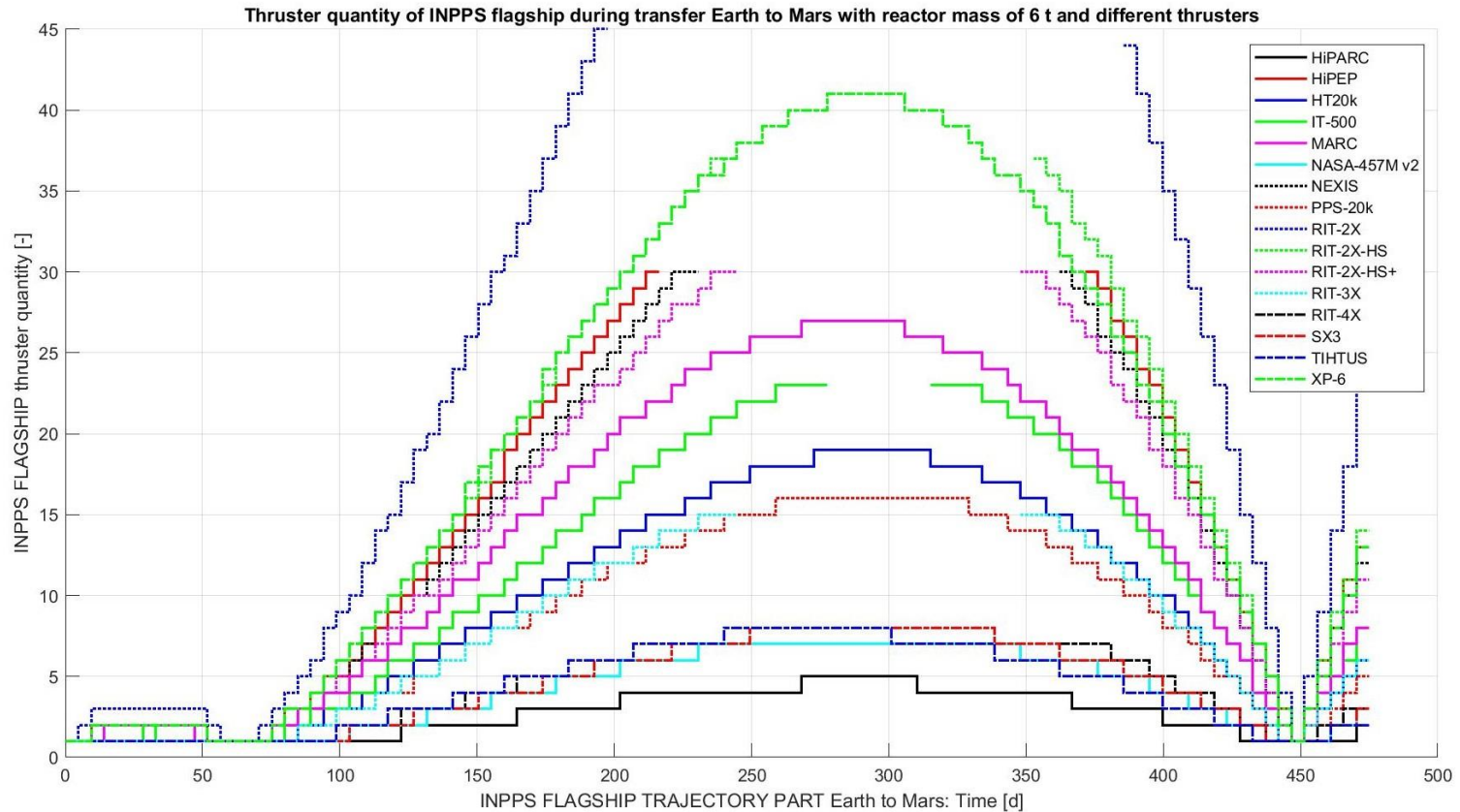


Droplet radiators results: mechanical details of DLR Boom + Russian droplet radiators (assembly, opening (boom / stiffener), droplets path & pipes mounting) .



NON-HUMAN + HUMAN DEEP SPACE EXPLORATION: BY THE NEP INPPS FLAGSHIP

YES WE CAN – Pure (no Chemical Propulsion!) – with Electric Thruster Earth-Mars-Earth-Jupiter/Europa



Important - 22 ET's were applied to MARS-/EUROPA INPPS flagship:

Russian - IT-500, **German** - HiPARC, MARC, SX3, THITUS and RIT-2X, RIT-2X-HS, -2X-HS+, 3X, 4X,

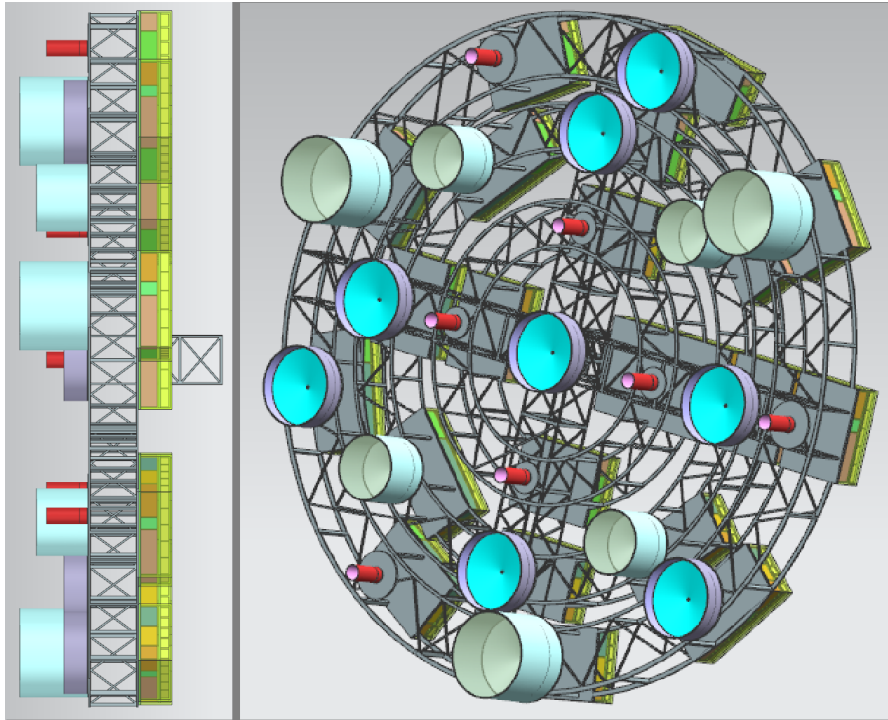
Austrian – Nano, Nano R³, Nano IR³, Micro R³, NEO, **French** – PPS-20k, **Italian** – HT-20k,

Japanese – XP-6 and **US** – HiPEP, NEXIS, 457M and 457Mv2

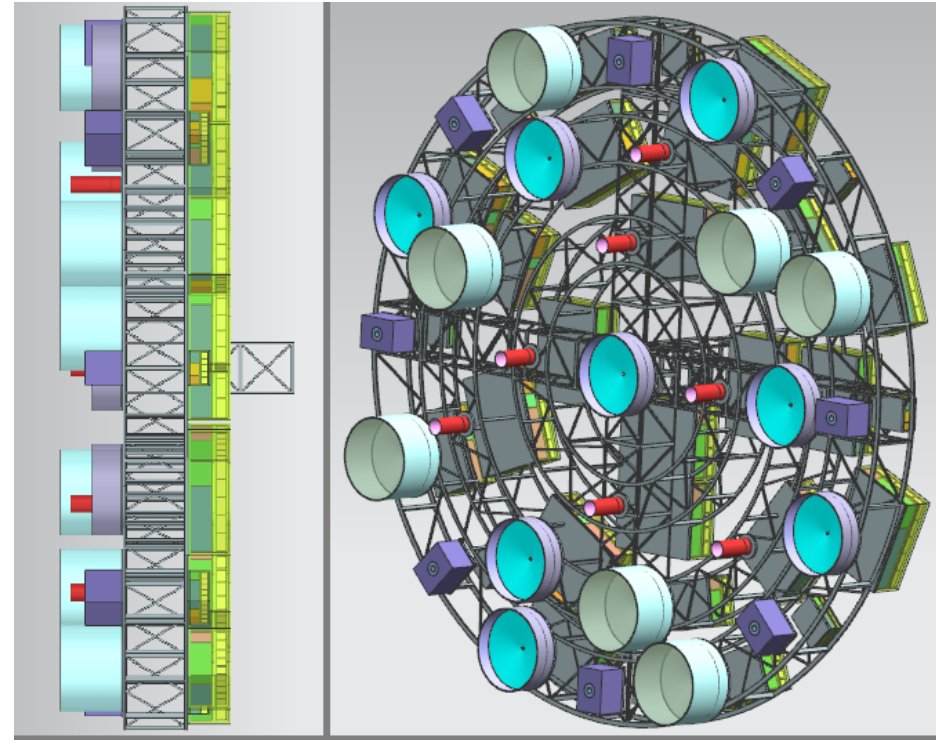


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Gridded CET plate: ET's from Europe, Japan, Russia, USA +? CAN WE REALLY INTERNATIONAL?



→HiPARC →SX3 →RIT-3X →RIT-2X-HS+

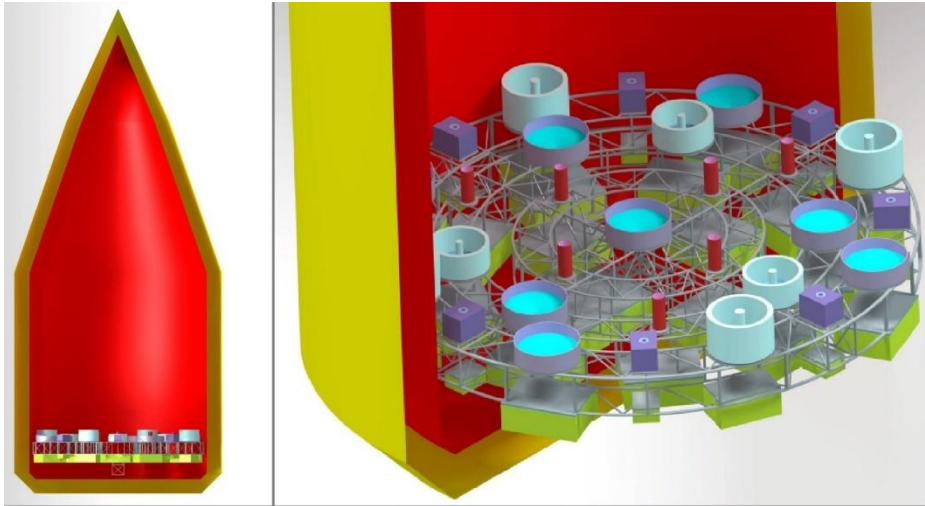


→HiPARC →SX3 →IT-500 →NEO¹⁰



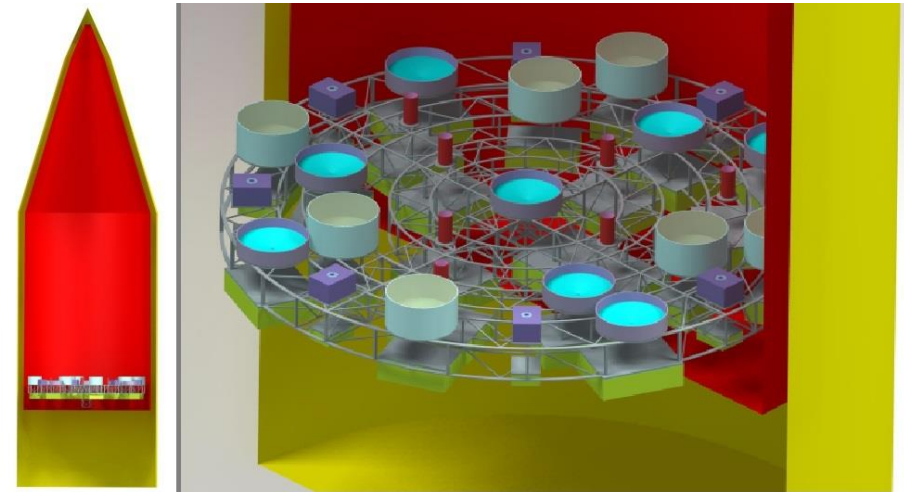
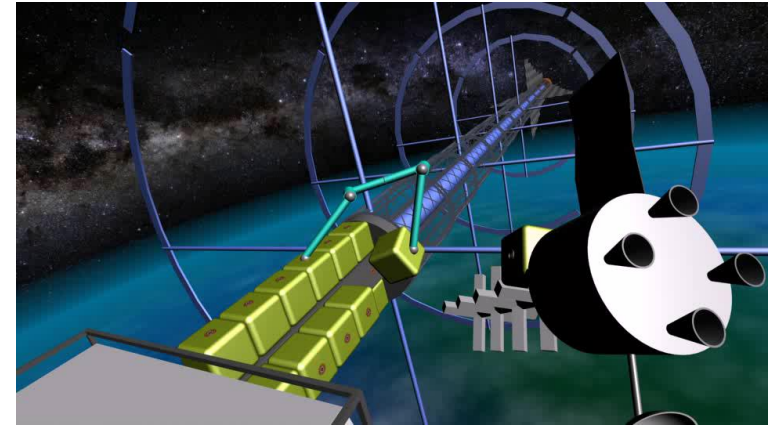
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Ariane and / or Proton and / or Angara + (?) ...rocket fairings



→ HiPARC → SX3 → PPS-20k → HT20k → NEO¹⁰

In Russian **Angara** rocket fairing: MARS-/EUROPA-INPPS flagship with German + French + Italian + Austrian electric thrusters.



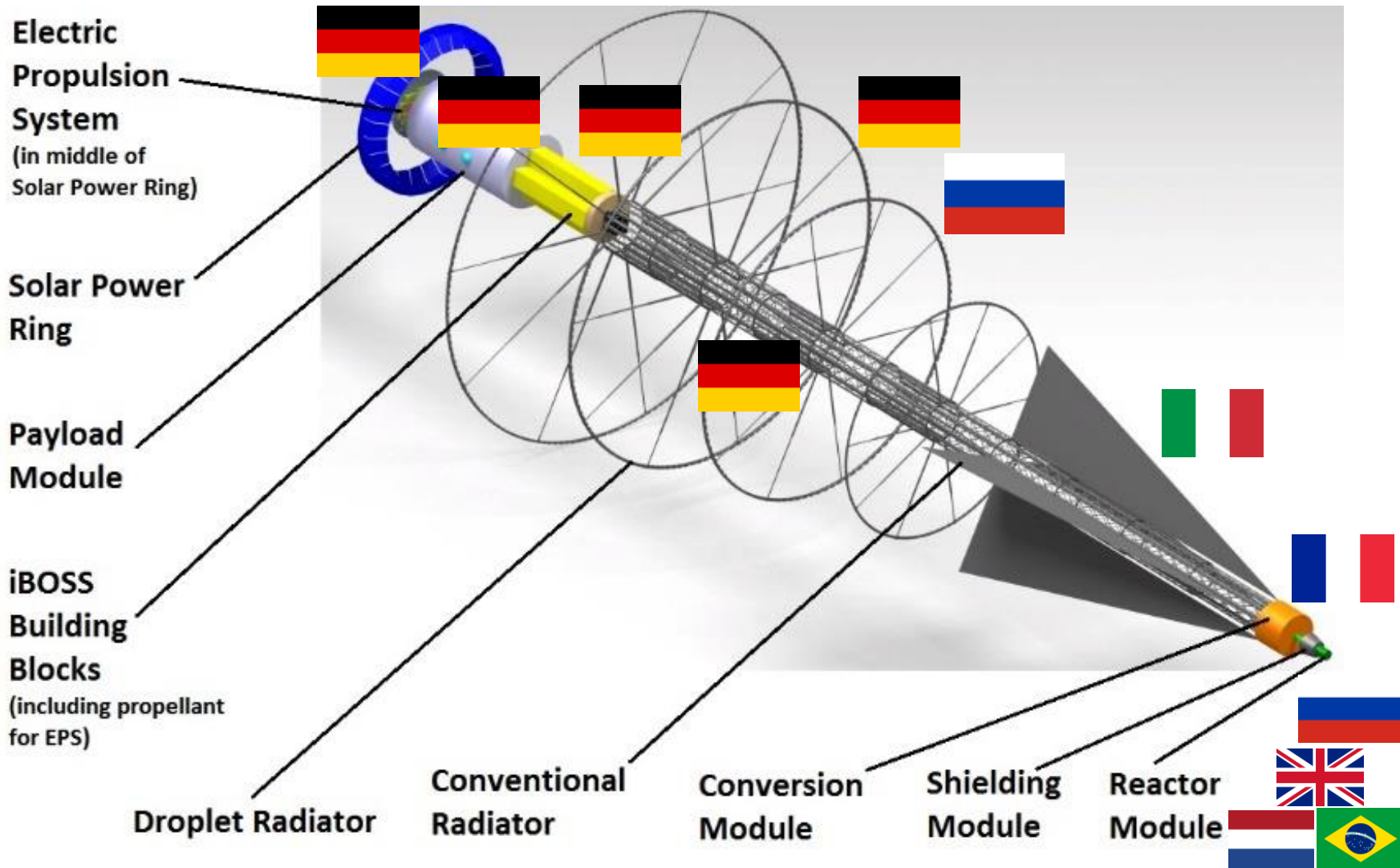
→ HiPARC → SX3 → IT-500 → NEO¹⁰

In Russian **Proton** rocket fairing: MARS-/EUROPA-INPPS flagship with German + French + Russian + Austrian electric thrusters.



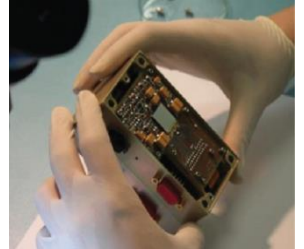
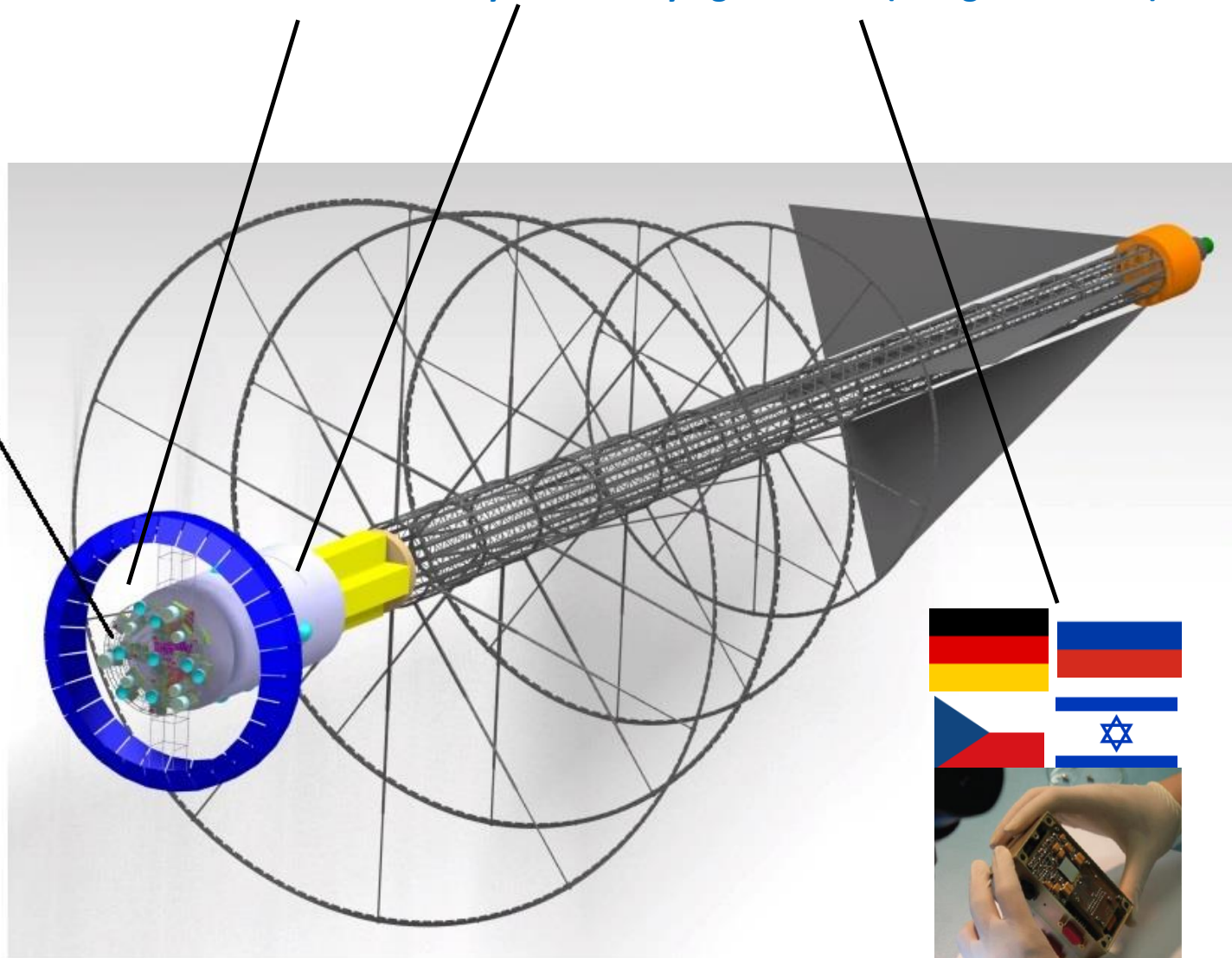
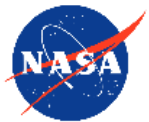
NON-HUMAN + HUMAN DEEP SPACE EXPLORATION: BY THE NEP INPPS FLAGSHIP

Nationwide Contributions: Nuclear + Non-Nuclear => Hybrid Flagship (nuclear/solar/battery)



NON-HUMAN + HUMAN DEEP SPACE EXPLORATION: BY THE NEP INPPS FLAGSHIP

Nationwide Contributions: Cluster of Electric Thruster, Payload, Co-Flying Satellites (all right: UN NPS)



NON-HUMAN + HUMAN DEEP SPACE EXPLORATION: BY THE NEP INPPS FLAGSHIP

1. Non-human (First) INPPS Flagship: 2026+ => 2035 Earth=>Mars=>Earth=>Europa
2. Human/Crewed (Second) INPPS Flagship: after 2035 Earth=>Mars=>Earth
3. Science + Commercial + Communication Payloads (Mars: 18 t, Europa: 11 t)

1. Orbit – Earth (11 Oct 2026) => Mars (28 Jan 2028);
2. Orbit – Mars (22 Sept 2028) => Earth (29 Jul 2029);
3. Orbit – Earth (12 Oct 2031) => Jupiter / Europa (6 Dec 2035)

Δv of INPPS flagship during transfer Earth to Mars

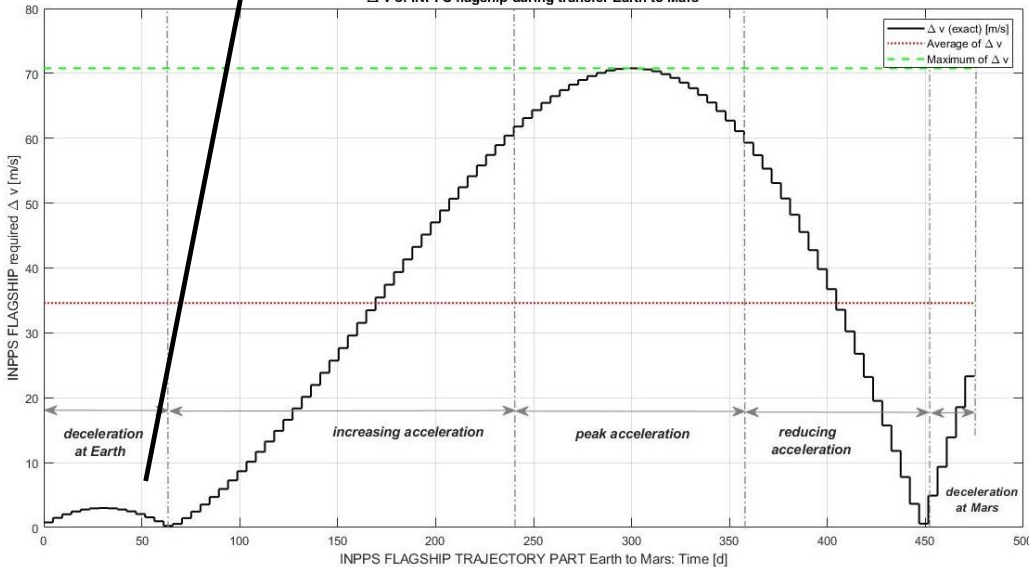


Image: Mars

- VaMEx (Valles Marineris Explorer).
- Europa – TRIPLE (ice melting probe).

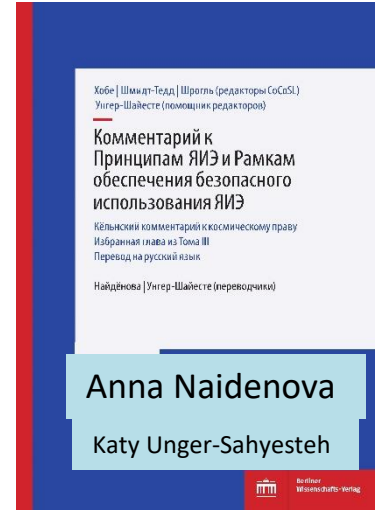
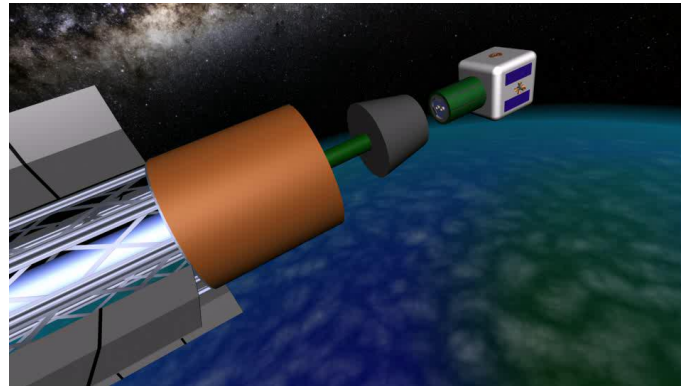
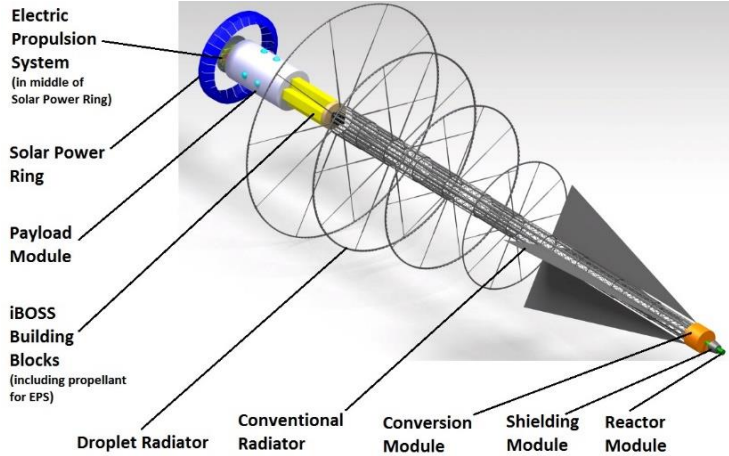


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CONCLUSIONS

Left:
Mars- and Europa-
INPPS Flagship.

Right: ebook
new Russian (Portuguese?)
translation
- Cologne Commentary on
Space Law – NPS Principles.



Main Conclusion:

**NOW: FEASIBILITY OF HUMAN & NON-HUMAN MARS-/EUROPA
INPPS WITH INTERNATIONAL / RUSSIAN & EUROPEAN & GERMAN
ET's IS REACHABLE!**



NON-HUMAN + HUMAN DEEP SPACE EXPLORATION: BY THE NEP INPPS FLAGSHIP Flagship Contributions from Brazil?

Conclusion:

ONLY INTERNATIONAL: COMPARABLE WITH GAGARIN FLIGHT, APOLLO MOON LANDING, ISS.

Invitations related to different flagship subsystem –

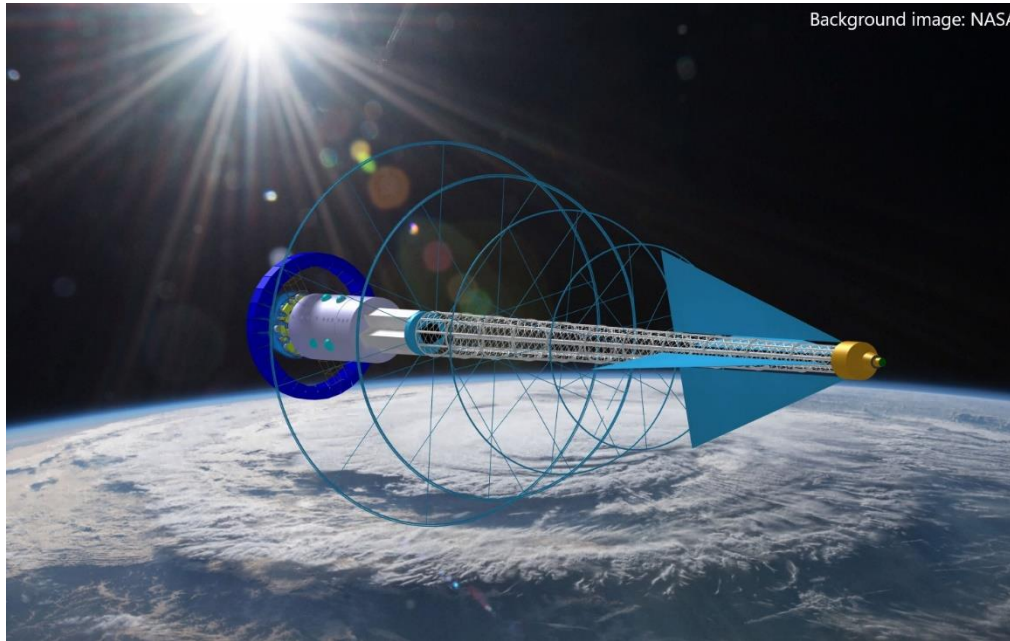
- 1) AT in non-nuclear subsystems (nuclear simulation?)
- 2) Scientific payload (...+Stirling?)
- 3) Interplanetary space weather (...+INPE?)
- 4) Commercial Payload (...+Cachaca?)
- 5) Co-Flying Satellite
- 6) Astronaut?

**NEW SPACE TECHNOLOGY plus SPACE SCIENCE for DEEP SPACE EXPLORATION (plus AT).
NEW SPACE ECONOMY for EARTH SOCIAL DEVELOPMENT with FRONTIER MENTALITY.
IF WE WISH - YES, WE CAN – HUMANS INTERNATIONALLY TO MARS!**

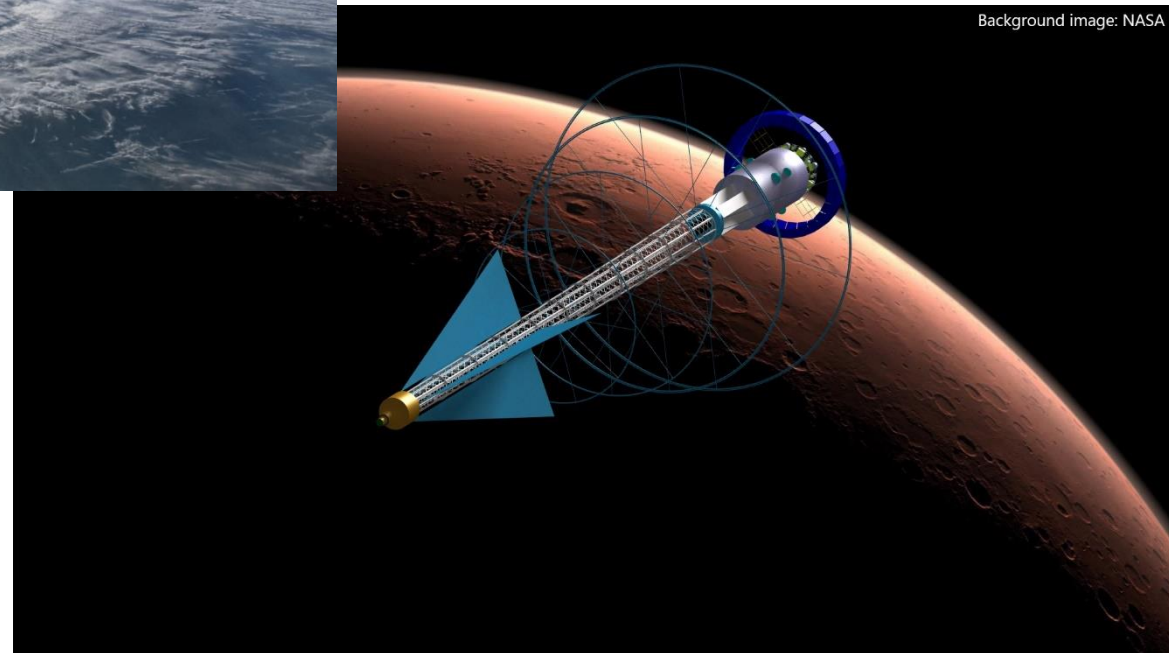


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Muito obrigado. Questions?



Contact: frank.jansen@dlr.de



Muito obrigado.

