

# ESA Close Proximity Operations activities

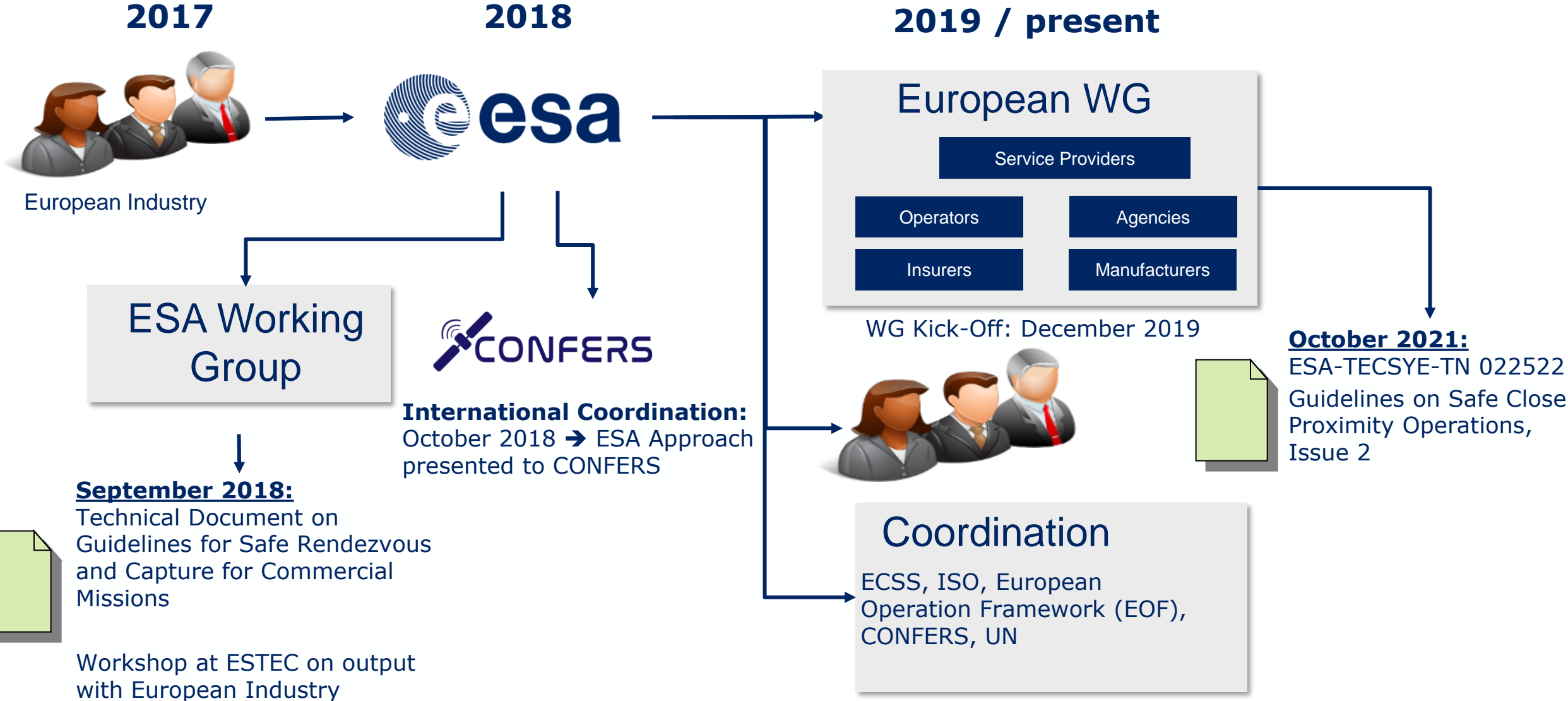
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Clean Space Industrial Days 2023

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# Rendezvous and Close Proximity Operations at ESA



- The European Close Proximity Operations Working Group, led by ESA with European participation, has enabled the exchange of information and ensured a level of playing field for all parties involved in the discussions
- The outcome of the discussions is captured in the “Guidelines on Safe Proximity Operations” Technical Note, Issue 2 (publicly released in October 2021) that presents the technical understanding and agreement of the European stakeholders on close proximity operations and serves as a baseline for future technical discussions.
- Currently, the document is a reference document in the ECSS Space Traffic Management Working Group (ECSS STMWG), where ISO 24330, Rendezvous and Proximity Operations (RPO) and On Orbit Servicing (OOS) – Programmatic Principles and Practices is discussed:
  - high level principles and practices that RPO/OOS service providers are expected to follow in order to ensure safe operations and to encourage a healthy RPO/OOS industry

- Discussions held in the context of the European Close Proximity Operations Working Group highlighted gaps in verification and validation activities for the identified guidelines and therefore a R&D activity was initiated by ESA in order to close the gaps
- In January 2023, the “Verification and Validation of Rendezvous and Proximity Operations Safety” activity (15 months) was kicked-off with TASF with the overall goal to develop methodologies/numerical tools for verification and validation of requirements for safety during Rendezvous and Proximity Operations for cooperative and uncooperative clients (non-human rated missions).
- In parallel, ESA started working on elevating the Technical Note to an ESA Handbook on Close Proximity Operations. However, issue 3 of the “Guidelines on Safe Proximity Operations” Technical Note, is currently expected by the end of 2023, which delays the consolidation of the ESA Handbook to 2024.
- Working Group discussions will be restarted in 2024 following the official release of “Guidelines on Safe Proximity Operations” Technical Note, Issue 3.

# Zero Debris and Close Proximity Operations

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# The vision ...



“In ESA we are implementing a policy that by 2030, we have a ‘net zero pollution’ strategy for objects in space, by consistently and reliably removing them from valuable orbits around Earth immediately after they cease operations. We need to lead by example here.”

ESA Director General, Josef Aschbacher

- In the overall framework of the Zero Debris requirements, rendezvous, proximity and capture operations requirements are considered of high importance targeting safety of non-human rated missions.
- Covering the gaps currently identified during on-going ESA R&Ds (e.g. TDE “Verification and Validation of Rendezvous and Proximity Operations Safety”), follow-up activities are currently discussed ESA internally in order to mature the guidelines in time for use in the 2026/2030 evolutions of ESA Zero Debris standards.

# Thank you!