



# General Support Technology Program

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ERIC MARTIN

 Canadian Space Agency / Agence spatiale canadienne







# Background

- For 25 years, the GSTP program has been developing leading-edge space technologies that enable missions and support the competitiveness of European and Canadian industry
- Until 2016, GSTP ran in periods of 3 to 4 years.
- Canada is participating since Period 1.
- GSTP now a continuous program composed of three elements and one component
  - Develop
  - Make
  - Fly
  - Precise Formation Flying Component (Proba-3)
- No major structural changes foreseen for Space19+



# GSTP Program - Highlights

- Financial envelope: 300 M€ to 330 M€ expected for the 2020-2024 period.
- The general objectives of GSTP consist in
  - Enabling missions of ESA by developing technology
  - Supporting the competitiveness of European (and Canadian) industry
  - Fostering innovation by creating new products
  - Improving European technological non-dependence and the availability of European sources for critical technologies
- Covers all technology disciplines except Satcom
- Covers mainly Technology development from TRL 4 to 8 with some activities at TRL 2-3
  - TRL 1-3 development mostly covered under the Technology Development Program (No Canadian participation)



# ESA Technology Strategy

**30% Improvement of s/c development time by 2023**

*We develop key technologies to allow ESA to reduce the time from Phase B2 to launch.*

**Order of magnitude better cost efficiency with every generation**

*We develop key technologies to allow Europe to achieve one order of magnitude cost efficiency improvements with every space system generation.*

**30% faster development & adoption of innovative technology**

*We develop processes, methods and technologies to allow Europe to take full benefit from the early introduction of new technologies into space systems.*

**Inverting Europ. contributions to space debris by 2030**

*We develop the technologies that allow us to leave the space environment to the next generation in a better state than we have inherited it.*

- GSTP a key program to achieve these ambitious goals



## **GSTP Element 1 “Develop”**

- Dedicated to the development of technologies, building blocks, components and test beds for projects from low TRL to qualification (TRL 7)
- Support to the implementation of the technology development targets of ESA and current and future cross-cutting technology themes
- Based on 5-year work plans with yearly updates
- Letters of support from delegation required
- Open competition between supported firms
- Usually 100% funding but co-funding possible leading to Direct Negotiations





## **GSTP Element 2 “Make”**

- Market driven, industry initiated, co-funded direct negotiation activities
- Strengthening of worldwide competitiveness in new and existing markets
- Developments of products in response to gaps in the supply chain
- Products to TRL 6/7
- Permanently open AO requiring co-funding
- Letters of support from delegation required



## **GSTP Element 3 “Fly”**

- In orbit demonstration of technologies either as products in need of acquiring flight heritage, hosted payload or complete space missions
- Investigations to prepare future missions
- Small missions responding to MS’s requests
- Demonstration of experiments in carriers opportunity
- Permanently open
- 100% funded
- Letters of support from delegation required



## Precise Formation Flying Component

- Phases C/D/E of the PROBA-3 mission in view of the demonstration of Precise Formation Flying (PFF) technologies and techniques
- Ongoing – no additional subscriptions at Space19+
  - No possibility for additional involvement from Canadian organizations





# ESA Implementation Approach

- Strengthen interactions with industry
  - ESA is planning open calls to industry and forum of open discussions to get new activity areas for inclusion in Compendia
- Foster timeliness and reactivity while reducing risk and building capacities
  - ESA established frameworks that have been adopted by PS and have proven to improve efficiency
  - Further evolution of frameworks planned
- Support competitiveness within evolving context of the European space sector
  - Element 2 “Make” which was more targeted to meet ESA’s needs will be segmented to better meet strategic developments of industry and priorities of ESA Member States
    - Objective is to reduce time to contract award
- Facilitate In-Orbit Demonstration of technologies
  - Greater effort to investigate the use of various types of flight opportunities



## Canadian Process for Issuance of Letters of Support

- Approved frameworks for selection of supported activities for ARTES, GSTP and NAVISP programs
- Before submitting to CSA, industry should contact CSA to discuss their idea and query about funding availability
- CSA requests a short proposal for evaluation
  - Based on short proposal requested by ESA
- Proposals evaluated based on the following criteria
  - European partnership/European Client;
  - Degree of Innovation;
  - Alignment with Program Objectives and Benefits to Canadians;
  - Development of Industrial Core Capabilities;
  - Competitive Advantage;
  - Path to Commercial Potential/Future Flight Opportunities.
- Results of evaluation provide basis for recommendation to higher management for approval

# Canadian Space Agency



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