

General Support Technology Programme (GSTP) & Discovery, Preparation & Technology Development

Status and Outlook

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Agenda

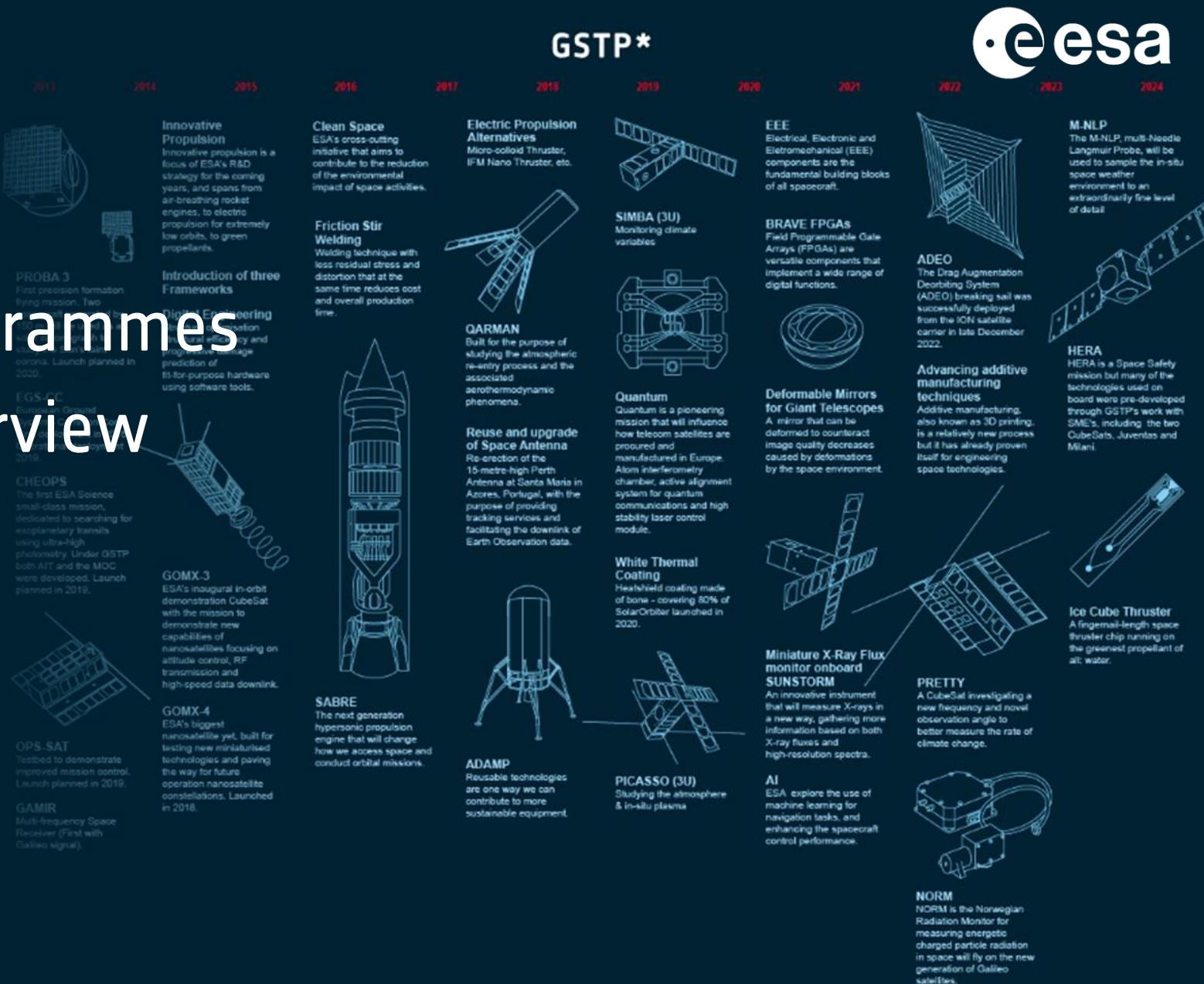
→ ESA's Technology Programmes

→ Discovery, TDE overview

→ GSTP overview

→ TDE outlook

→ GSTP outlook



*Since 2012 GSTP became a Permanent Programme



Disruptive Ideas

- Taking risks
- Low budget
- Fast and Open
- Novelty driven
- Commercialisation
- Research, studies and tech.dev.
- Outside driven (OSIP)
- Open competitive

Discovery

Future Missions

- Solid baselines
- (Pre-)Phase A
- For all domains
- MBSE, ODebris, LCA
- Commercialisation
- ESA-driven
- Open competitive

Preparation

Technology Raising

- All ESA applications
- Enabling missions
- Low TRL
- 2yr work plans
- ESA driven
- Open competition

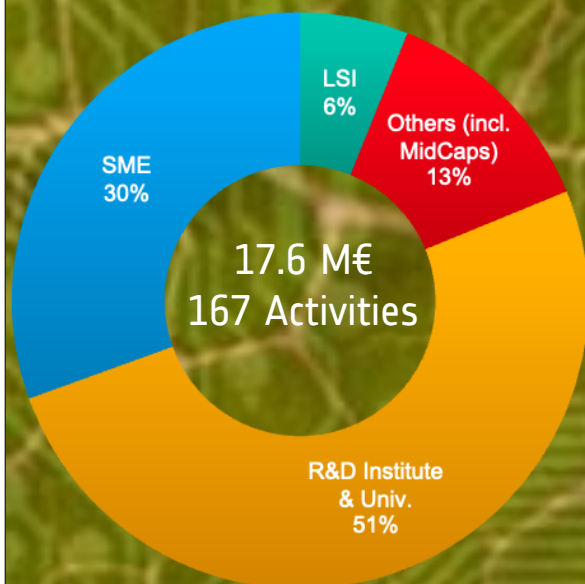
TDE

- Enabling missions
- Supporting Competitiveness
- Higher TRL
- Work plans and industry-driven proposals
- SME focus
- Delegation support
- 3 Elements

GSTP

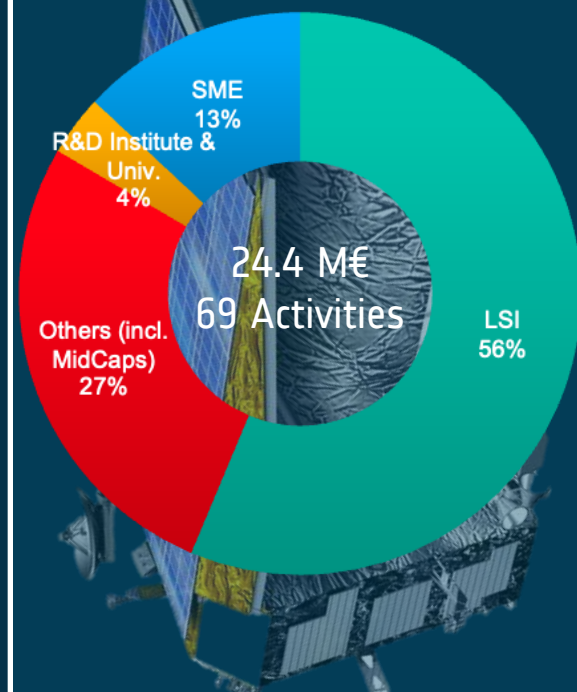
Discovery, Preparation, Technology Development (TDE), General Support Technology Programme (GSTP)

Disruptive Ideas



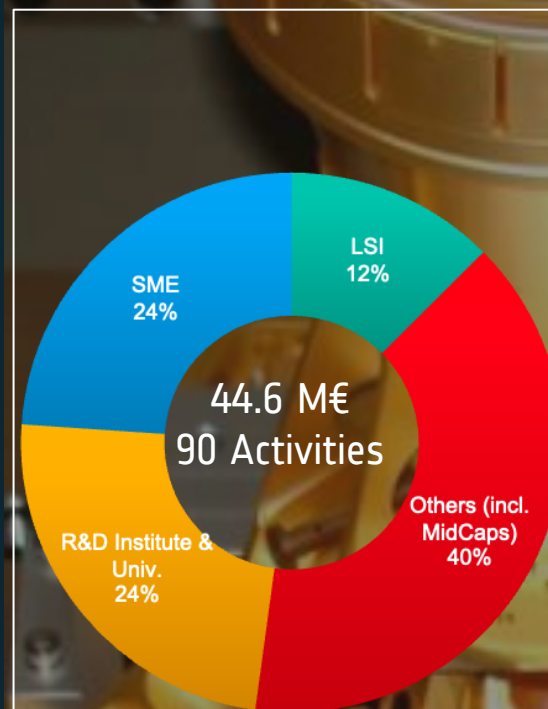
Discovery

Future Missions

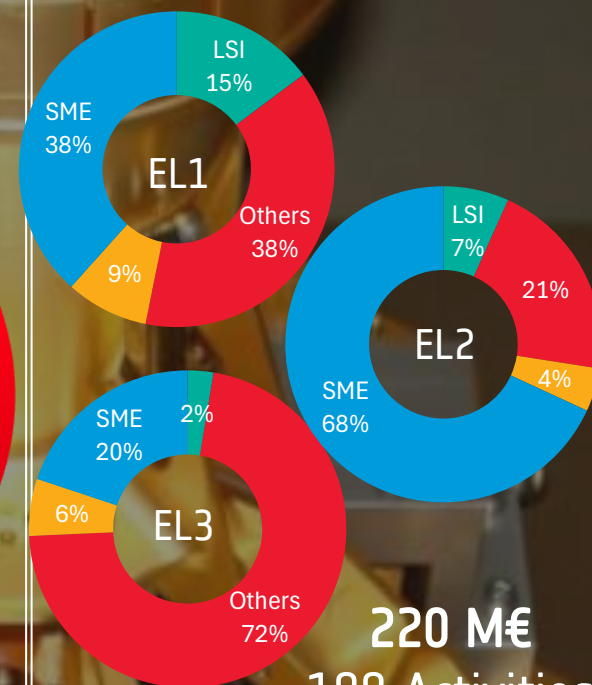


Preparation

Technology

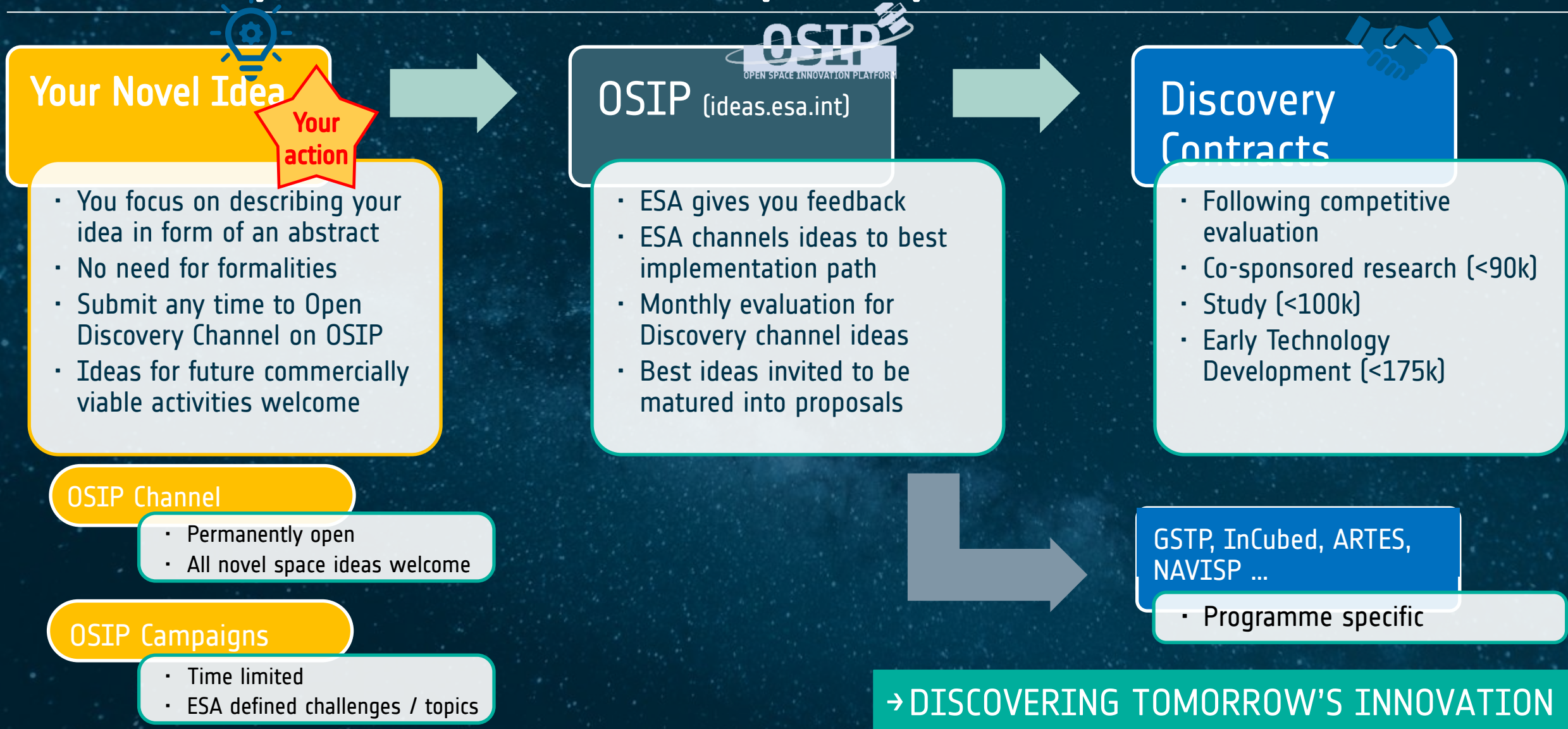


TDE



GSTP

Discovery Element: How to participate ?

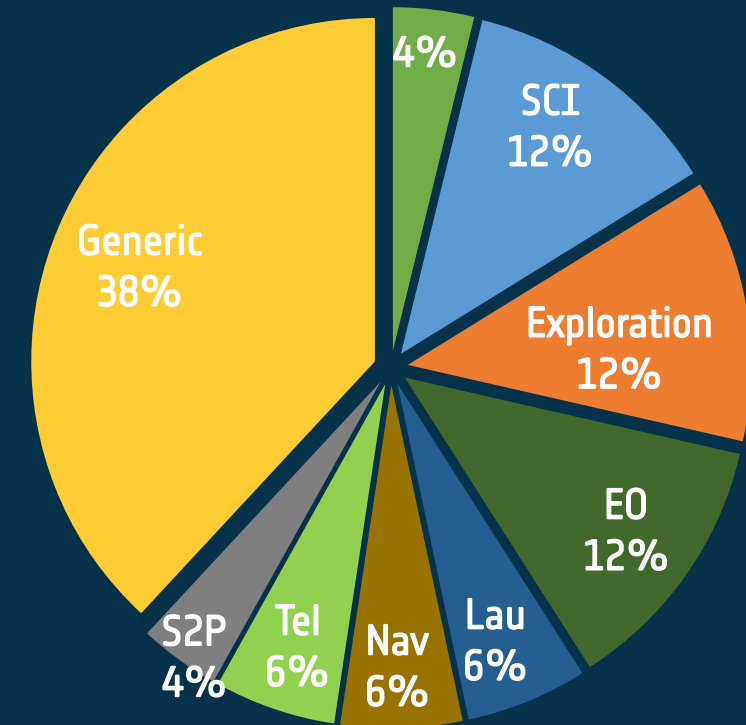


Technology Development Element (TDE)



- Part of ESA's Mandatory Basic Activities.
- All ESA Member States contribute.
- Covers all ESA programmes, applications & technology disciplines.
- First step of the implementation of ESA Technology Strategy.
- Activities defined by ESA experts. Industry inputs always welcome
- Relies on European Space Technology Harmonisation Roadmaps.
- Based on 2-year work plans, with yearly updates, ~ 200 activities, ~ 100m€, TRL 1 - 4
- 94% of all activities in open competition.
- Around 50% of the contracts are awarded to SME or R&D Institutes.

Budget Breakdown



ACHIEVEMENTS – Optical polishing techniques

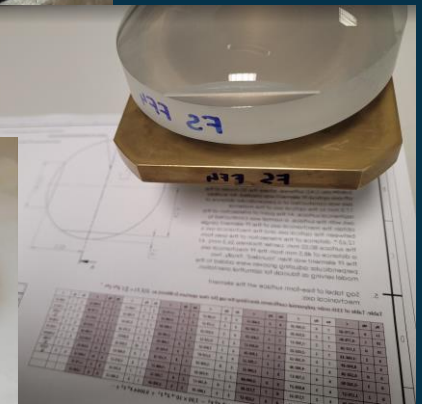


50 YEARS OF
INNOVATION
AT ESA



Several TDE activities have worked on manufacturing techniques to improve polishing of aspherical and free-form lenses, which will in turn improve performance in optical systems. One of these is using infrared polishing techniques on brittle materials that are tough to get smooth.

TDE | Asphericon | T716-603MM



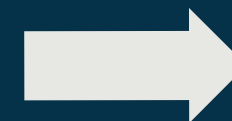
TDE: How to participate ?

ESA identified technology needs

- ESA published 2-year TDE work plans.
- Based on future mission needs (TECNET).
- Across all domains.



- Look for ITT on esa-star Publication.
- Form partnerships.
- Submit your proposal answering ESA statement of work.



TDE Contract

- Following competitive evaluation.
- TRL 1 - 4 raising technical activity.
- ~ 500k€ per activity.
- Parallel contract.

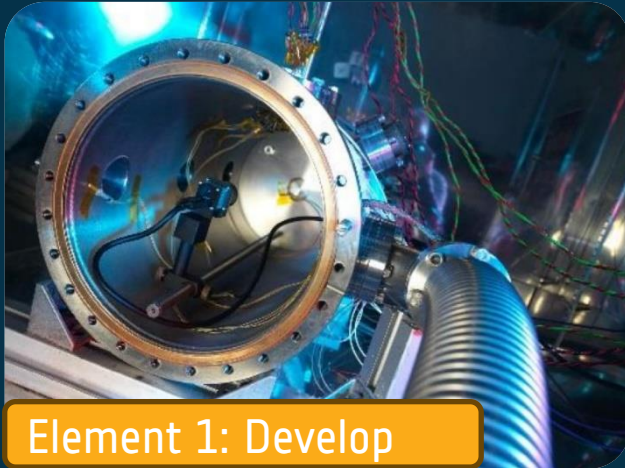
Your action

General Support Technology Programme (GSTP)'s mission



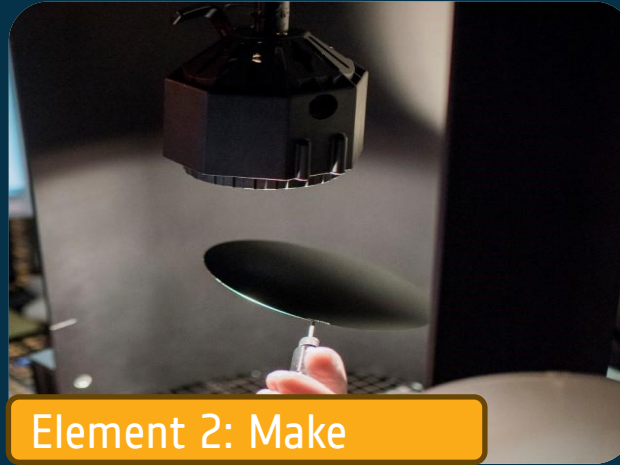
- For more than 30 years, the GSTP has been developing leading-edge space technologies that enable missions and support the competitiveness of European industry.
- GSTP allows companies of all sizes as well as research and academic organisations to perform technology developments and demonstrations
 - Building capacities, fostering innovation and creating and improving products and services.
- GSTP is an optional ESA programme with the participation of all ESA Member, Associate and Co-operating States.
 - 27 Participating States in total

GSTP Structure



Element 1: Develop

Supports technology developments up to qualification, capacity building & ESA technology aims.



Element 2: Make

Industry initiated and driven co-funded activities to strengthen competitiveness.



Element 3: Fly

On-ground and in-orbit demonstrations of technologies in need of acquiring in-orbit validation.



EEE Component

Space Component

Sovereignty for Europe

GSTP Element 1 Develop

Compendia 2022-2025 implementation

	Compendia activities in the E1 Work Plan	Compendia activities TOTAL	Share
Generic Technologies	31	86	36%
Artificial Intelligence	11	21	52%
Cybersecurity	8	14	57%
Digitalisation	7	15	47%
Quantum	4	7	57%



- Activities in Open Competition
- 61 activities included in GSTP WP

ACHIEVEMENTS – Real-time flight status

As the monitoring and control system at ESA's Operations Centre nears obsolescence a new service is needed for missions in space to receive real-time communications and **status** updates. The replacement, EGS-CC, requires additional components to make sure it offers equivalent and, hopefully, improved infrastructure.



GSTP | ATOS | GT17-119GI

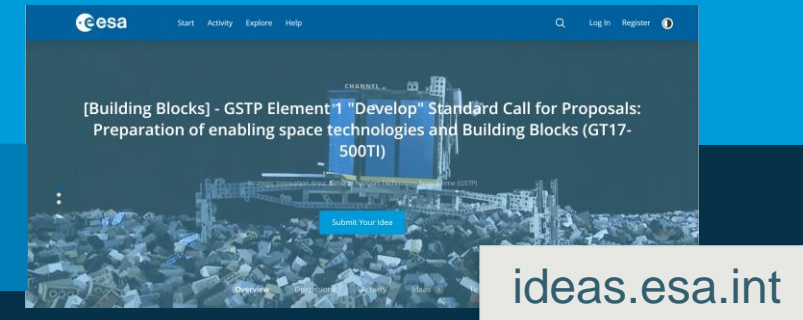


GSTP Element 1 Building Block and De-risk Frameworks

- Preparation of Enabling Space Technologies And Building Blocks
- Assessments to prepare and de-risk technology developments

Procurement using a template

- Max budget: €1 M (BB), €250 K (De-risk)
- Max duration: 24 months (BB), 9 months (De-risk)

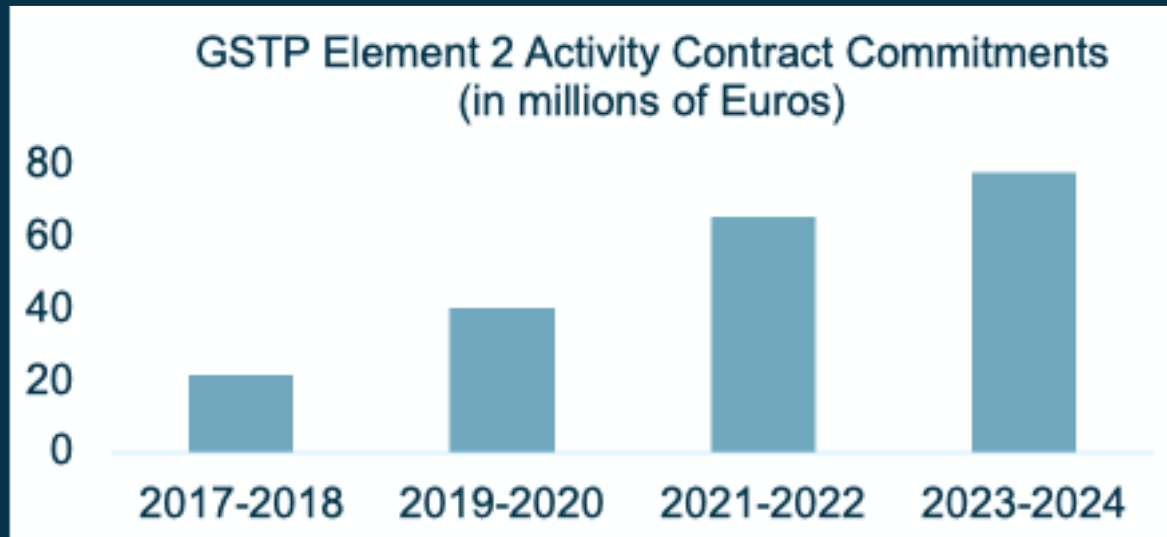
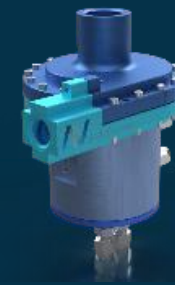


- BB Framework improved in the context of CM22 and the maximum activity funding level extended to 1000 KEuro
 - Allowing faster procurements for larger activities
- De-risk framework improved in 2023 and the maximum activity funding level extended to 250 KEuro
- De-risk channel on OSIP (ideas.esa.int) evolved to bring together the main and thematic de-risk frameworks
- IPC approved the application of COOPERATIVE AGREEMENTS for DE-RISK activities <250 Keuro



GSTP Element 2 Make

Industry-driven market-oriented activities



- Growing use following major evolution in 2019-2020
- Tailored Calls for Proposals:
 - **Produkt Initiative call** (Germany): Product developments target mid-Class missions
 - 'idea' (Q1/2024) to 'contract' (Q3/2024) for most of the 15 activities
 - **Calls** in Denmark and Spain
- **Support to production process and industrialization**
 - Develop and validate innovation and improvements for production process
 - Number of activities increased to 10-15 per year



GSTP Element 3 Fly

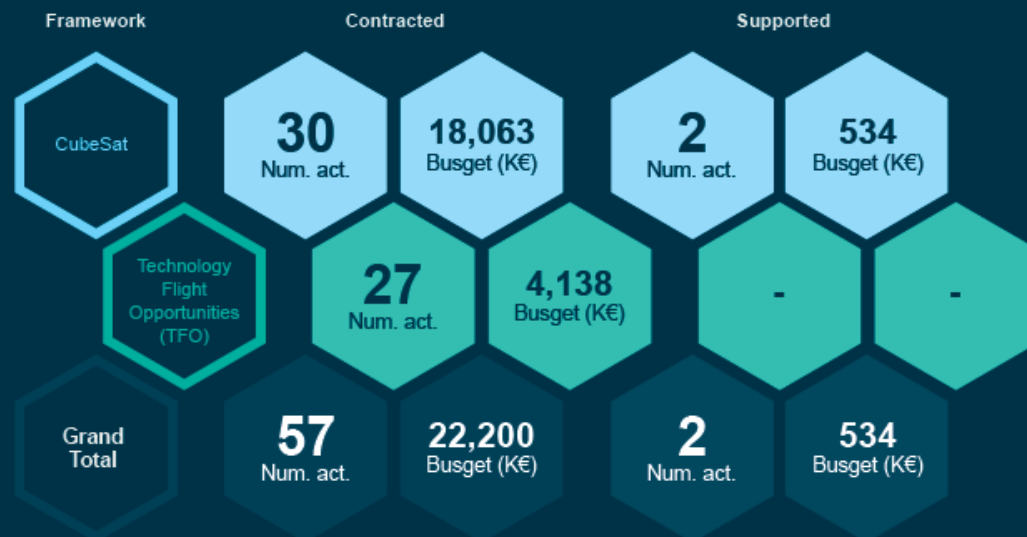
Facilitating Technology Demonstrations

Main objectives:

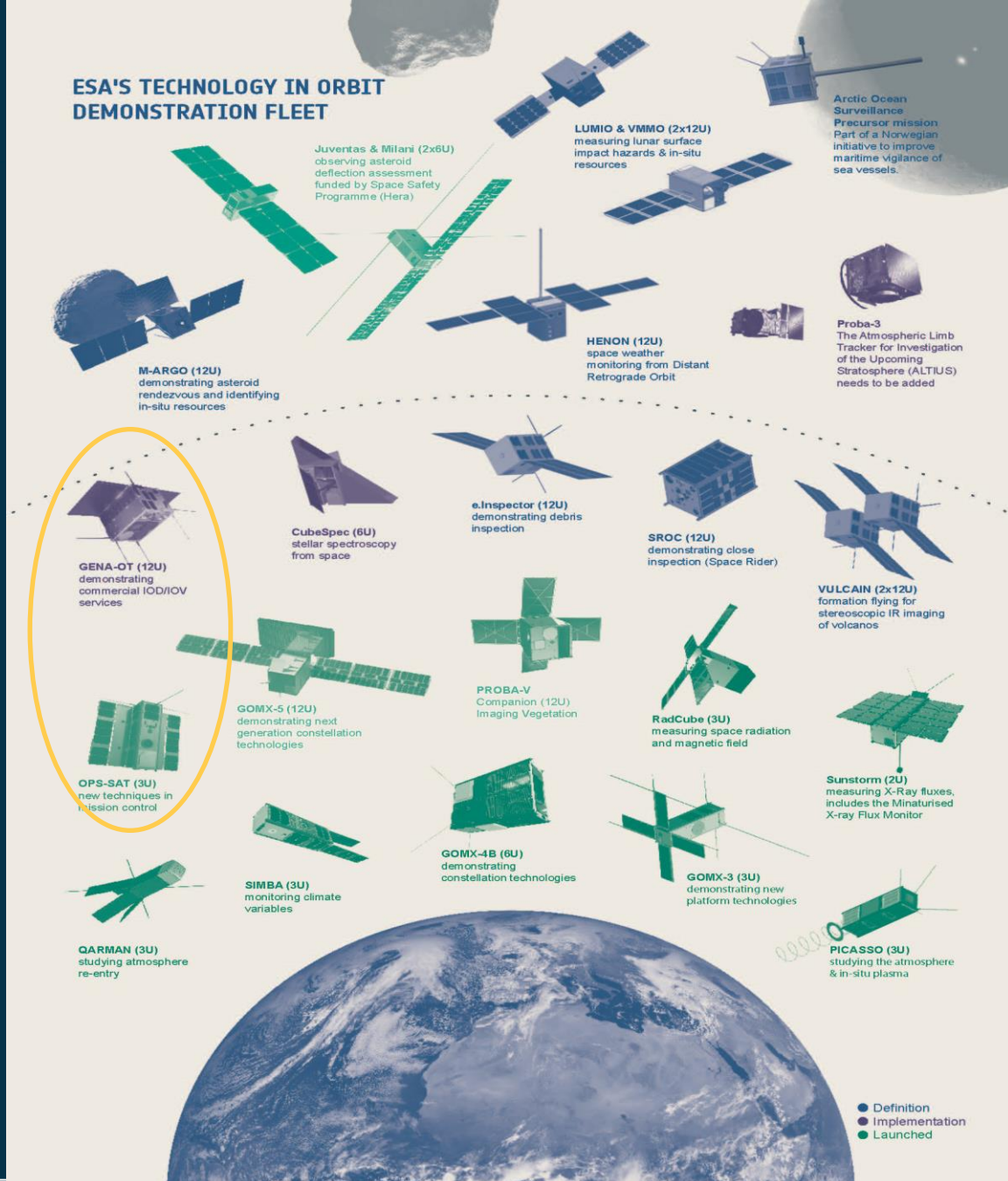
Demonstrating technology, techniques and capabilities.

- Successful implementation of missions and IODs
- Preparation of new mission/IOD opportunities.
- Enhancement the demonstration approach.

GSTP Element 3 'Fly' Frameworks overview



ESA'S TECHNOLOGY IN ORBIT DEMONSTRATION FLEET



Outlook 2025: Technology Development Element (TDE) General Support Technology Programme (GSTP)

Directorate of Technology, Engineering and Quality

TDE OUTLOOK: TDE 26-27

- A TDE Workplan for 2026-2027 period will be published in Sep. 2025
- Volume ~100 M€ (depending on LOR for BA)
- Focussed on TRL 1-4
- Covers all ESA activities, such as:
 - ESA Vision 2024
 - Voyage 2025
 - JTF Recommendations on critical space technologies



GSTP OUTLOOK: **Speed** and **Focus**

Compendia
AI, Quantum, Cybersecurity

Standardised subsystems & platforms
Sustainable Space, Propulsion

Faster IODs

Enabling MS to propose IOD,
Focus on 1-2 tech/IOD



FOCUS



SPEED

Element 3: Fly

In Orbit Demonstrations
(Competitiveness, Innovation, Capacity Building)

Introduction of **ACCELERATE**

R&D Projects for speed & impact
Focus 'high-potential' technology developments



FOCUS

Element 1: Develop

Component Sovereignty

ESA driven technology developments
(Work Plan, Frameworks)

Harmonised across ESA

Time to contract



SPEED

Element 2: Make

Industry driven developments
to strengthen competitiveness

GSTP Outlook: Preparation of Compendia 2026/2028

- Sustainable Space
- Innovative Propulsion



VLEO
Quantum



Artificial
Intelligence



Security



M-IND
Mid-size sat INDustrialisation

Competitiveness for LEO Mid-size Sats - MIND - Mid-size sats INDustrialisation

- Pulled by the Programme Directorates via
System Studies for Integrators*

	Integ.1 P/Fa	Integ.2 P/Fb	Integ.3 P/Fc	Integ.n P/Fd
Equipm-1 Supp. A Supp. B				
Equipm-2 Supp. C Supp. D				
Equipm-n Supp. M Supp. N				



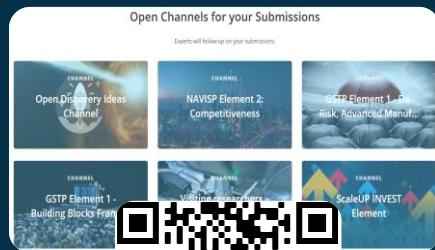
- Cost efficiency
- Faster development
- Progressive adoption

Take Away

- Registration of new companies.
 - Invitations to tenders.
 - News/Procurement related announcements
 - TDE WP
- IMPLEMENTATION 2025



- Channel and Campaign.
- Entry to Discovery Element.
- Submission of pre-proposals and outline proposals for GSTP.



Activities Portal

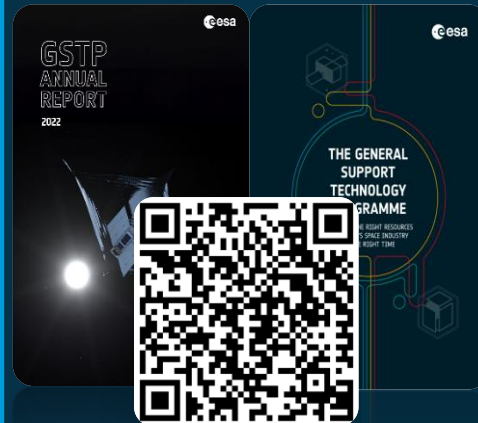
- Running activities
- Visibility on interim results and publications
- Managed by the contractor
- Simplified interaction with ESA



ENABLING & SUPPORT

shaping the future

- TDE/GSTP information.
- TDE/GSTP achievements summary.
- Annual reports and highlights.



Nebula Public Library

The knowledge bank of ESA's R&D programmes

- Discovery, Preparation, TDE and GSTP
- activities achievement summary





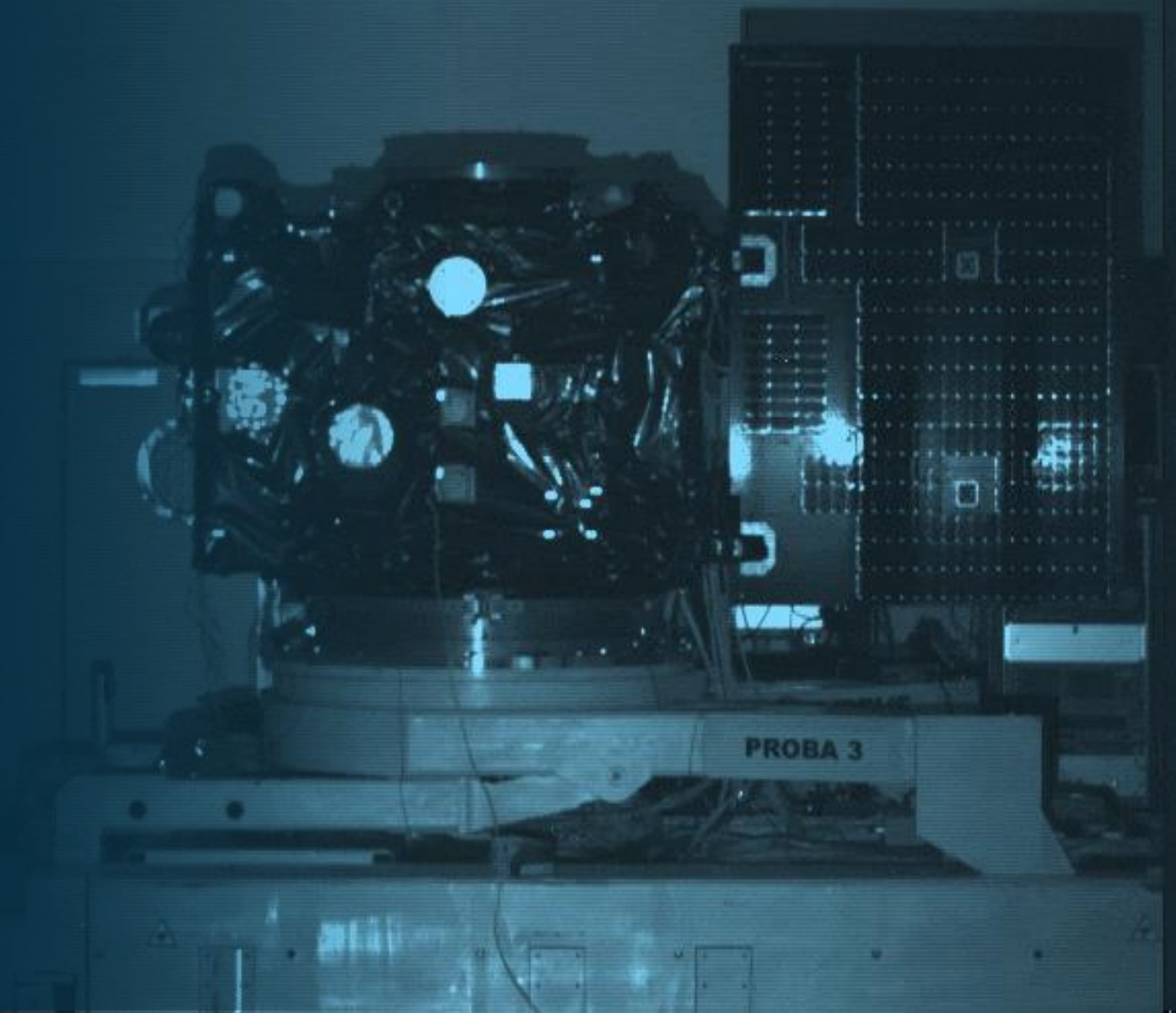
50 YEARS OF
INNOVATION
AT ESA

Thank you

More at: <https://esa.int/Future>

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→ THE EUROPEAN SPACE AGENCY