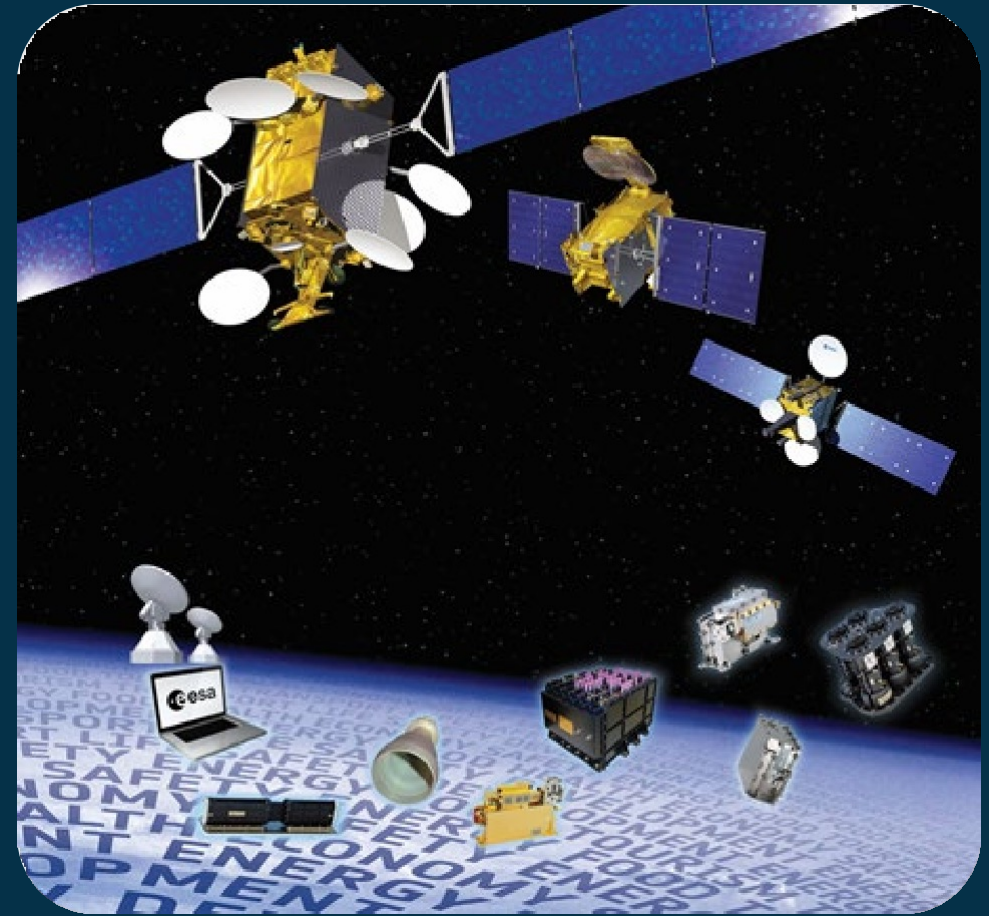


# ARTES 4.0 Core Competitiveness – an Overview

To Improve the capability and competitiveness of the ESA Member States industry in the world satellite communications market

**ARTES:**

Advanced Research in  
TElecommunications Systems





- **National Delegations** contribute funding
- **Industry & institutions** develop technology and products for the world satcom market
- **ESA** shares the risks and manages the contracts and activities
- **Industry** brings the end result to market & retains Intellectual Property Rights (IPR) when co-funded

## Strategic Programme Lines

Responding to societal/economic objectives



**Space for 5G/6G & Sustainable Connectivity**




**Space Systems for Safety and Security (4S)**



**Optical & Quantum Communication- ScyLight**

Direct access to Programme Lines




## Generic Programme Lines

Maximum efficiency



**Future Preparation**



**Core Competitiveness**  
(ARTES C&G + AT)



**Partnership Projects**

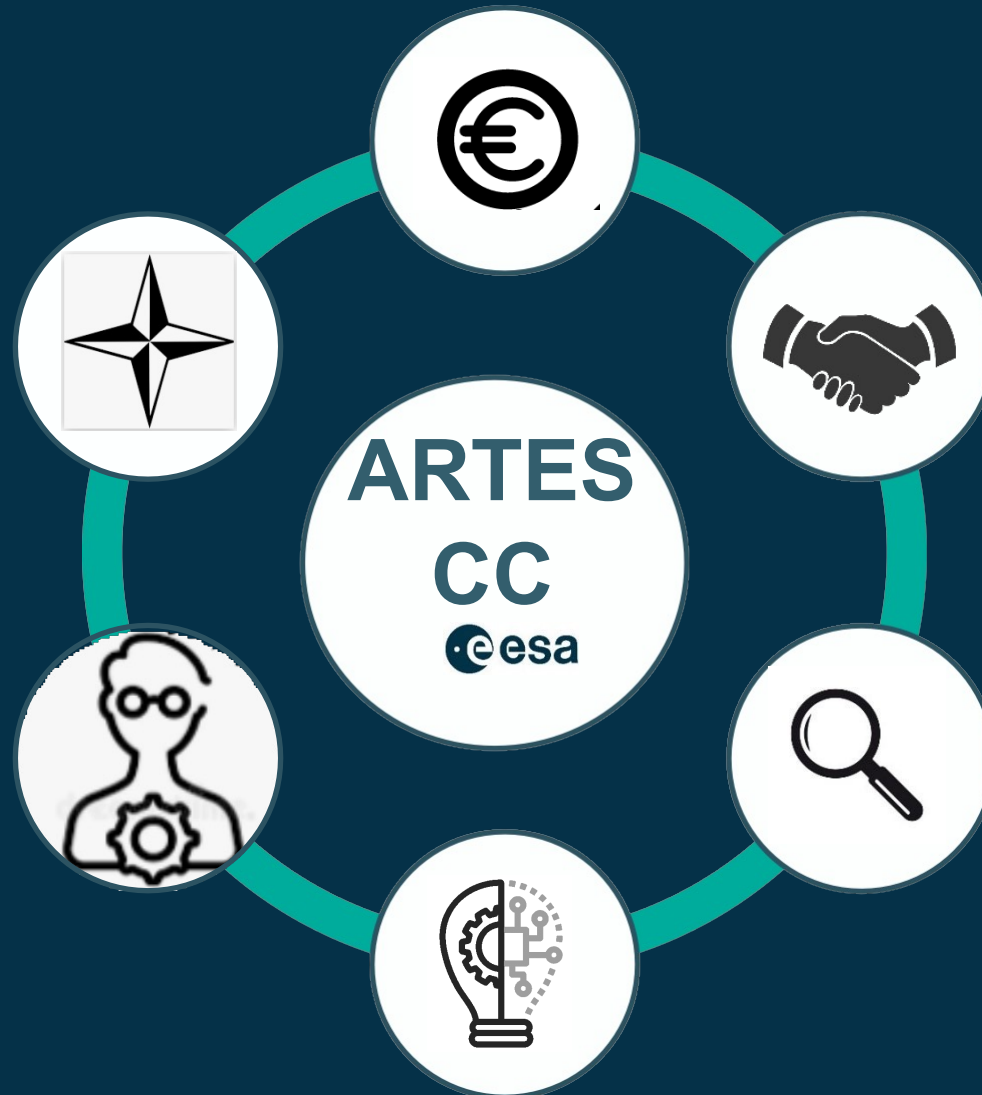


# ARTES 4.0 Core Competitiveness



Makes **funding** available

**Guides you**  
to the most  
suitable  
programmatic tool



Facilitates **synergies**  
**and cooperation**  
among Industry

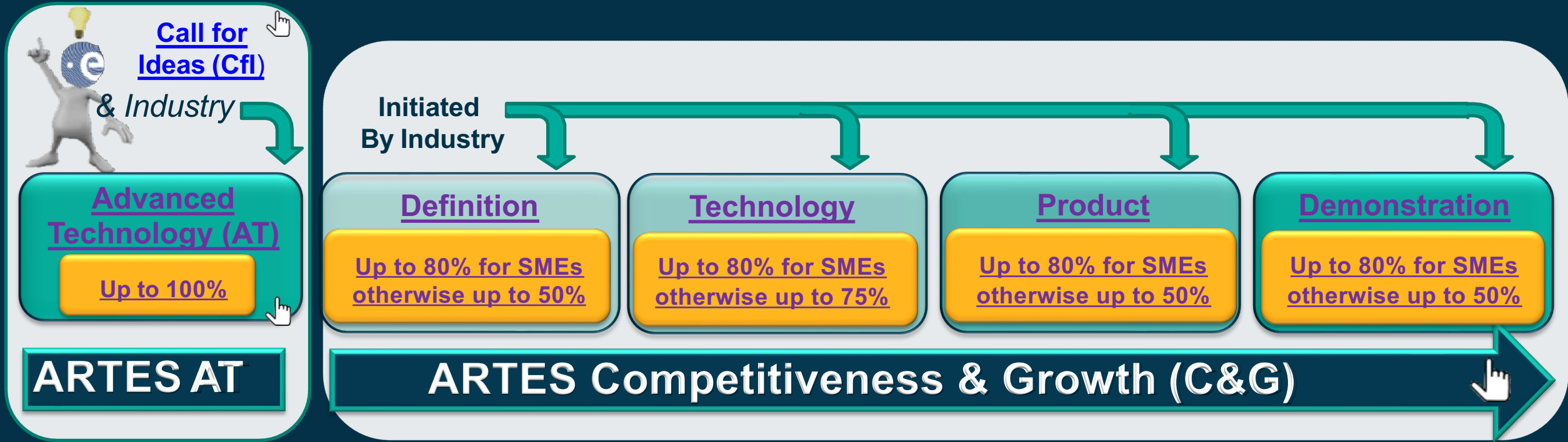
**Independent**  
assessment and  
technical **expertise**

**Full transparency,**  
**confidentiality and**  
**fairness**

**Think tank for ideas and opportunities**



# ARTES Core Competitiveness Element



Open Competition



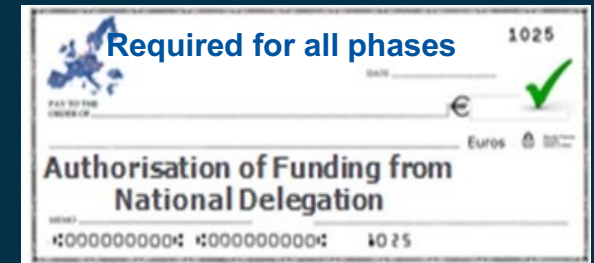
**Technology Push**

Direct



Negotiation





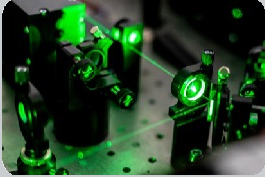
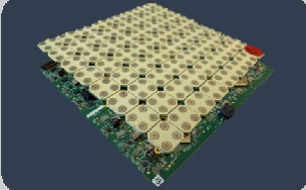


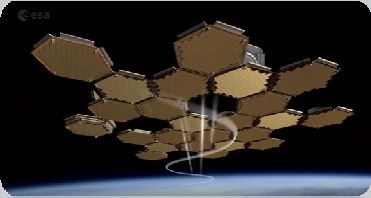


**Market Pull**



# ADVANCED TECHNOLOGY



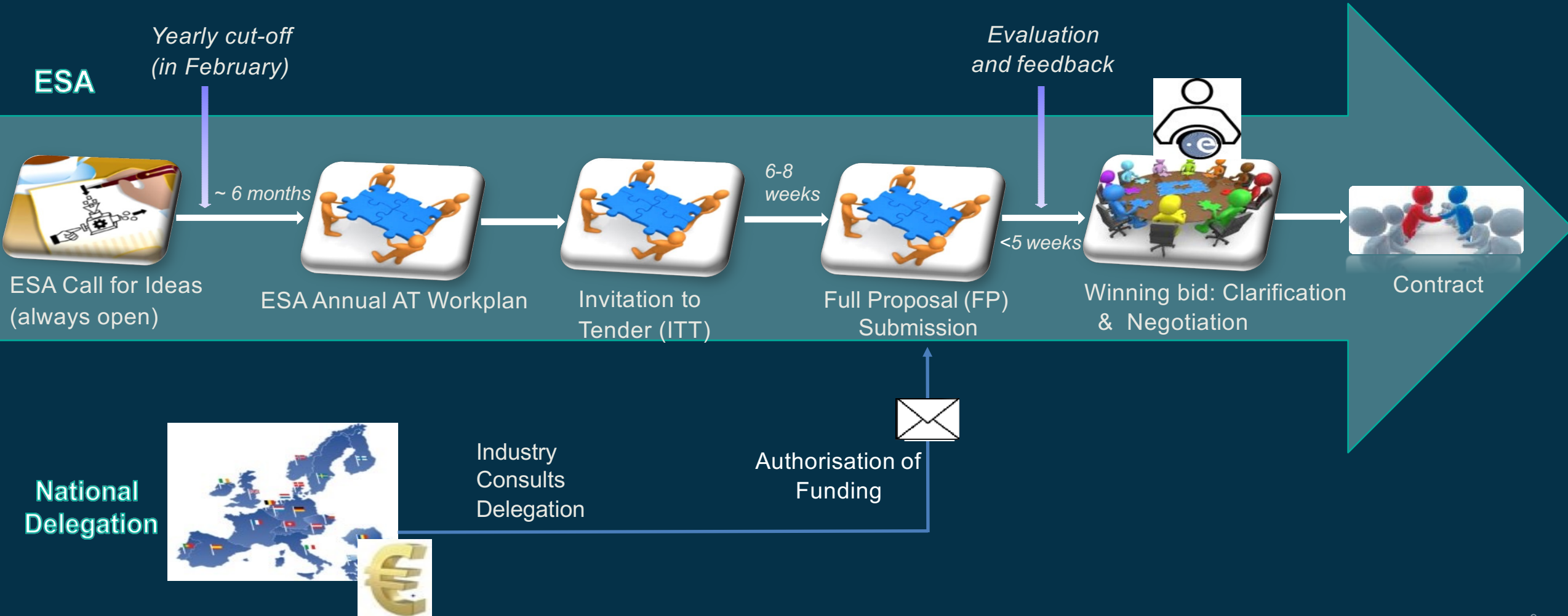
# ARTES Core Competitiveness Technology Pillars

Wavelength Agnostic Communication	Digital and Secure Processing, Cloud & AI	Optical and Quantum Communication	Smart Antennas	Disruptive Satellite Platforms and Sub-System	Smart design and sustainable manufacturing
	 <p>HPC at ECMWF</p>  <p>MDM5000 Satellite Modem</p>	 	 	 	 
<p>Multifrequency communication techniques from VHS to mm-wave; Devices, Equipments and Systems from mW to kW power range.</p>	<p>Efficient and scalable digital signal processing enabling (Secure) Software Defined Systems; Virtualization; HPC and orchestration hardware and techniques.</p>	<p>Optical and quantum devices, systems, techniques and equipment for “Fibre in the Sky”, optical payloads and towards Quantum Internet.</p>	<p>Multifrequency, multi-beam antennas ready for volume production. Large lightweight, stowable reflectors.</p>	<p>Stackable, orbit specific, demisable satellite platforms and sub-systems ready for volume production and batch launch.</p>	<p>Digital twins; AR supported design; Advanced Materials; Green and sustainable volume production techniques.</p>



# ARTES Advanced Technology – ARTES AT

Up to 100% funded, open competition



Work Plans and Activity Status: <https://connectivity.esa.int/advanced-technology>

The screenshot shows the website header with the CSC logo and 'Connectivity & Secure Communications' text. A search bar is visible in the top right. The main content area features a satellite image of Earth at night with a teal box containing the text 'CORE COMPETITIVENESS'. Below this, a paragraph describes the program's goal. At the bottom, two links are listed, with the first link circled in teal.

**CSC** | Connectivity & Secure Communications

## CORE COMPETITIVENESS

ESA's ARTES Core Competitiveness programme helps European and Canadian industry to develop innovative satcom products, services, systems and partnerships.

[Home](#) » [Advanced Technology](#)

ARTES Advanced Technology is dedicated to long term technological development of the satcom industry based on ESA's initiative. This element focuses on research and development of new technologies and techniques in telecom satellites, ground and user equipment for future or evolving satcom systems.

[Download the ARTES AT Workplans for Current and Previous Years](#)

[Download the ARTES 4.0 Planned Activities Summary Table](#)



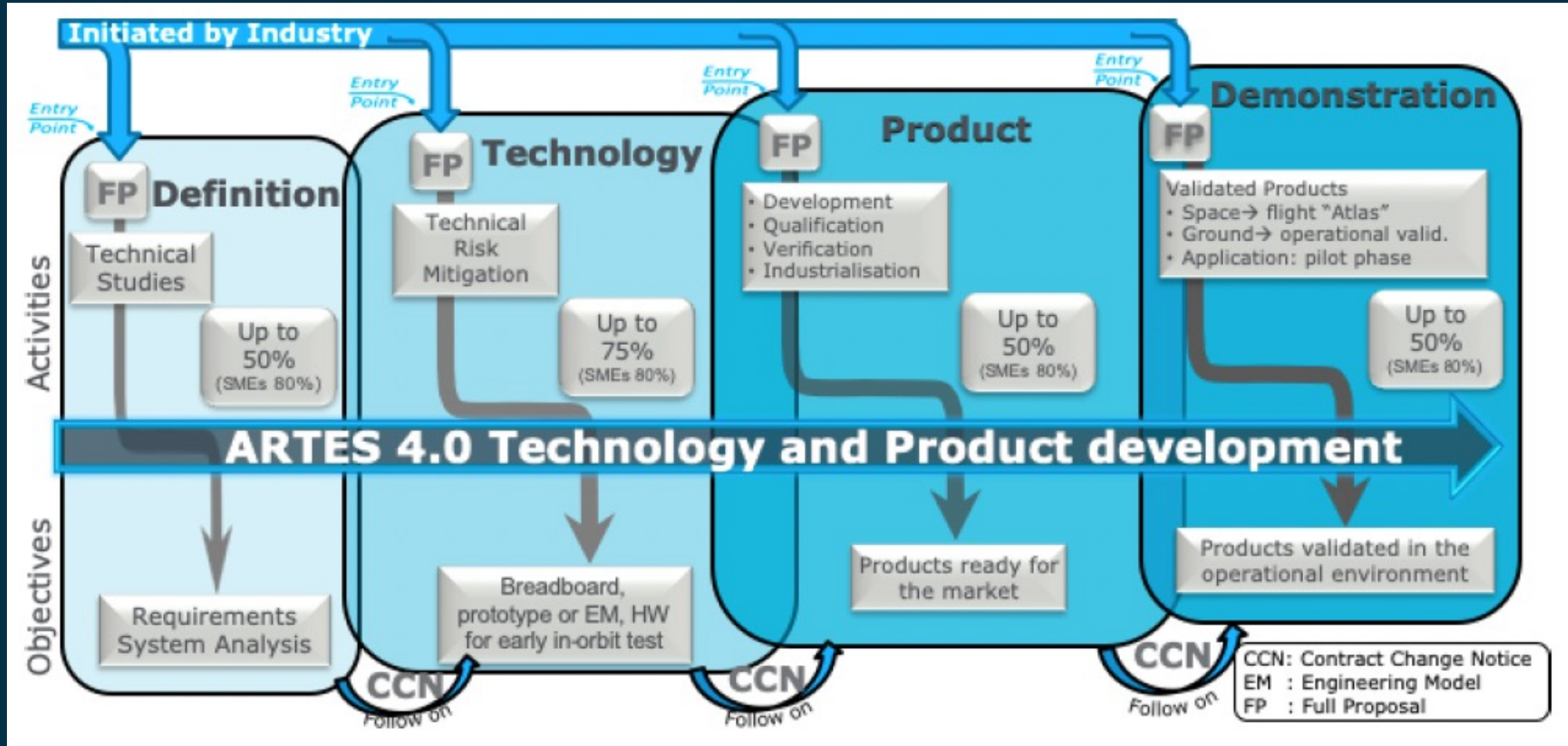
# COMPETITIVENESS AND GROWTH

Industry-initiated

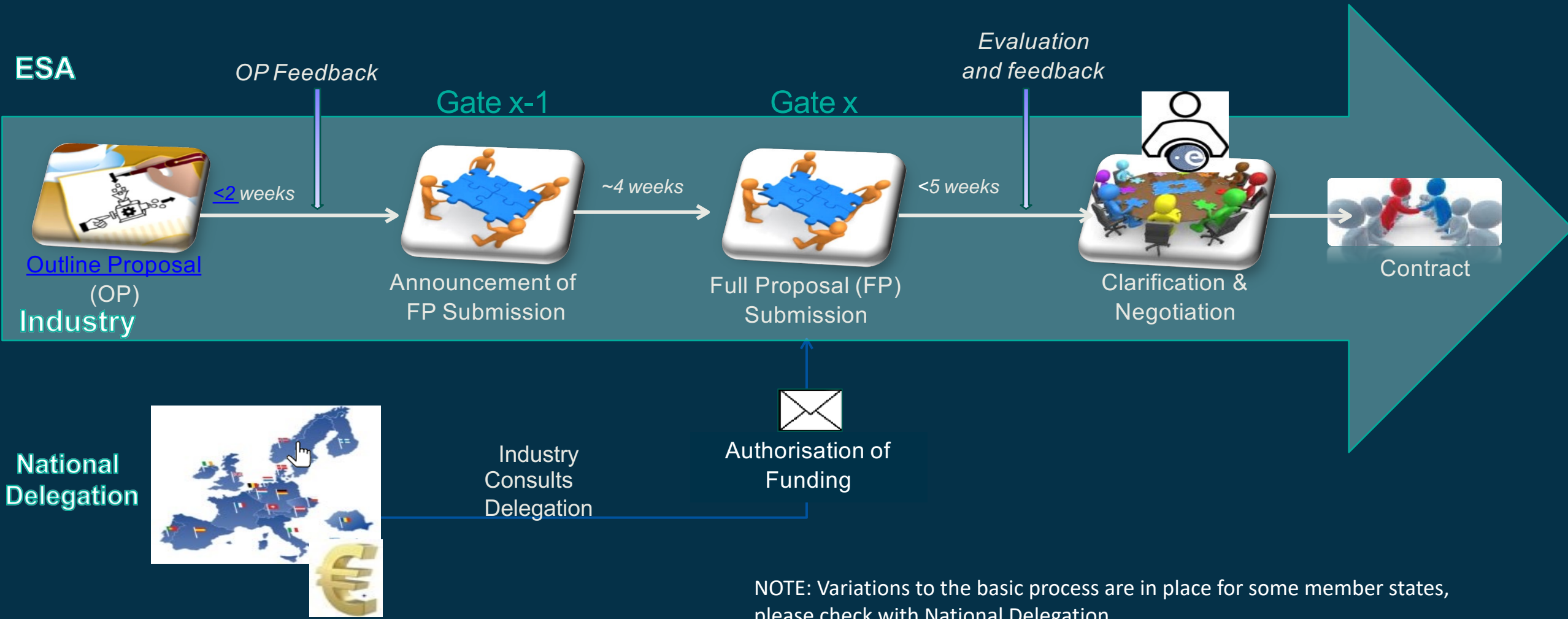
Industry-initiated  
ESA-Initiated

# ARTES 4.0 Competitiveness & Growth: Development Phases

Initiated by Industry (Outline Proposal, Full Proposal)



# ARTES 4.0 Competitiveness & Growth Process



NOTE: Variations to the basic process are in place for some member states, please check with National Delegation

# Funding Levels in ARTES C&G - Industry

C&G <i>Development Phase</i>	<i>Main goal(s)</i>	Funding level <i>up to</i>	
		<i>Non-SME</i>	<i>SME</i>
<b>Definition Phase</b>	Establish user requirements / spec. and define baseline	50%	80%
<b>Technology Phase</b>	De-risking; tested BB or EM; early in-orbit test	75%	80%
<b>Product Phase</b>	Qualification / industrialisation; (E)QM	50%	80%
<b>Demonstration Phase</b>	Validate the product in its operational environment; PFM	50%	80%

# Funding Levels in ARTES C&G - Institutions

	Maximum Funding Level for Universities or Research Institutes		
ARTES C&G Development Phase	With commercial interest in the product (Non-SME status)	With commercial interest in the product (SME status)	No commercial interest in the product (up to 30% of the total contract cost)
Definition Phase	50%	80%	50%
Technology Phase	75%	80%	100%
Product Phase	50%	80%	50%
Demonstration Phase	50%	80%	50%

**ARTES AGILE** supports development activities within the ARTES 4.0 Call for Proposals covering Technologies and Products in C&G, ScyLight, 4S and 5G using the same implementation rules as for C&G:

## Intention:

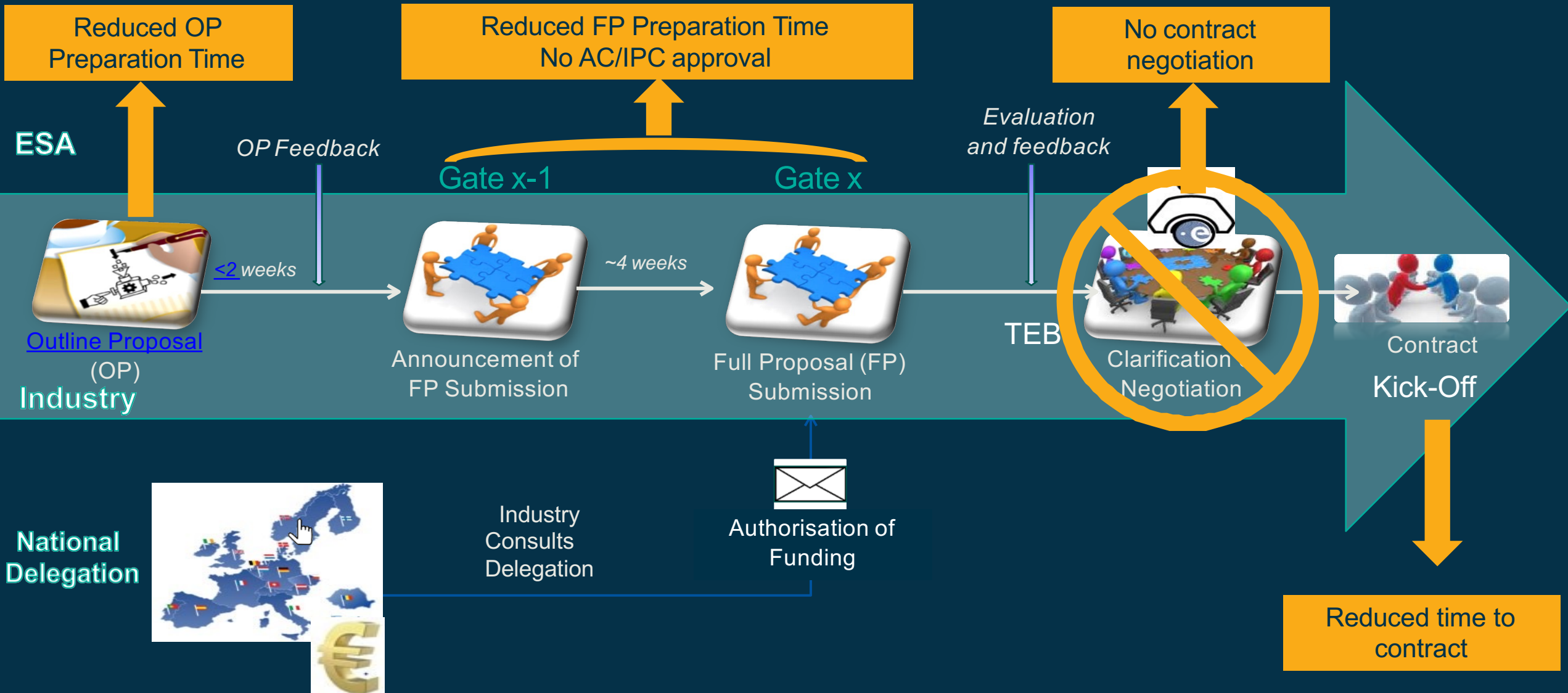
- Facilitate **short duration** technical de-risking activities critical to the definition and development of future products and services for the satcom sector
- Foster Innovation and support **opportunistic developments** with limited risks for stakeholders
- Allow **New Space approaches** (e.g. iterative design, spiral development, agile and lean)
- Outreach: **Newcomers** (easily gain experience of working with ESA) and SME focus
- **Faster** implementation
- **Simplified** ESA templates and limited proposal effort

## Scope:

- Address **high technology risk developments to confirm the viability of a product development plan**
- **Typically 12 months duration**
- **ESA Firm Fixed Price < €250,000.**



# ARTES AGILE Streamlined Approach



# ARTES 4.0 C&G Demonstration Phase in Space: Atlas

- **Atlas** is about demonstrating performance of “flight hardware” in space within the ARTES 4.0 C&G Demonstration Phase
- **Atlas** supports any flight hardware related to **telecommunications satellites** and **telecoms products** (platform or payload)
- **Atlas** helps the product gain the critical **flight heritage**
- **Atlas** Hardware can be:
  - On any **type of mission** including other ARTES missions
  - On a flight opportunity from anywhere in the **World**
  - Within main mission (**Embedded**) or alongside the main mission as hosted technology (**Independent Hosted**) or as a dedicated mission (**Independent Standalone**)

**Atlas is a flexible tool to gain flight heritage**

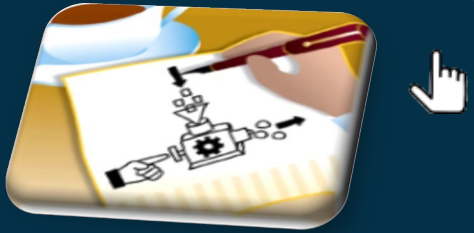


# Atlas Support

ESA provides:

- Access to ESA resources and support
- Co-funding for the flight hardware:

	Embedded (Item part of commercial mission)	Independent (Hosted or Standalone)
Accommodation study	Supported	Supported
Flight hardware design, development, manufacturing and test		
Satellite level accommodation		
Portion of satellite platform & launch cost	Not eligible	
Launch campaign specific to flight item		
IOT and early operations specific to flight item		



## Outline Proposal (OP)

Overview  
company, planning, cost,  
deliverables

Product Definition,  
Development and  
Verification

Business Plan

*ESA evaluates OP  
and potentially  
invites Industry  
to submit FP*



Call for Proposal on ESAStar

## Full Proposal (FP)

Modular Structure

4 Management

1 Cover Letter

5\* Implementation

2 Business Plan

6\* Financial

3 Technical

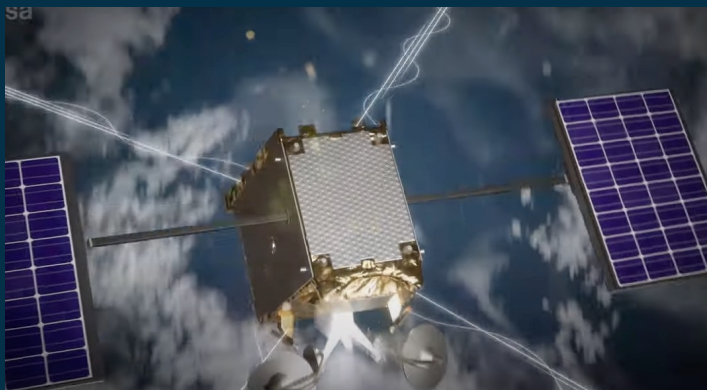
7 Contractual

*Outline Proposal allows ESA to assess  
eligibility, feasibility and validity of the activity*

\* Update required for subsequent Phases

# ARTES CC – A Success Story

## [ARTES 4.0 Video](#)



[https://www.youtube.com/watch?v=nGhL0t\\_RZeo](https://www.youtube.com/watch?v=nGhL0t_RZeo)

## [ARTES 4.0 Interactive Presentation](#)



<https://indd.adobe.com/view/8d47d0ba-389c-4ba8-825c-db0b0bf7569b>

# Your success is our success!

# ARTES 4.0 Core Competitiveness

## *Information and contact*

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Visit us at <https://connectivity.esa.int/core-competitiveness>

How to apply to ARTES CC: <https://connectivity.esa.int/how-apply>

Outline Proposals for ARTES 4.0 C&G and  
Announcements of Activity are to be sent to:

[artes-cg@esa.int](mailto:artes-cg@esa.int)

ARTES 4.0 Advanced Technology  
Expression of Interest are to be sent to:

[artes-at@esa.int](mailto:artes-at@esa.int)

