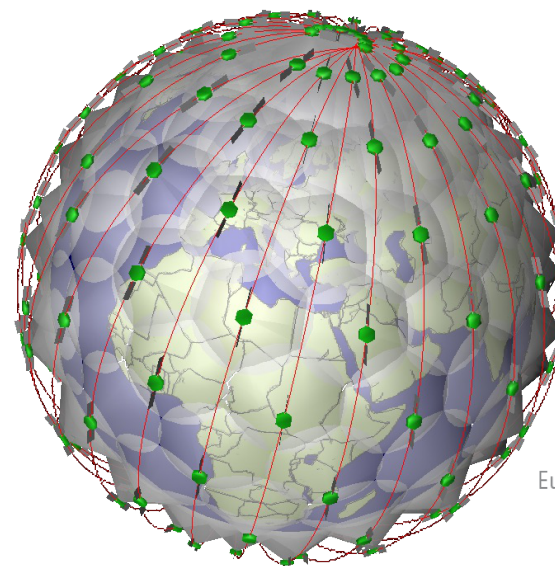


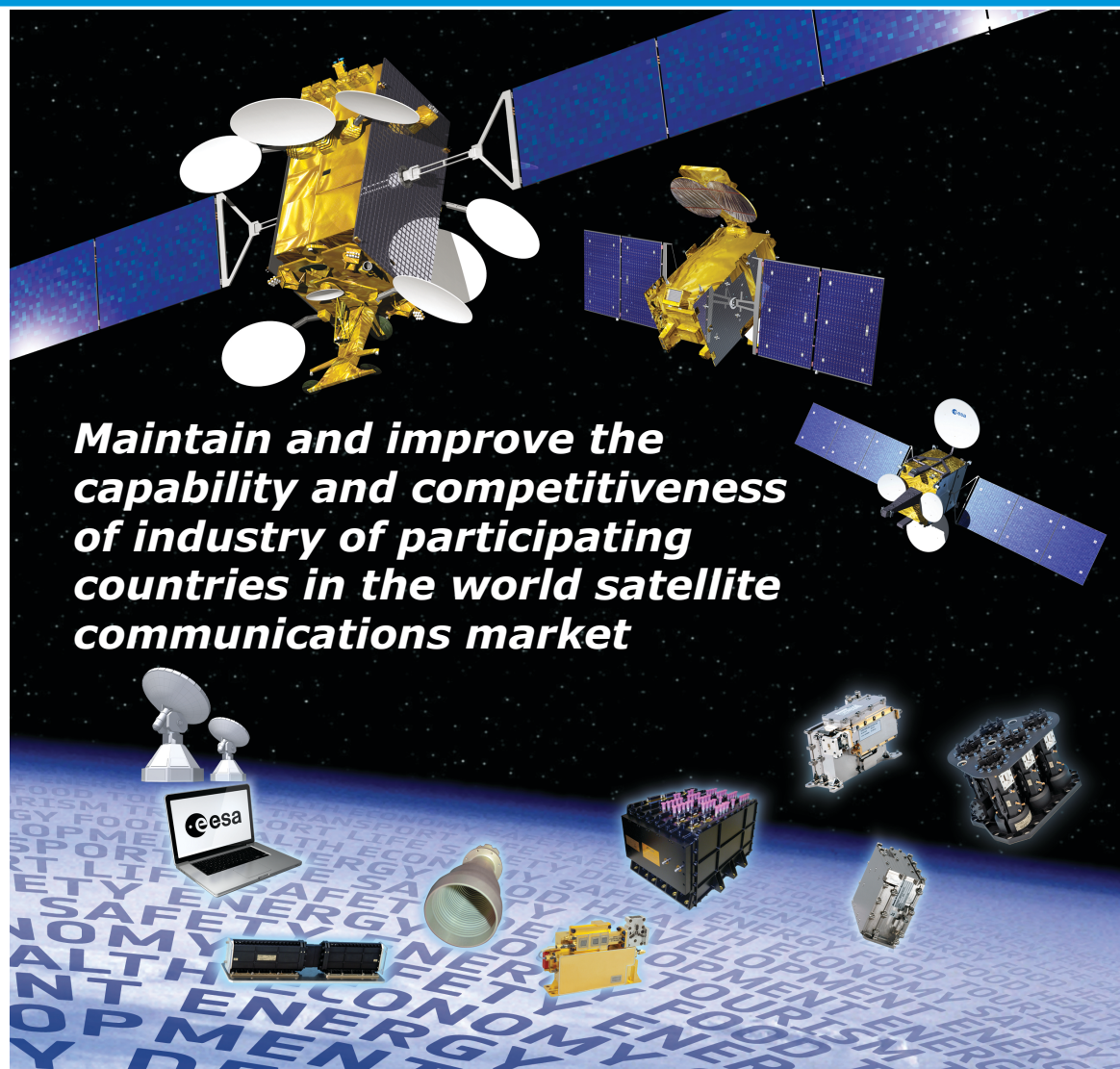
**Portugal National Space Info Day**

# **The ARTES Technologies and Products programme and the Megaconstellations opportunity**

Pavilhão do Conhecimento,  
Alameda dos Oceanos, Lisboa, Portugal  
October 28<sup>th</sup>, 2015

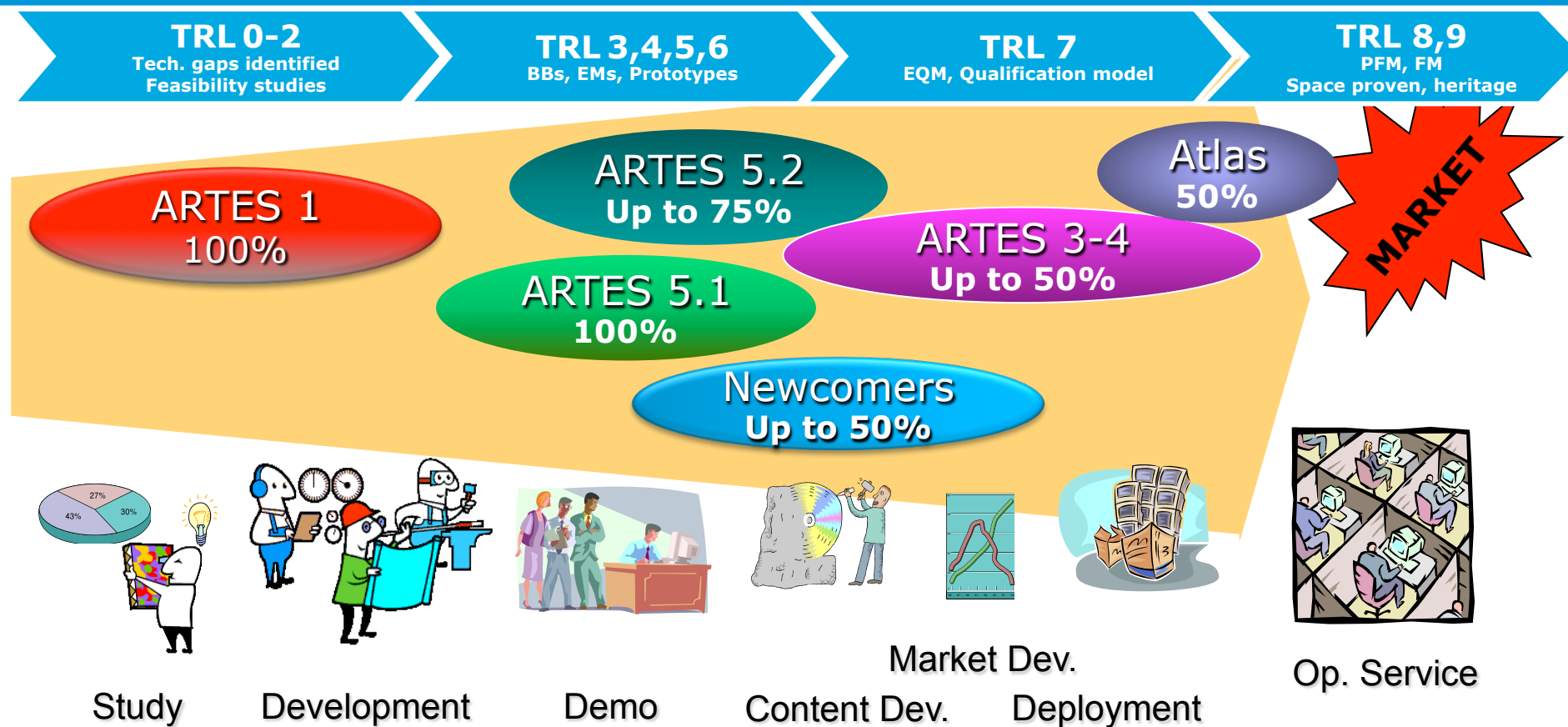


# ARTES 3-4 and 5 Mission



***Maintain and improve the capability and competitiveness of industry of participating countries in the world satellite communications market***

# ARTES 1, 5.1, 5.2 and 3-4 Programme Element Funding and deliverables: an Overview



## Deliverables: Hardware & Software



# ARTES 5.2 and 3-4 elements: (industry-initiated activities - Direct negotiation)



## Industry Objective

	Programme Element	Funding Level	Call for Proposals on EMITS	Announcement of activity	Outline/Draft Proposal (OP/DP)	Full Proposal (FP)	Prior Work allowed
Mitigate <u>Technology</u> risks for a potential product	ARTES 5.2	75%	AO 6000	No	OP	Yes	No
Develop a <u>Product</u> ready for the market	ARTES 3-4	50%	AO 5891	No	OP	Yes	Yes (10% of costs)
Conduct a <u>Study</u> for a future <u>Product</u>	ARTES 3-4 Study	50% (up to 250K€)	AO 5891	No	OP is Optional	Yes	No
Develop a <u>Product</u> when you are new to ESA and an SME	ARTES 3-4 Newcomers' Initiative	50% (up to 200K€)	AO 1-5658	No	OP (simplified)	Yes	No
Develop a <u>Product</u> for Megaconstellations (MC)	ARTES 3-4 Fast Track	50%	MC AO 5891	Yes	OP	Yes	Yes (20% of costs)
Business plan confirmed by a customer	ARTES 3-4 Fast Track++	50%	MC AO 8468	Yes	DP (= FP without PSS forms)	Yes	Yes (20% of costs)

# ARTES 5.1 element: (ESA-initiated activities – open competition)



Develop advanced <u>technologies</u> and techniques identified by ESA	Programme Element	Funding Level	Invitations to Tender on EMITS	Notification to ESA	Outline Proposal	Full Proposal	Prior Work allowed
	ARTES 5.1	Up to 100%	Annual Workplan, activities (ITTs) on EMITS	No	No	Full Proposal in response to ITT	No

=> The Annual Workplan is based on a perpetually open Call for Ideas

# The Megaconstellations sector



- **OneWeb:**
  - 648 LEO smallsats to deliver 3G/4G & WiFi.
  - ADS partner to design & deliver satellites
- **LEOSAT:**
  - 78 to 108 smallsats to deliver LEO-HTS services.
  - TAS selected as prime for system design, development, production & integration.
- **SSII:**
  - 300 satellites constellation in LEO announced.
  - OHB selected for the design of the system.
- **Others:** SpaceX, Samsung, etc.

**Opportunities maturing, others emerging, a sector developing**

# Industrial opportunity



- **European primes are involved in the design & delivery of system and space segments**
- **Selection of suppliers starting as soon as Q4-2015 and to finish as soon as Q2-2016:**
  - Worldwide suppliers selection process
  - Production Disruptive requirements: Cost, Volume, Rates
  - New technologies & production processes needed
  - Urgent opportunity of the European & Canadian Suppliers
- **Further applications of the industrial capabilities expected beyond the initial wave of Megaconstellations to other Applications**

**ARTES work plan supporting both  
present AND future Industrial Needs**

# Workplan: Mid-long term

## Identify the next generation of solutions



### Mid Term

- **Identification and validation of the next generation of technologies:**
  - ESA support of development of future technologies and risk-mitigation developments through the use of the existing **ARTES 5.2** programme sub-element

### Long term

- **Strategic positioning of the European/Canadian Satcom Industry:**
  - Industrial contract with industry, 400 kEuros value, 100% funded.
  - Open ITT on ARTES 1, no support letter.

# Workplan: Short-term ARTES 3-4 for Megaconstellations activities



## Scope of the ARTES 3-4 for Megaconstellations:

- Currently covers Space Products (platform and payload) and associated tools
- in case you wish to develop products for ground segment or applications please contact ESA
- ARTES 3-4 Call For proposal for Megaconstellations will be open initially from Nov. 2015 until 31st July 2016
- Support equipment or sub-system development activities for which the supplier:
  - has been **selected by an industrial prime (Fast Track++)**
  - Or
  - can **demonstrate a business opportunity** linked with Megaconstellations (**Fast Track**)
- Support developments performed at system or subsystem level by an industrial **prime involved in a Megaconstellations (Fast Track++)**

# ARTES 3-4 Fast Track for Megaconstellations Eligible Space Products



- **Antennas**
  - > onboard user, gateway, and steerable multi user antennas
- **Repeater Units**
  - > Ka & Ku band RF high power amplifier, Ka & Ku band LNA's, frequency generation and distribution, frequency converters, passive RF filters, transparent digital signal and regenerative digital signal processors, ISL terminal, switches and switch networks, RF harness, integrated front end equipment, DC power subsystems, modulators/demodulators, RF test and calibration systems
- **Satellite Platform**
  - > On board computer and satellite management system, solar arrays and cells, power conversion, batteries, Mechanisms (SADM, antenna deployment, pointing), structure, propulsion, TT&C equipment, sensors, actuators
- **Mechanical & Electrical Ground Support Equipment**
  - > xGSE's adapted to the production of large number of units
- **NOTA:** for other relevant space segment or Ground Segment activities, interested companies are invited to contact ESA. The Standard ARTES 3-4 Call for proposal is applicable and always open for for all products and applications.

# ARTES 3-4 Fast Track for Megaconstellations: Measures to improve time to contract



- **ESA allows more time for National Delegations to authorize funding:**
  - Early notification from ESA as soon as industry has submitted a notification form.
  - Timely issuing their confirmation:
    - support in principle at the time of Proposal submission
    - letter of Authorization of Funding issued at the latest 2 weeks after the Full Proposal submission
- **ESA internal process: Member States (IPC) have approved the procurement of activities up to an envelop of 75 Mio Euro which can be initiated without additional IPC authorisation.**

**Note: Funding of an activity remains subject to National Delegation authorisation**

# Demonstration of business plan for Fast Track



Outline Proposal	Full Proposal
Confirmation that Tenderer has received technical and commercial requirements from potential Customer(s)  Detailed Description of the Business plan	Business plan is demonstrated (e.g. letter of interest from customer)

# Demonstration of business plan for Fast Track++



Company/ Tenderer role	Draft Proposal (no PSS forms)	Full Proposal
<b>Prime</b>	Tenderer has received technical and commercial requirements from internal Customer	Evidence that the business case is confirmed (e.g. letter of confirmation that the supplier/product has been selected, copy of contract)
<b>Supplier to prime</b>	Tenderer has received technical and commercial requirements from Prime/Customer(s)	Evidence that the business case is confirmed (e.g. letter of confirmation that supplier/product has been selected, copy of contract)
<b>Provider to a Supplier</b>	Tenderer has received technical and commercial requirements from selected Supplier	Evidence that the business case is confirmed for both the Supplier (customer) and the Provider (e.g. letters of confirmation from customers, copy of contract)

# Contact points



**If you want to participate,**

**Go to:** <http://artes.esa.int>

**Or Contact us:**

**Announcement of Opportunity,  
ARTES 3-4 CfP for Megaconstellations,  
ARTES 3-4, ARTES 5.2**

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**ARTES 1:**  
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