NEOSAT / ARTES 14

The next generation of geostationary telecommunication platform

13/11/2012
Rationale for NEOSAT

• Satellite systems represent 50% sales for ESA member states industry (3.1 B€).

• Telecommunications satellites correspond to 66%.

• More than 80% of the satcom market on the 3 to 6 Tons segment.

• European Industry enjoyed a strong position in the global accessible 3-6 Tons market thanks to R&D efforts on E3000 and SB4000 product lines.

• Strong competition anticipated during the next 20 years, with more aggressive non-European competitors (US, China, India, etc.)
Rationale for NEOSAT

- Need to develop a new product available by the end of the decade, targeting a 30% competitiveness improvement

- Joint initiative from Astrium and Thales Alenia Space to develop maximum common building blocks based on an agreed single set of requirements at European level

- In the expected lifetime and market share this can represent ~ 150 satellites

- Strong interdependence between European technology, equipment suppliers and primes (80% of parts of the European platforms procured from ESA member states)
The 3 to 6 Tons satellite launch-mass market segment is essential
Actors on the market

- A number of actors are active on the market.
- Newcomers are emerging
Market share

The ARTES participating states industry has gained in competitiveness

1980-1989: 19%
2000-2005: 29%
2006-2011: 35%
Preparing the future

Need to prepare the future to maintain and develop competitiveness of the industry

**But**

Two independent product families: E3000, SB 4000
Maturing products that will lose efficiency by 2020

**Need to**

Develop new product families
Disruptive technologies

**Objective**

Satellite competitiveness improvement (30% cost reduction)
Commercially available on the market by 2018

**Through**

Common requirements / specifications on functional chains and equipment to maximise opportunities for RoI of suppliers (e.g. one set of interface for wheels)
The need for an ESA initiative

Need to efficiently join efforts from technology and equipment suppliers, up to prime integrators, for an optimised definition of building blocks and requirements:

- Combination of top-down and bottom-up efforts
- Concurrent assessment of design choices at system level
- Guaranteed acceptability from customer thanks to joint prime-supplier efforts and in orbit validation
The need for an ESA initiative

Need to guarantee:

- A consistent approach at technical, programmatic and budgetary levels
- A consolidated approach at pluri-annual level
- Committed and protected investments over time for primes and for technology & equipment suppliers
- Definition and implementation of specific procurement rules, under the monitoring of ESA, in particular with respect to the European equipment suppliers

A dedicated program element in ARTES dedicated to the Next Generation Platform
Benefits of a dedicated ARTES element

- It provides in-flight heritage and on-orbit demonstration, essential to commercialise a new platform product.

- It allows building up a stable core industrial structure in charge of the production and the commercialisation of the platform.

- Developments are adjusted depending on the maturity level of technology.
Objectives of the new ARTES element

To develop and qualify a platform product allowing satellite primes to deliver competitive 3 to 6 tons satellites on the commercial market...

...by means of development, qualification and in orbit validation of equipment, building blocks, platform and (eventually) satellite...

...with a protoflight model (PFM) delivery in orbit by 2018.
Consistency with other product lines

1990 - 2020

- > 6 tons market
- 3-6 tons market
- < 3 tons market

R&D

- E2000+ & SB3000 on the market
- Stentor pgm
- NGP Products on the market

Alphasat product on the market

1st E3000 & SB4000 Commercial contracts

Stentor launch

E3000 & SB4000 products on the market

R&D

- Alphasat launch
- PFM

Stentor launch

Small GEO

E3000 & SB4000 products on the market

1st E3000 & SB4000 Commercial contracts

Stentor pgm

Alphasat launch

NGP Products on the market

PFM

European Space Agency

ESA UNCLASSIFIED – For Official Use
### Preparatory activities

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<th>TOP-DOWN</th>
<th>BOTTOM-UP</th>
<th>COMBINED</th>
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<td><strong>French PIA:</strong></td>
<td><strong>ARTES 1:</strong></td>
<td><strong>GSP:</strong></td>
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<td>Initial top-down design (system architecture and platform), Initial assessment of breakthrough and innovative techno, Definition of the platform functions and subsystems, including Definition of common procurement and product requirements</td>
<td>Technology identification and analysis</td>
<td>Concurrent engineering (support to technology/equipment suppliers)</td>
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<td><strong>ARTES 5.1:</strong></td>
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<td>Technology prototyping and assessment activities</td>
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▶ A set of activities aimed at assessing and maturing disruptive technologies and breakthrough innovation as a combination of top-down and bottom-up efforts
Main content of an ESA ARTES element on a Next Generation Platform (NEOSAT)

- **On ground development and validation**
  - **Technology, equipment and sub-systems development and qualification**
    - System engineering consolidation
    - Equipment predevelopments
    - Development & qualification of equipment and building blocks
    - Preparation of validation mission
  - **Product line qualification and PFM equipment manufacturing**
    - Product line qualification
    - Manufacturing of the platform PFM equipment

- **PFM delivery and In-orbit validation mission**
  - System engineering
  - Mission definition and detailed design
  - Payload, ground segment and mission implementation
  - Satellite design, manufacturing, integration and validation
  - Launch, LEOP, ...
  - Commercial and/or experimental services
Summary schedule

1. Sub Element I of ARTES 14:
   - Pre-developments: 2013 - 2015
   - Complementary technology developments: 2013 - 2018
   - Platform definition (Phase B): 2013 - 2014
   - Platform development (C/D): 2014 - 2017
   - Phase 0/A Mission Definition: 2014

2. Sub Element II of ARTES 14:
   - Payload development: 2016 – 2017
   - Satellite integration: 2017 – 2018
   - Launch: 2018
   - Early Operations: 2018 - 2020
The stake for the ARTES participating states

- Capture 50% of the market in the 2018 – 2030 period

- Generate 25 B€ of satellite sales

- 7 B€ of revenues for platform equipment suppliers in the same period.

- A unique opportunity for the European equipment suppliers: Today 80% of the European satellite platform equipment are procured from ESA member states Industries
Thank you for your attention.