



Sixth Meeting of CNS/MET Sub-Group of APANPIRG

Bangkok, Thailand, 15 – 19 July 2002

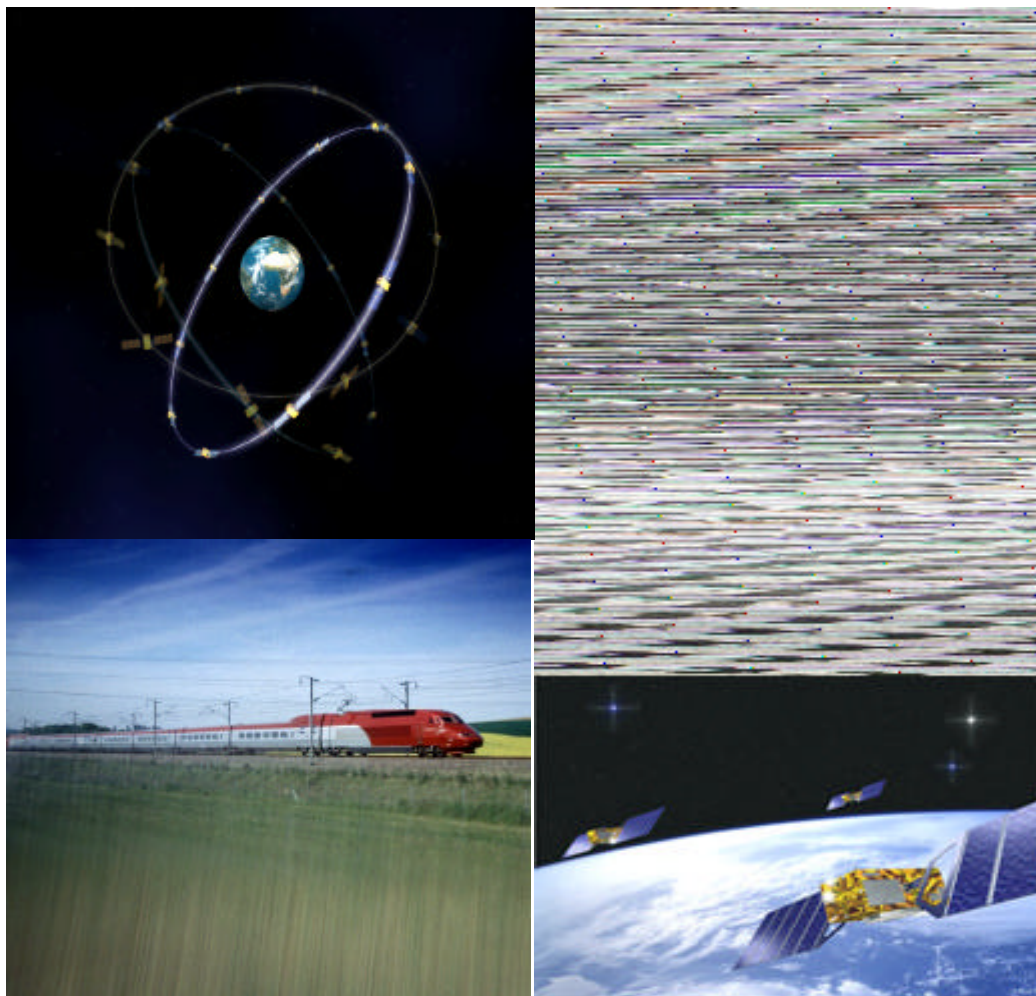
Agenda Item 6:

Review:

- a) **Strategy for the provision of Precision Approach and Landing Guidance Systems**
- b) **GNSS strategy**
- c) **GNSS implementation**
- d) **GPS measurement campaign**

ORGANIZATIONAL AND TECHNICAL VIEWS OF GALILEO

(Presented by Galileo)



GALILEO Status

GNSS 2002 Abstract

Bangkok, 17 July 2002

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The development phase has been launched

On 26 March, the Transport Council agreed on the Regulation governing the statutes of the GALILEO Joint Undertaking...



- JU Entity founded by EC and ESA in charge of Development phase
- Private sector participation possible at a later stage

...and on 21st of May 2002, the EC Council has adopted the regulation setting up the JU



- Published in the Official Journal of EC
- Priority action : Public Procurement Plan



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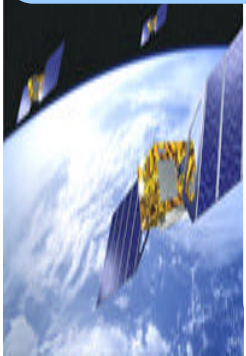
The development phase budget

On 26 March, the Transport Council agreed on the final Galileo budget for development phase



- Full funding of the 1100M€ development phase
- Includes the 100M€ already released by EC and the 550M€ ESA contribution
- Joint Undertaking as beneficiary

...and on the release of the remaining EC contribution



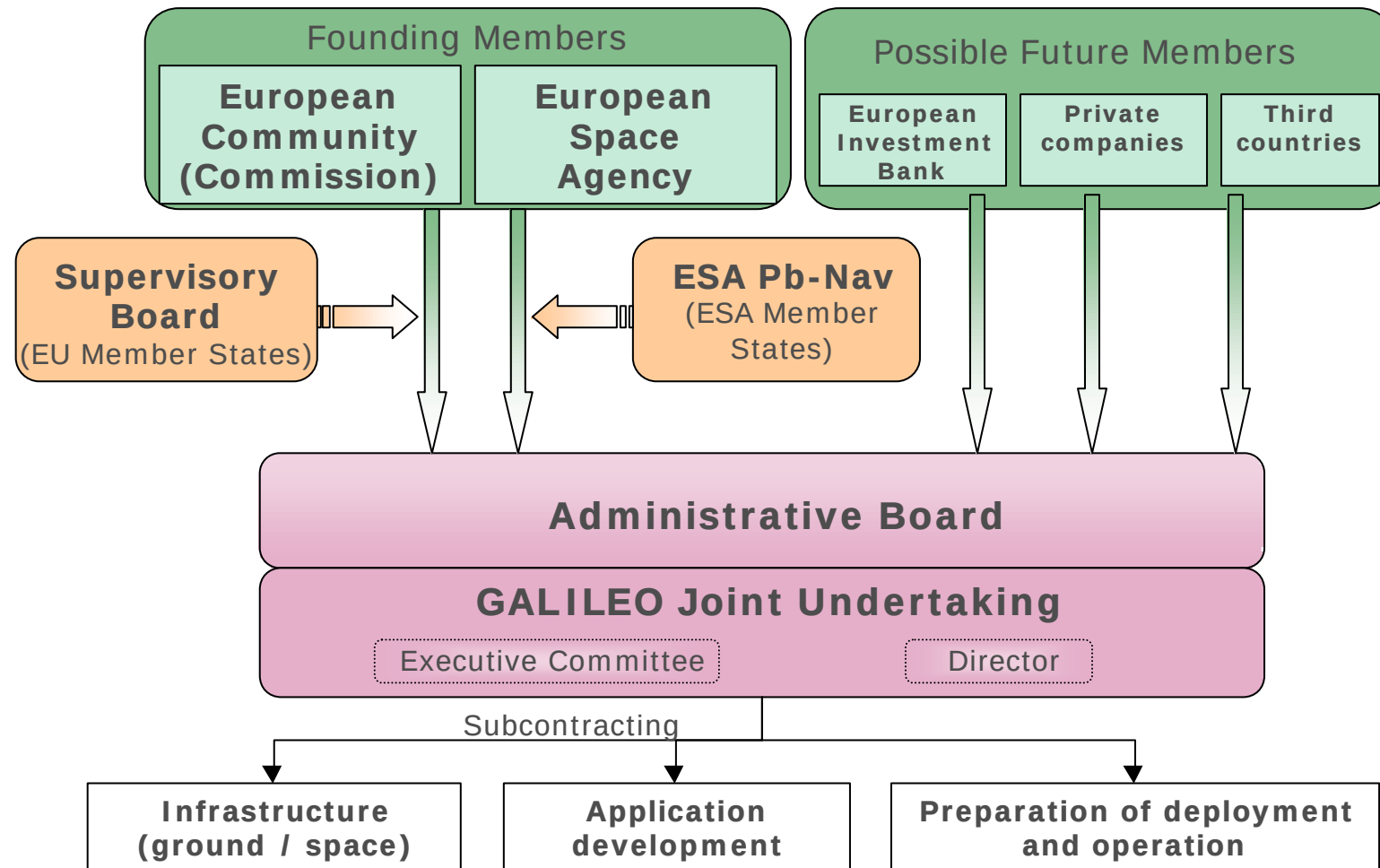
- 450M€ as Trans-European Network project



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Joint Undertaking: How it works



Mission & Development

Consolidation of the Mission definition

- New version of the HLD (Mission High Level Definition document) and consolidated frequency plan scheduled for Mid 2002.
- Formal consultations with relevant user communities and Member States.

Space and ground segments development

- ESA will carry out the actual development and validation of the space and ground segments, including the launch of the first test satellite.
- The GALILEO Joint Undertaking will supervise all activities in this phase to ensure their coherence and to avoid duplications of work.



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Market & Services

Foster application and service development

- Projected European market potential for GNSS: € 10 billion/year
- JU to ensure that needs of future users and market requirements are taken into account
- User oriented approach: Setting up of user fora, addressing all segments of industry (potential users, service providers, equipment and receiver manufacturers,...)

Responsibility for creating the markets lies with industry



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The steps ahead

Deployment & operations

- The JU will launch one or more calls for tenders to allow for the Council to select the private entity that will manage the deployment and the operation phase
- The JU will elaborate proposals on the future legal structure (concession).

Prepare WRC 2003

- Build on existing world-wide support for GNSS spectrum allocation.
- Consolidate frequency allocation obtained at WRC 2000.
- Confirm fairness of GALILEO's access to spectrum compared with other systems.



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International co-operation

- The GALILEO programme is open to international co-operation
- European rules on public procurement will apply (except for certain security-sensitive technologies)
- On-going negotiations with the United States and Russia on interoperability issues are of paramount importance
- Need to establish education/demonstration centres beyond Europe to prepare a world-wide market



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GALILEO

Development and Validation Project status overview



Bangkok July 17 2002



GALILEO Program features

- **Civilian market driven, commercial oriented**
- **Global Positioning, Timing and Search-and Rescue services**
- **Built-in Global System Integrity (SISA + IF)**
- **New Spectrum, Signal mapping to Services**
 - ✓ **Open (2 carriers)**
 - ✓ **Commercial (3 carriers, commercial encryption)**
 - ✓ **Safety of life (with integrity)**
 - ✓ **Public regulated (high robustness, with government encryption)**
- **Interoperability with GPS**
- **Operational by 2008**



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Design consolidation phases

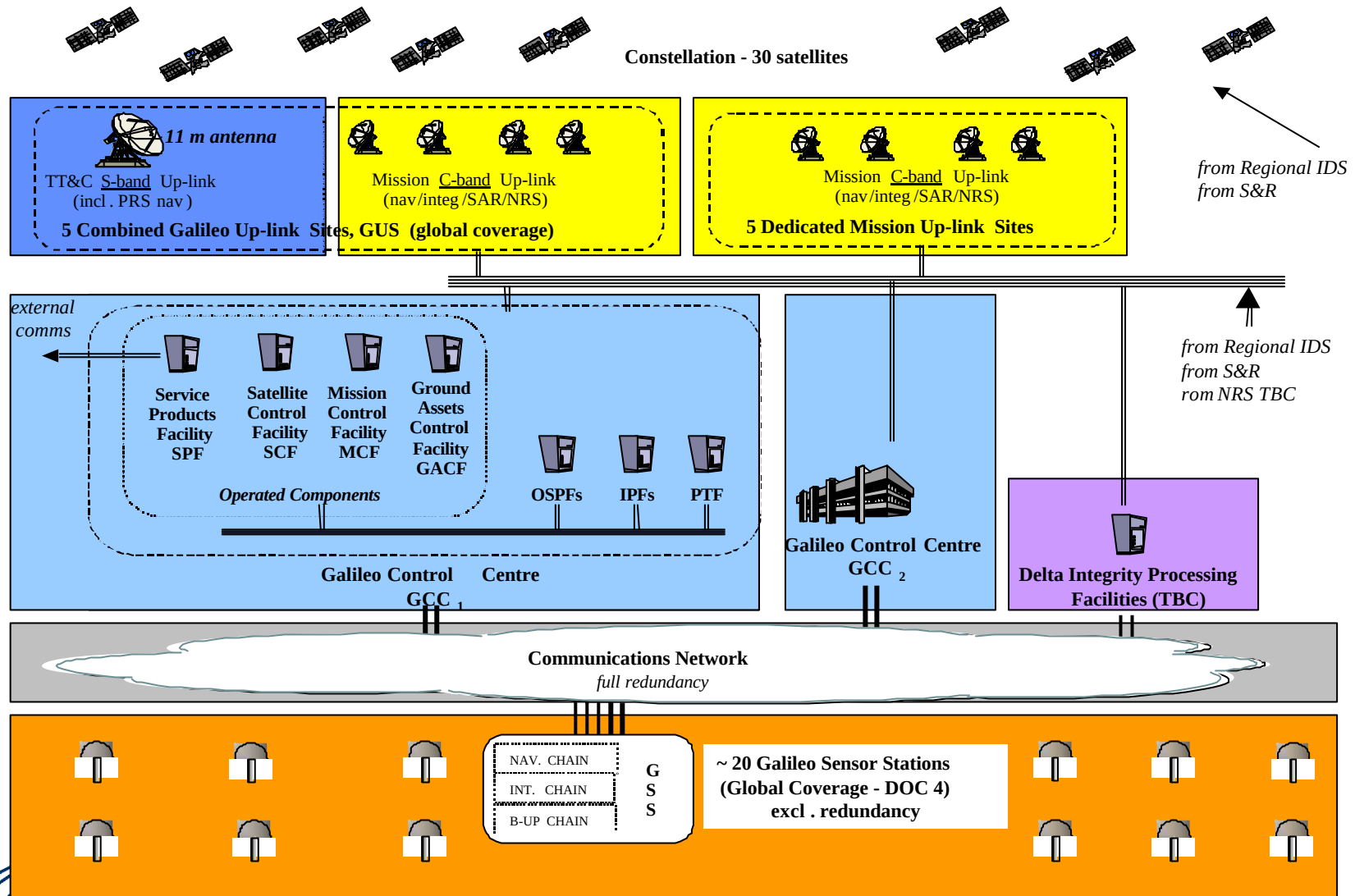
- **PHASE A: 1998-1999**
 - ✓ Comparative System studies
- **PHASE B1: 2000-2001**
 - ✓ Baseline System Design (BSDR)
- **PHASE B2: 2001-2002**
 - ✓ Preliminary System Design (PSDR)
- **PHASE C/D/E1: 2003-2005**
 - ✓ Detailed design, development and In-Orbit Validation (CDR, SQR, IOVR)
- **PHASE E2: 2006-2008- 2028**
 - ✓ Full Deployment and Long-term Operations (FVR)



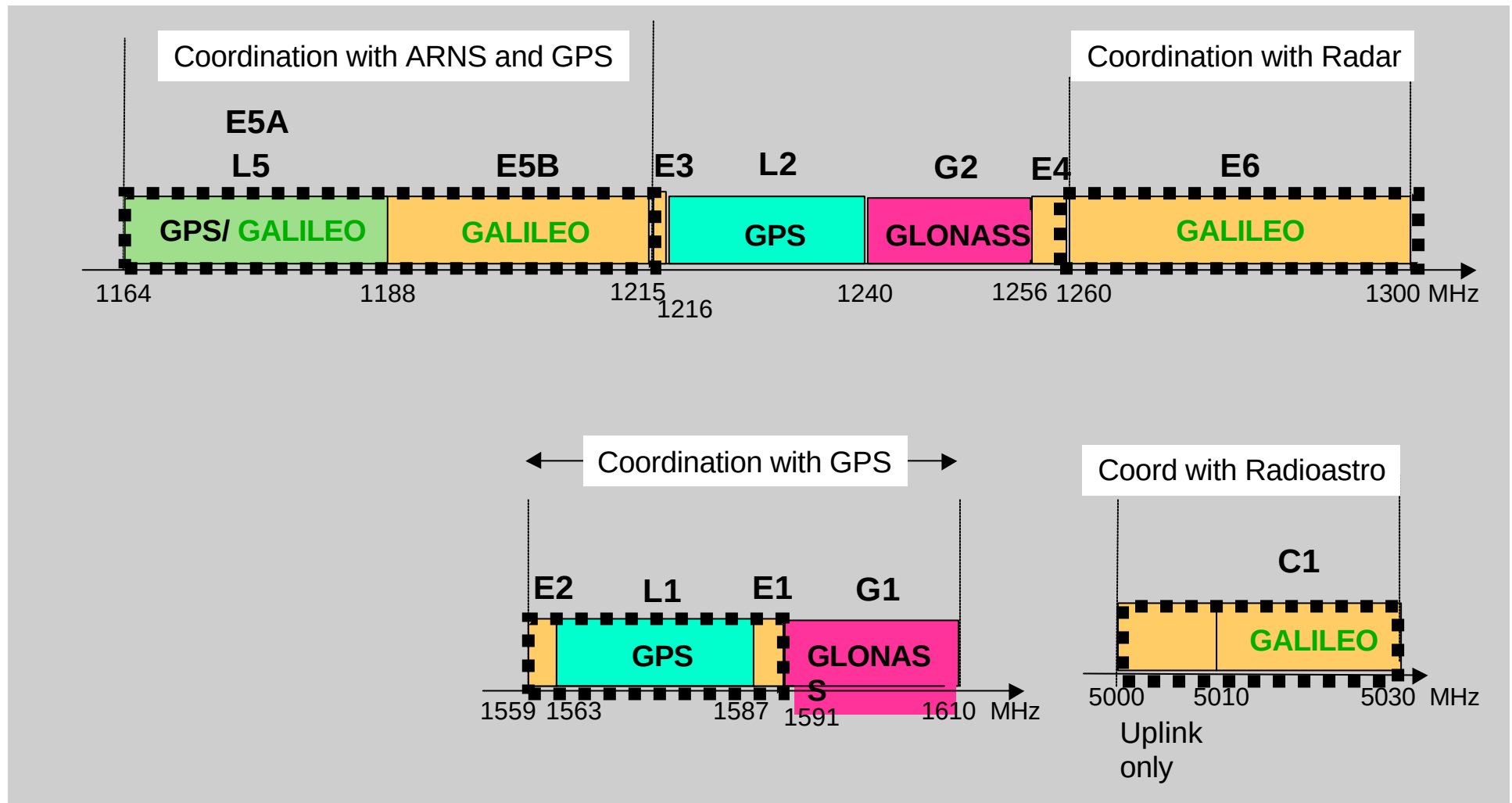
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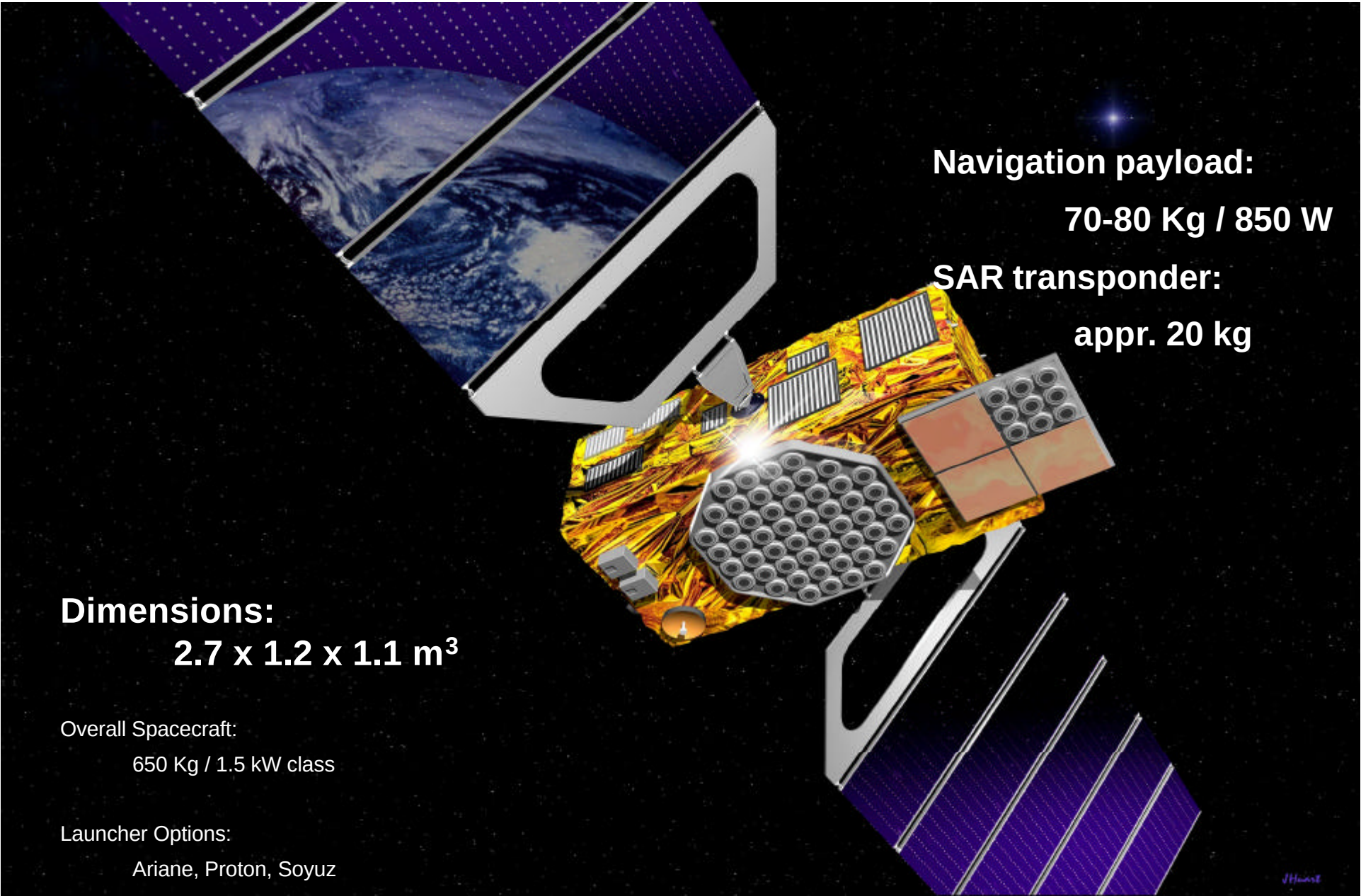
GALILEO Architecture



Frequency Co-ordination



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Dimensions:
2.7 x 1.2 x 1.1 m³

Overall Spacecraft:
650 Kg / 1.5 kW class

Launcher Options:
Ariane, Proton, Soyuz

Navigation payload:
70-80 Kg / 850 W

SAR transponder:
appr. 20 kg

Early implementation : Galileo System Test Bed

GSTB V1 : Kicked-Off June 2002

- ♦ Early Trials based on available data and tools
- ♦ GPS/GLONASS measurements data are collected world-wide by a network of stations and processed off-line to verify GALILEO OD&TS and Integrity concepts
- ♦ Collaboration with IGS, Time Community and EGNOS

GSTB V2 : 4 Q 2002

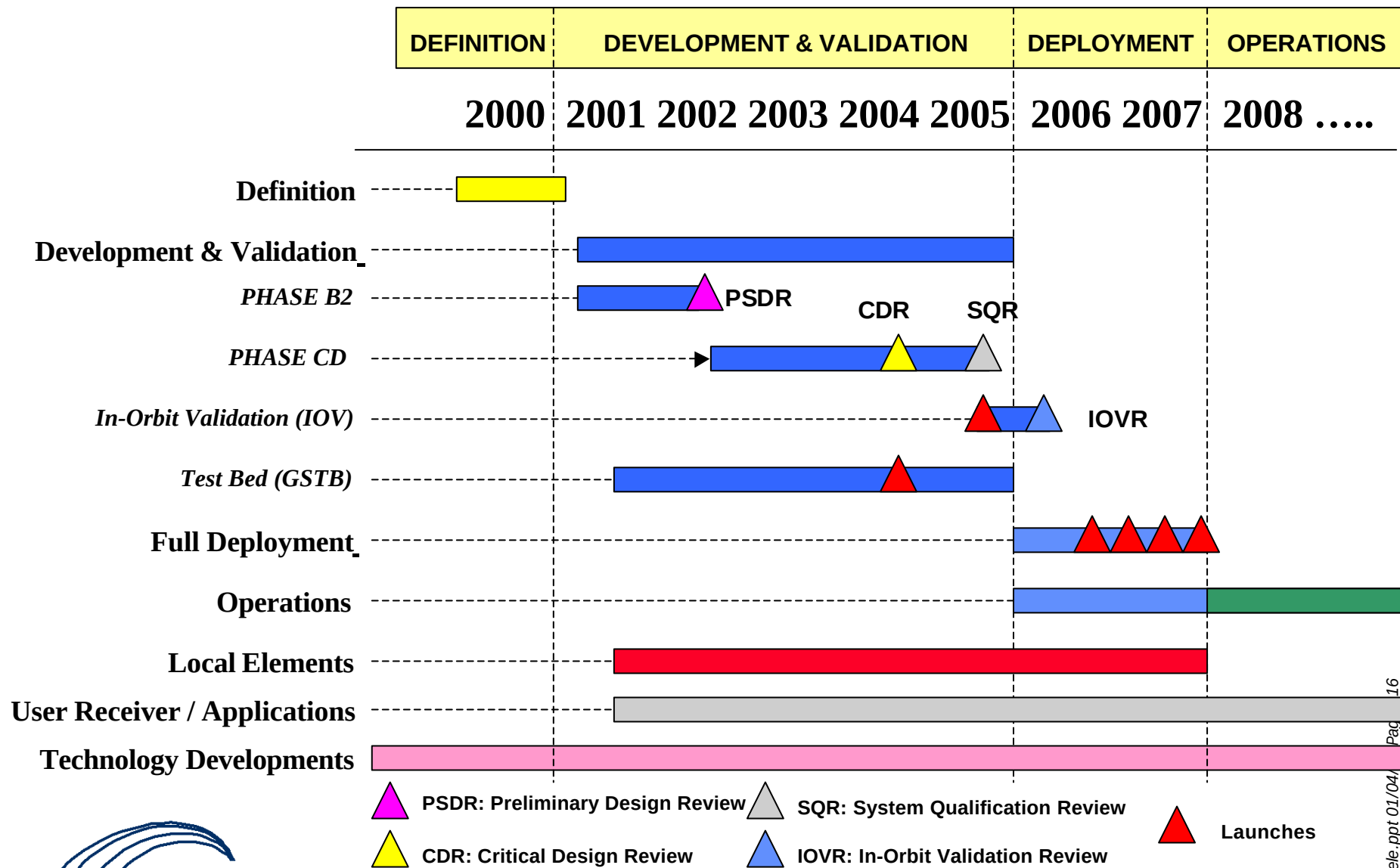
- ♦ Experimental GALILEO Satellite launched by end 2004
- ♦ Upgrade of GSTB V1 to include GALILEO Receivers and upgraded OD&TS and Integrity processing algorithms operating in real-time
- ♦ Real Signal calibration and Support demonstration of GALILEO Services



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GALILEO Master Schedule



It is just the
beginning

