*Airbone New and Advanced Satellite techniques and Technologies*

*in A System Integrated Approach*

# ANASTASIA

# Presentation to the EUROCAE Technical Committee

## Pierre Gayraud

## Gatwick, 27/04/05

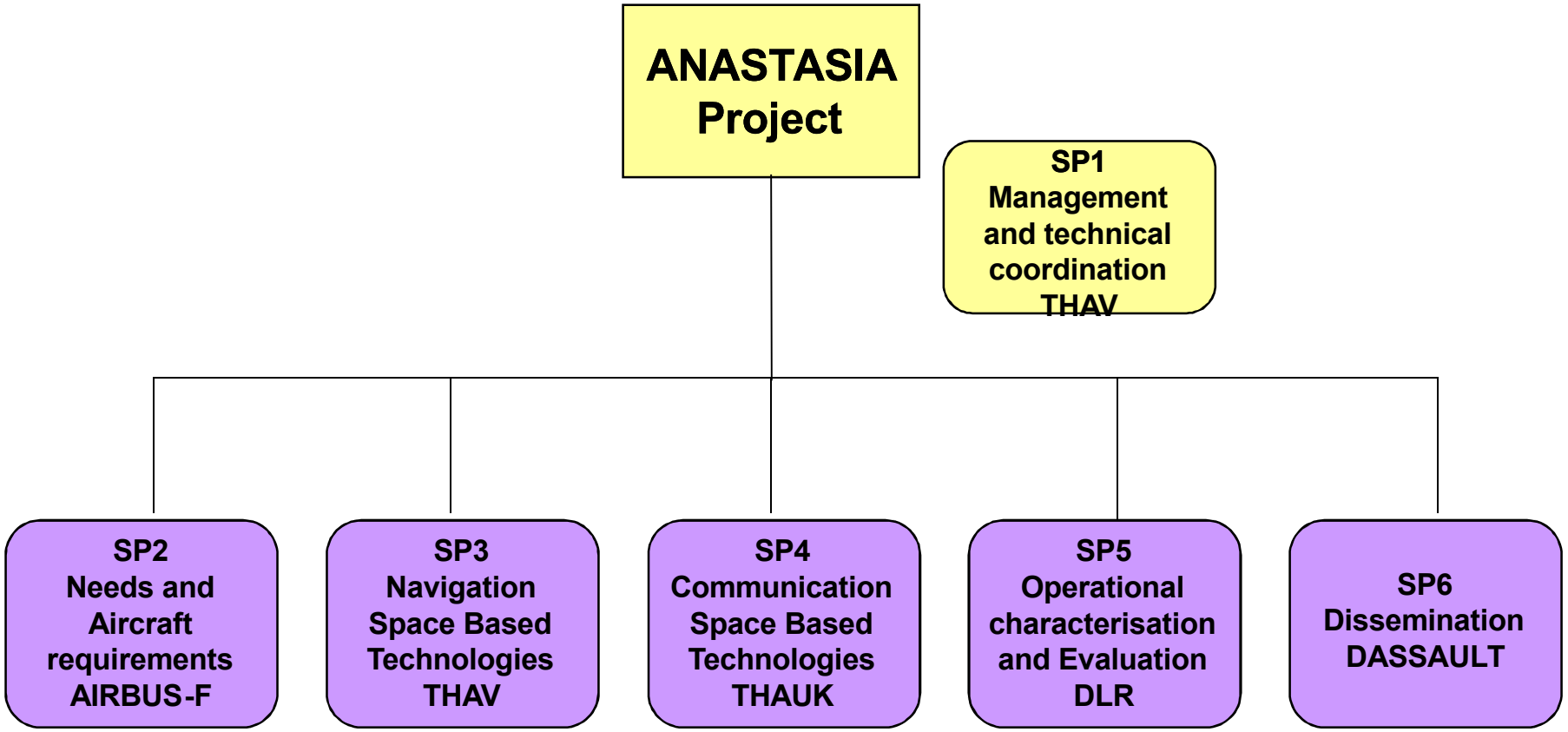
# ANASTASIA

- Integrated project, 6th PCRD, aeronautical and space priority
  - 20 ME Euro
  - 31 partners
  - Starting date: 1st of April 2005
  - Duration: 4 years
- Goal: To define the Future Avionics beyond 2010
  - New needs: improve operational capacity and safety of the air transport system
  - New space based technology : satellite navigation, Satcom
  - Define the new Communication & Navigation techniques and technologies beyond 2010

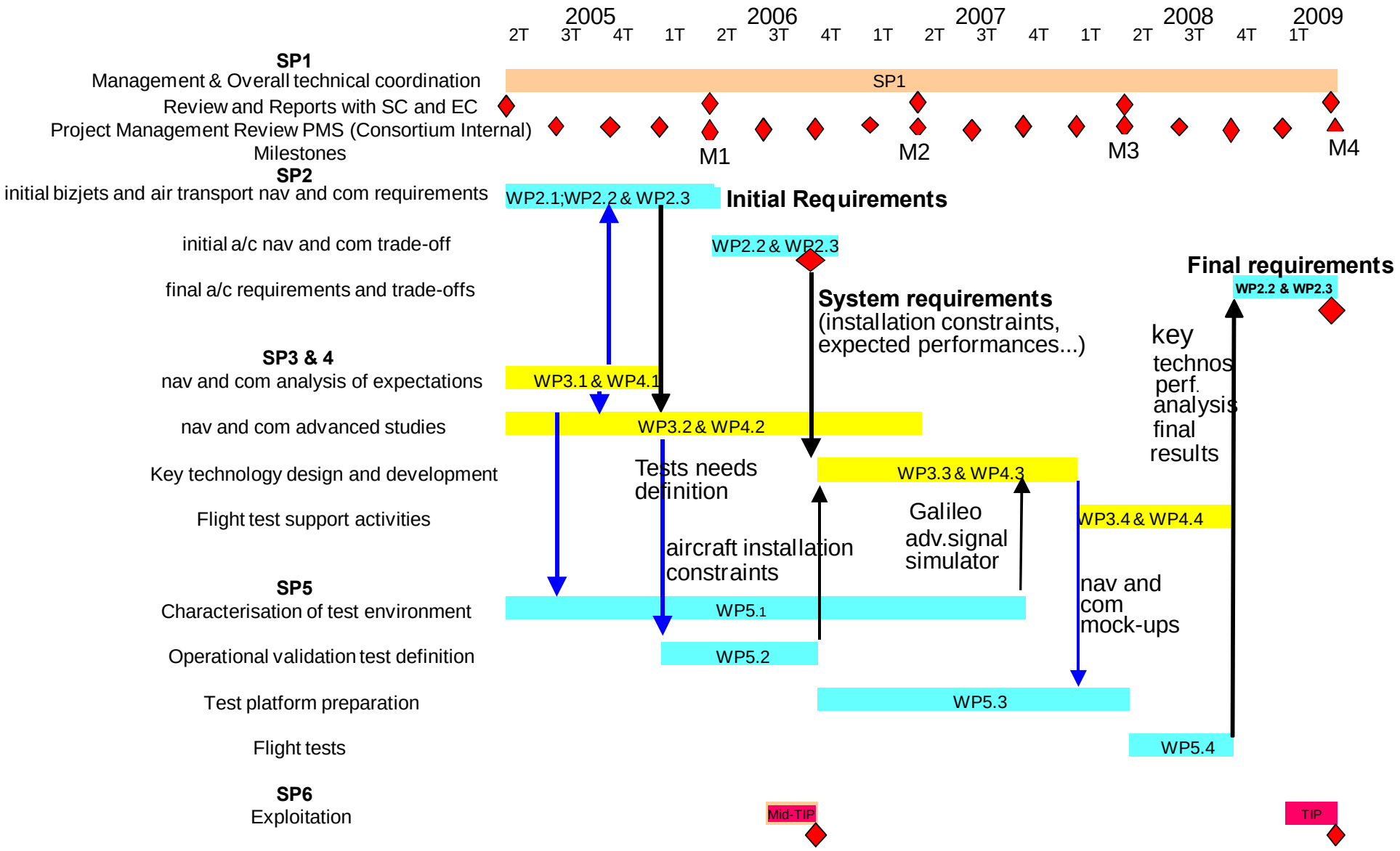
# The ANASTASIA objectives

- **ANASTASIA aims to carry out research, evaluation and cost benefit analysis to define future CNS avionics beyond 2010**
- **Navigation**
  - Investigate Multiconstellation, multifrequency satellite positioning
    - Antenna design
    - Advanced signal processing
    - Receiver integration
    - Hybridisation techniques with low cost inertial sensors
- **Communication**
  - To establish the requirements for an affordable aeronautical Satcom system for ATM
  - To design, implement and demonstrate a preliminary such Satcom system
  - Prototype Higher bandwidth services and Systems for future a/c Communication requirement
- **Consolidate future needs of Surveillance with the requirements and key technologies from COM & NAV**

# ANASTASIA WBS – SP level



# Programme schedule



# SP 2 Objectives

- **To identify the requirements for the new satellite based CN(S) functions for both business jets and commercial aircraft**
  - ñTop ï Downòanalysis of the future needs foreseeable in 2020, and their associated performances
  - ñTop ï Downòanalysis of the airborne functional requirements foreseeable in 2020, for both navigation and communication
  - ñBottom-upòassessment of the airborne opportunities introduced by foreseeable technological evolutions (identified in SP 3 and 4)

# SP 3 Objectives

- **To define the new space based navigation technologies that will fulfil the civil aviation needs and to validate their performance**
- **Design, development and validation with key technology mock-ups**
  - Advanced signal processing and navigation algorithms for Multiconstellation, Multifrequency satellite positioning
  - Antenna
  - Receiver
  - Hybridised system with low cost inertial sensors (Micro Electro-Mechanical System - MEMS)
- **Integration**

# SP 4 Objectives

- 1. To design, implement and demonstrate a prototype of an affordable aeronautical SATCOM system that will meet evolving European ATM requirements such as using satellites to complement the congested VHF spectrum. It shall be based on current or planned space segment and shall have maximum synergy with existing and planned non-ATM aeronautical SATCOM systems

- 2. To carry out research into higher bandwidth services, systems and airborne equipment to meet future SATCOM requirements in ATM such as delivering weather maps and electronic flight bag data – this work will concentrate on antenna issues since experience has shown that this is the key technical risk area.

# SP 5 Objectives

- To assess the performances of key satellite Navigation and Communication technologies in actual environment
  - Simulation
  - Flight trials
  - Data analysis

# SP 6 Objectives

- **To disseminate the results**
  - Use of the ANASTASIA results in a way which will allow future regulations to take into account the future generation of satellite based NAV and COM receivers

    ANASTASIA results will be presented to ICAO, RTCA, EUROCAE, ARINC and SAE
  - Contributions to standards and regulations, especially for performance and safety assessment, and certification issues will be proposed to the appropriate authorities


ANASTASIA PROJECT
Airborne New Advanced Satellite techniques and Technologies in A System Integrated Approach
INMARSAT 4
GPS
GALILEO
New Aeronautical Communication for ATC-AOC-AAC
New Satellite Navigation Systems
New On-board Technologies
The New on board Satellite based Navigation, Communication Systems and Technologies
EUROPEAN COMMISSION PROJECT
6th FRAMEWORK PROGRAMME (2002-2006)
ANASTASIA