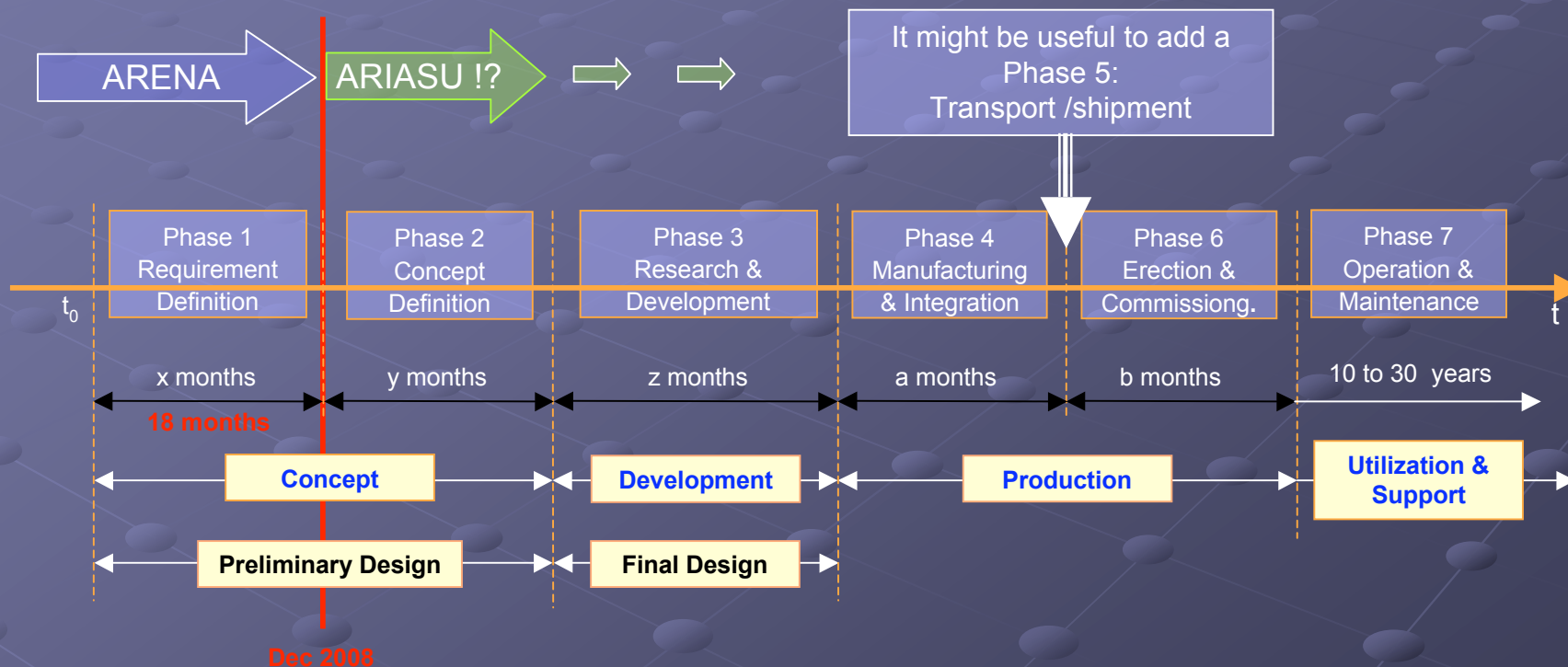


System Definition



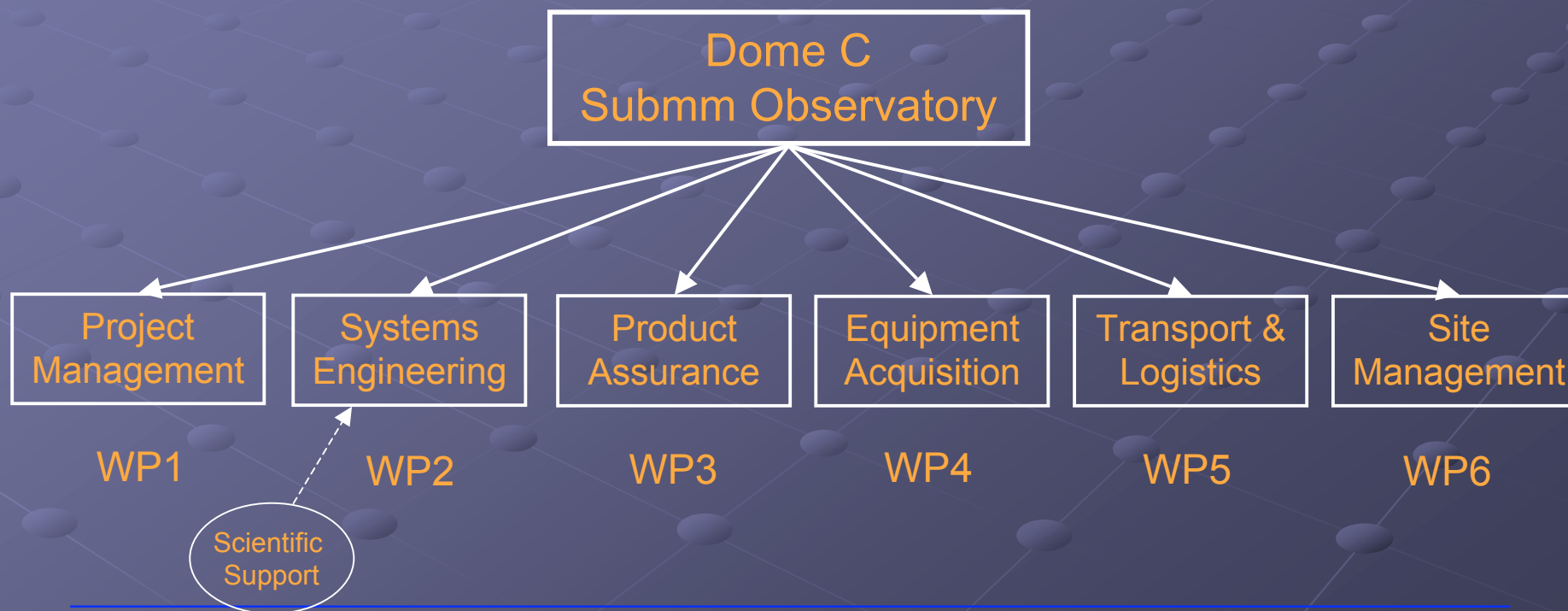
Project Definition

Project Phasing



● Project Definition

- Work Breakdown Structure, WBS



RAMS-CON

Management Consultants

Project Management Submm
Observatory for Dome C

Dome C Submm Observatory

WP1

Project
Management

WP2

Systems
Engineering

WP3

Product
Assurance

WP4

Equipment
Acquisition

WP5

Transport &
Logistics

WP6

Site
Management

- Project Control
- Project Office Operation
- Configuration Mgmt
- Finance, Legal and Contractual Matters

- RAMS Assurance
- Quality Assurance

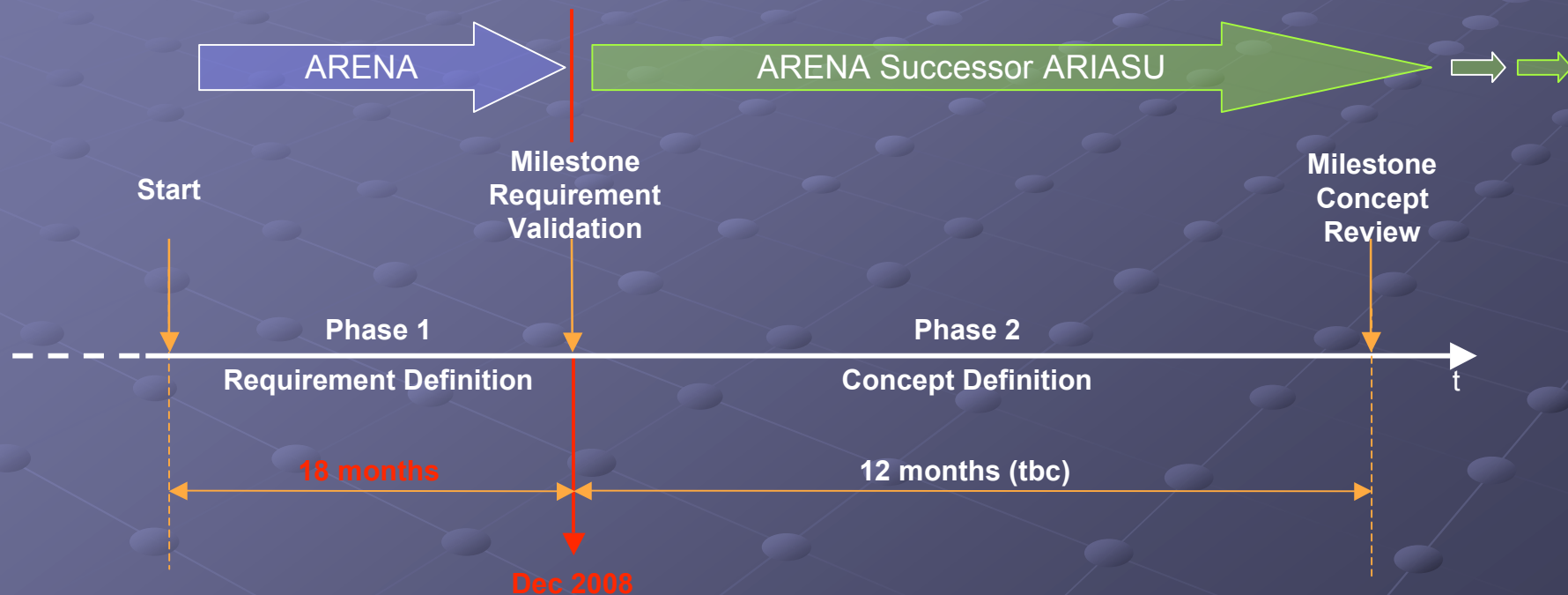
- Requirement Engineering
- Operational Concept
- Verification / validation Concept
- Maintenance & Logistic Support
- Observatory Operations
- Installation and Commissioning
- Data Handling
- Scientific support

- Antenna
- Tower
- Power Generator
- IT and Data Transmission System
- Support and Test Equipment
- Others

- Site Qualification
- Civil Engineering
- Erection / Install.

- Transport and logistic concept
- Transport and Handling Equipment

● Activities Project Phases 1 and 2



● Phase 1 Requirement Definition*

- Identification of true and realistic users' and stakeholders' needs
- Transformation of the needs into complete system requirements (technical, financial, schedule, environmental, safety, sustainability aso.)

* standard ARENA activities

- Phase 1 Documents (standard ARENA activity)
 1. User Requirements / Needs Definition Report
 2. System and Subsystems Performance Requirement Specifications (validated by users)
 3. System Interface Specification
 4. Environmental Specification
 5. Transport and Logistic Support Concept
 6. Operation & Maintenance (O&M) Concept
 7. Life Cycle Cost Definition

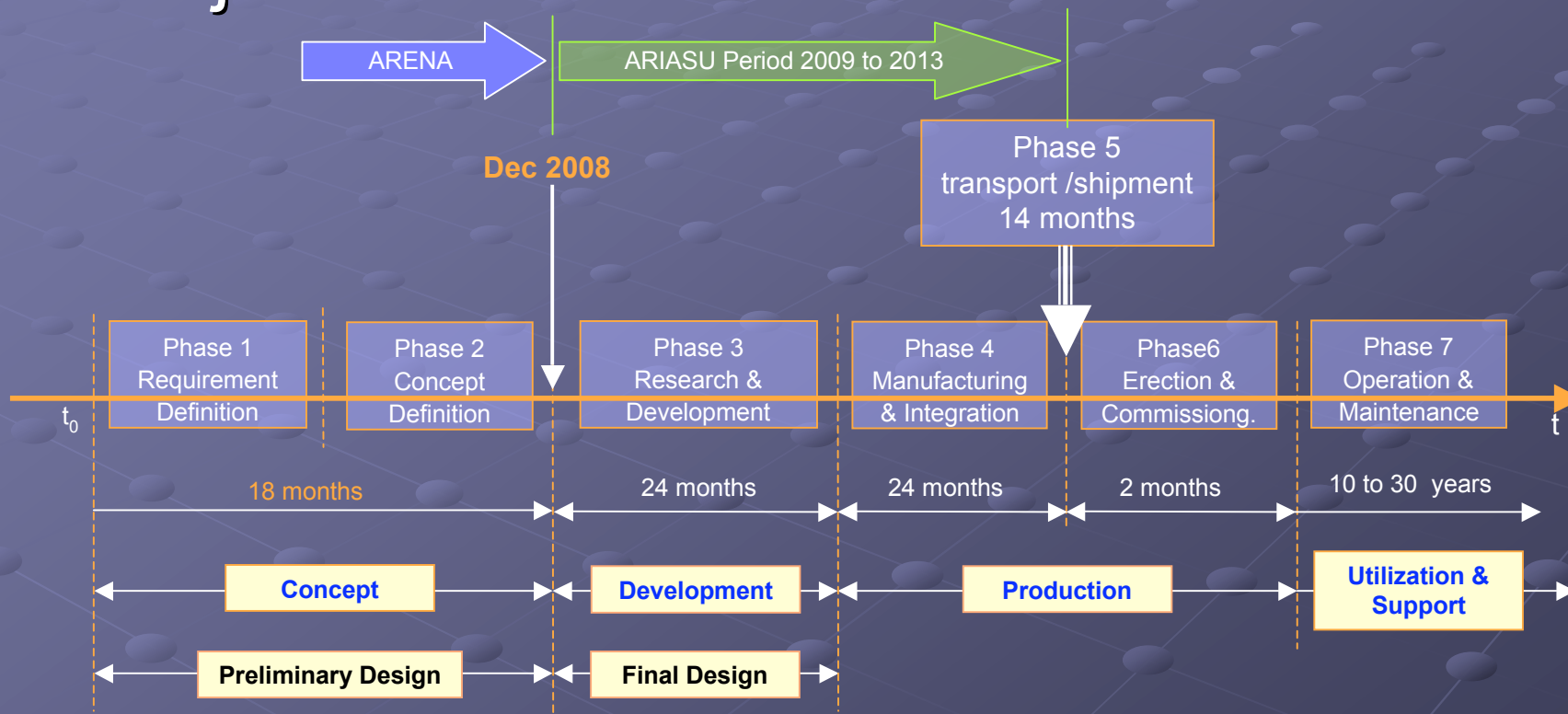
● Phase 1 Documents (None-ARENA activity)

1. Report on necessary technical modifications of the ALMA Antenna for operation at Dome C (first estimation, including cost and schedule)
2. Indicative technical and cost proposal for other antenna, e.g. modified SPT

● Phase 2 Concept Definition

- Elaboration of alternative concepts, e.g. ALMA, SPT, others
- Selection of most promising concept(s) for realisation
- Definition of development requirements on system and subsystem level
- Definition of O&M Concept
- Definition of Transport Concept
- Definition of Installation and Commissioning Concept

Project Phases



● Activities Project Phase 3

Research &
Development

- Full scale design and development
- Essential supporting activities:
 - Design Verification Programme
 - Parts and Material Programme
 - Reliability, Availability, Maintainability & Safety Assessments (⇒ Reliability Centred Maintenance)
 - Integrated Logistic Support Programme
 - Transport and Erection / Installation Programme

● Activities Project Phase 4

Manufacturing
& Integration

- Production, assembly, integration and verification of all configuration items (CIs)
- Essential supporting activities:
 - Manufacturing Plan
 - Quality Control (in manufacturing and end item)
 - Parts and Materials Procurement Programme
 - AIV Programme (including environmental tests)
 - Configuration Management and Control
 - Operator and User Training

● Fundamental Assembly Integration and Verification (AIV) Principles:

- Complete demonstration of all functional and operational characteristics in Europe!
 - full integration of the system
 - complete functional and operational tests
 - full safety compliance demonstration
 - complete operation and maintenance demonstration
- Formalized “European Acceptance” for all CIs before shipment!

● Activities Project Phase 5

Transport /
shipment

- Transport of all equipment to CONCORDIA
 - Minimum system disassembly
 - Shipment one year before actual use at Dome C
 - Storage capabilities of CONCORDIA?
 - Transportability to be demonstrated during Phases 3 and 4
 - Site preparation for storage and use
 - Incoming acceptance of the goods at CONCORDIA Station

● Activities Project Phase 6

Erection &
Commissioning

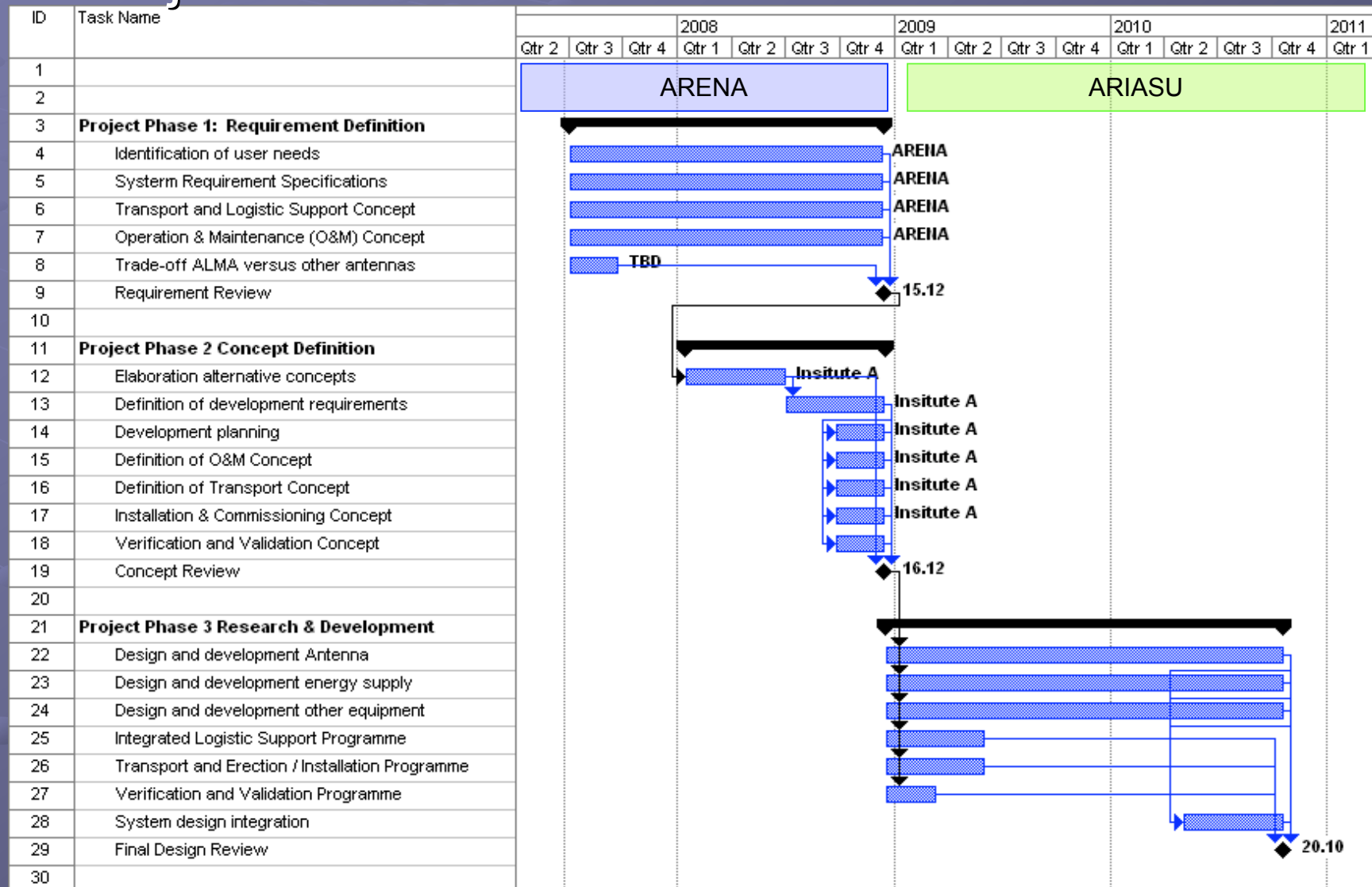
- Installation and commissioning of all equipment, processes and procedures
 - Site preparation
 - Set-up of maintenance and logistic support system
 - Set-up of observatory operation system
 - Assembly and installation of equipment
 - Commissioning
 - Final acceptance of equipment after commissioning

● Activities Project Phase 7

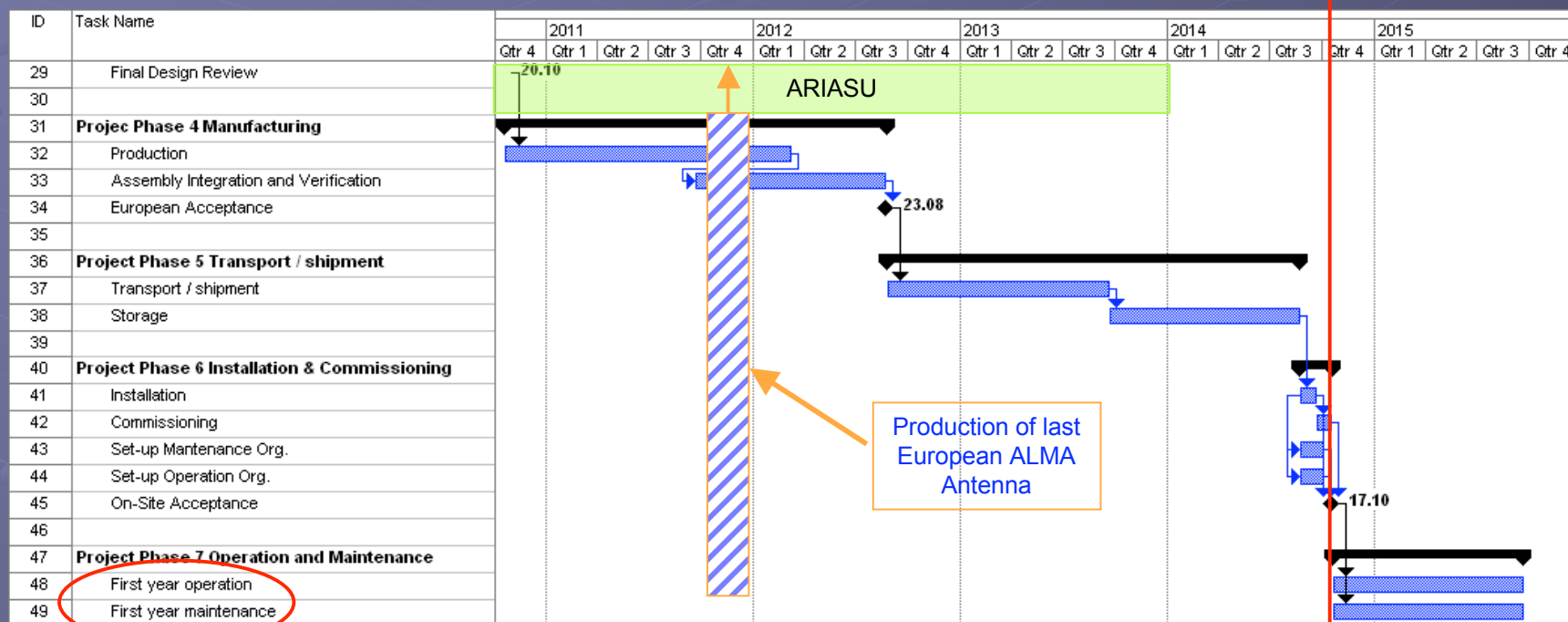
Operation &
Maintenance

- Scientific operation and equipment maintenance
- Observatory operations
- Equipment upgrading when necessary
- Installation of new instruments
- Optimization of operation and maintenance and logistic support processes
- Taking out of service of equipment, dismantling and return to Europe for disposal

Project Schedule First Estimation Phases 1 to 3



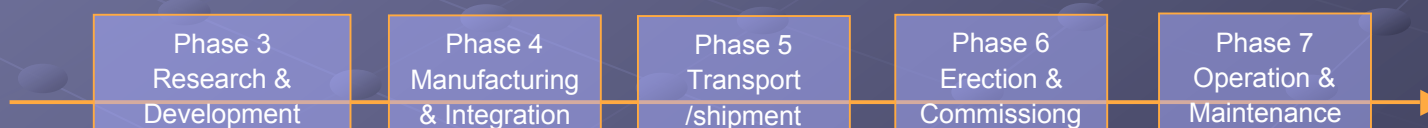
● Project Schedule First Estimation Phases 4 to 7



● Major Problems

 Funding for Concept Definition parallel to ARENA activities until Dec 2008

 Funding for Project Phases 3 to 7



The image features a wide-field view of the Sombrero Galaxy (M104) in the center, showing its bright central bulge and a prominent dark dust lane. The galaxy is set against a dark, star-filled background. The text "Thank you" is centered in the upper half of the image in a light yellow font. The text "for your attention!" is centered in the lower half of the image in the same font. In the bottom right corner, there is a small white text credit: "Sombrero Galaxy, Credit ESO".

Thank you

for your attention!