



Overview of the SKA

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Top-level description



a large radio telescope for transformational science

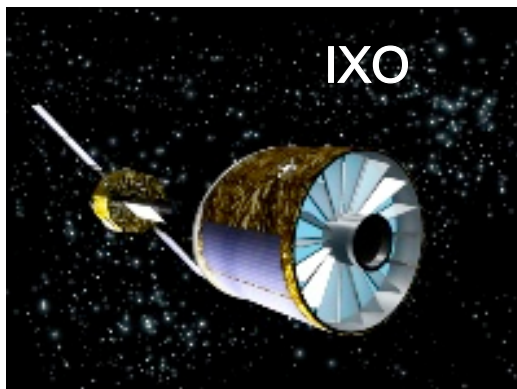
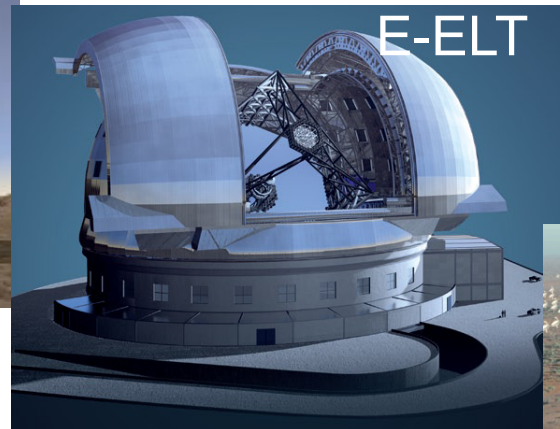
- up to 1 million m² collecting area distributed over a distance of 3000+ km
- operating as an interferometer at frequencies from 70 MHz to 10 GHz (4m-3cm) with two or more detector technologies
- connected to a signal processor and high performance computing system by an optical fibre network

providing

- 40 x sensitivity of EVLA, and
- up to 10000 x survey speed

67 institutes in 20 countries are participating

Great Observatories for the coming decades





The Square Kilometre Array

Top-level description (2)



Construction will proceed in two phases:

SKA_1 , SKA_2

SKA_1 will be a subset (~10%) of SKA_2

Major science observations already possible with SKA_1 in 2020

Phased construction allows maximum use of advances in technology

SKA is driving development of new science & technical solutions



- Dishes, feeds, receivers (N=3000)
 - Low and mid aperture arrays (N=250)
 - Signal transport (10 Pbit/s)
 - Signal processing (exa-MACs)
 - Software engineering and algorithm development
 - High performance computing (exa-flop capability)
 - Data storage (exa-byte capacity)
 - (Distributed) power requirements (50 -100 MW)
- } ongoing verification programs

INDUSTRY ENGAGEMENT IS CENTRAL TO THE SKA

Timeline



1995-00

Preliminary R&D

2000-07

Initial Concept Phase

2008-12

Preparatory Phase

- System design , Site selection

2012-15

Pre-construction Phase

- Detailed design, Production readiness

2016-23

Construction

SKA₁ ~ 350 M€; SKA₂ ~ 1.5 B€

2020-50+

Operations

Pre-construction phase (2012-2015)



Goals

1. Progress the SKA design to Production Readiness Review stage and let contracts for construction of major sub-systems
2. Progress infrastructure roll-out on selected site to allow sub-systems to be deployed
3. Mature the SKA legal entity into an organisation capable of carrying out the construction, verification, and operation of the telescope

Work Packages in the Project Execution Plan for the Pre-Construction Phase



1. Management
2. System
3. Science
4. Maintenance and support /Operations Plan
5. Dishes
6. Aperture arrays
7. Signal transport & networks
8. Signal processing
9. Computing & software
10. Power
11. Site preparation

Resource Summary for 2012 - 2015



Total resources proposed (4 years): 90.9 M€

WPCs: 63.0 M€ (70%)

SPO: 27.9 M€ (30%)

Current governance (April 2011)



Founding Board Signatories at Government or Funding Agency level

Australia

China

France

Germany

Italy

Netherlands

New Zealand

South Africa

UK

+

Observers

Tasks

1. Establish a legal entity for the SKA Organisation by July 2011
2. Decide location of the SKA Project Office (Jodrell Bank Observatory in the UK)
3. Agree a resourced Project Execution Plan for the pre-Construction Phase

Governance: January 2012 →

