SKA in the UK: Introduction

Matthew Johnson, Head of the SKA Project Office, Science and Technologies Facilities Council (STFC)
SKA Phase 1

2 sites; 3 telescopes; one Observatory

Frequency range SKA1: 50 MHz – 3 GHz

Cost-cap: €650M

Construction: 2017 – 2023

Early science: 2020

SKA-Mid: ~190 15m dishes + MeerKAT, RSA

SKA-Low: ~250,000 low-freq antennas, AUS

SKA-Survey: ~60 15m dishes + ASKAP, AUS
SKA Phase 2

2 sites; 3 telescopes; one Observatory

Frequency range SKA1: 50 MHz – 14 GHz

Expected Cost: >€1.5Bn

Construction: mid-2020’s on

SKA-Mid: ~ 2500 15m dishes, RSA

SKA-Low: 2-3 Million low-freq antennas, AUS

Mid-Freq AA: ~ 250 60m arrays RSA
SKA Members and Governance

Australia (DoI)  
China (MOST)  
Italy (INAF)  
New Zealand (MED)  
Sweden (Chalmers)  
India (Tata/DAE)  
Canada (NRC-Herzberg)  
Germany (BMBF)  
Netherlands (NWO)  
South Africa (DST)  
UK (STFC)  
(Portugal joining shortly)

• SKA Organisation
  – HQ based at University of Manchester’s Jodrell Bank Observatory
  – UK Company Limited by Guarantee
  – Long-term governance structure being established as a treaty organisation.
SKA Members and Governance

- Finance Committee
- Executive Committee
- Science & Engineering Committee
- Strategy & Bus. Dev. Committee
- Science Working Group

Members → Board of directors → Director-General → SKA Office → Work Package Consortia

- SKA Office: 50
- Design consortia: > 350

€97.2M (in kind)
€23.4 M (cash)
Work Package Consortia

Details at: http://www.skatelescope.org/skadesign/wp/
Timeline

- Re-baselining complete: March 2015
- CDR: June 2016
UKSKASC

• “The UKSKASC acts as the conduit between the UK SKA Board representatives and the UK science community, communicating the latest news, critical project time points and developing the UK science priorities for the SKA”

• Website: www.stfc.ac.uk/UKSKASC
  • Communication Hub; keep up to date!
  • Send in your thoughts/questions

• Currently an Adhoc committee in place

• 12 individuals sought to form the permanent committee
  • Please see website for details
  • Closing Date for Nominations is the 18th July 2014
News story
£600 million funding boost for science and research

Science Minister David Willetts announces government investment in the ‘eight great technologies’.

In a major speech David Willetts has set out how the government will fund research into cutting-edge technology and help make the UK one of the best places in the world to do science.

He explained how the £600 million of extra science funding that was committed from the Autumn Statement in 2012 will be allocated. It includes:

- £189 million for big data
- £25 million for space
- £35 million for robotics and autonomous systems
- £88 million for synthetic biology
- £20 million for regenerative medicine
- £30 million for agri-science campuses
- £73 million for advanced materials (with £28 million to the National Composites Centre in Bristol)
£11M Earmarked for SKA

£30 million to lead global computing technology

A major new £30 million government investment was announced, 1 February 2013, by the Chancellor of the Exchequer, Rt. Hon George Osborne, as he visited the Science and Technology Facilities Council’s Daresbury Laboratory. The investment, part of the £600m announced in the 2012 Autumn Statement, is designed to firmly establish the UK as the world leader in energy efficient supercomputer software development to meet big data challenges. Economy-boosting partnerships between research and industry are just some of the benefits poised to come from investment that will confirm the UK as a leader in the development of energy efficient super-technologies and software.

£19 million of this investment has been allocated to Daresbury’s Laboratory’s Hartree Centre, the world’s largest centre dedicated to software development and home to the most powerful supercomputer in the UK. The investment will support the progress of power efficient computing technologies designed for a range of industrial and scientific applications, and particularly in the development of software that can handle the huge amounts of data created by large experimental research initiatives, such as the Square Kilometre Array (link opens in a new window)(SKA) and CERN, the largest generators of scientific data in existence.

The Chancellor, Mr Osborne said: "Britain is in a global race and we are in a position to lead the way in science and technology. Projects like the Daresbury development are crucial to boosting the economy and putting the UK at the forefront of the big data revolution."

The other £11m have been earmarked for the SKA, the world’s largest radio telescope, to develop the software capable handling the unprecedented amount of data it would produce. To put this into perspective, the data collected by the SKA in a single day would take nearly two million years to playback on an iPod.

Minister for Universities and Science David Willetts, who accompanied Mr Osborne today, said: “The next generation of scientific discovery will be data-driven. This £30 million investment will support one of the world’s leading high performance computing software centres. It will help ensure UK science and industry remains at the very forefront of research and development.”

Professor John Womersley, Chief Executive at STFC, said: “This investment will enable the development of new, more capable and more energy efficient computing for an immense range of applications. For industry this could mean extreme modelling for smart materials for industrial adhesives or coatings, or in the engineering and manufacturing for the car and aerospace industries. For the consumer, it could result in longer-life mobile communications for phones and tablet computers. With the government’s strong support and continued investment, we can convert world leading R&D into commercial opportunities, and provide UK businesses with the technology they need to be able to grow and compete on a global scale. We have already started to work with a number of major industrial partners and today’s announcement confirms how important science and technology are to the UK economy.”
Current status

• Design programme underway with UK role in several programme areas:
  • **Leading:** Science Data Processor  
    • (University of Cambridge)
  • **Leading:** Signal and Data Transport design  
    • (University of Manchester)

• **Engineering lead:**
  • Aperture Arrays
  • Correlator design
  • Telescope control

• Industry involvement through subcontracting from lead institutes
David Willetts announcement: £100M allocation to SKA construction

March 2014
Opportunities for the future construction phase

- Preparing for construction phase 2017/18+
  - UK role at around 18-19%

- UK Industry Community
  - Procurement model being defined at present clear that some form of return on investment will be linked to contribution
  - Engagement for industry now will offer opportunity for contractual involvement in SKA construction phase
Summary

• SKA Organisation now fully established
• Design funding secure, schedule agreed
• Design Consortia are up and running
  - designing a facility, not an experiment
• Policy work underway
• UK Community Engagement Underway
• UK in a strong position
• 2014 will be an exciting year for the SKA & UK
Questions?

Thank-you for your attention

WWW.stfc.ac.uk/UKSKASC
www.skatelescope.org