



SKA Developments in Australia

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CSIRO SKA Project Scientist
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CSIRO acknowledges the Wajarri Yamatji people as the traditional owners of the Murchison Radio-Astronomy Observatory site

Highlights from Australia

- **Site Bid**
 - Preparing response to RfI
 - Site Interviews
 - Planning for Site Outcome
- **Site Readiness**
 - Preparing for SKA
 - Indigenous Engagement
 - Radio Quietness Protection
- **SKA Project Engagement**
 - Founding Member of the SKA Organisation
 - PAF development for SKA
 - Preparing for SKA PCP
- **Industry Engagement**
 - Consortium Forming
- **Science and Technology**
 - Planning for ASKAP (Ilana)
 - CAASTRO/ICRAR/Universities
 - Nobel Prize
 - Trans-Tasman eVLBI
 - MWA Science (Peter?)
- **Education and Outreach**
 - Discover SKA
 - SKA Forum at Banff
 - Public/Political Support

SKA Site Bid

- After 2005 'Site Bid', Australia and RSA were shortlisted.
- March 2011- Request for Information issued by SSG
- **Key parameters**
Security, Employment, Customs & Excise, Basic Infrastructure, Power, Data Transport, Radio-quiet (RFI, RQZ), Ionosphere, Troposphere, Array Configuration and Science Outcomes, Physical Characteristics, Legal, Socio-Economic, Working & Support Environment.



6 months



47 organisations



1 document

After the Response

- Site Interviews – December 7/8th 2011
 - Answering follow-up questions

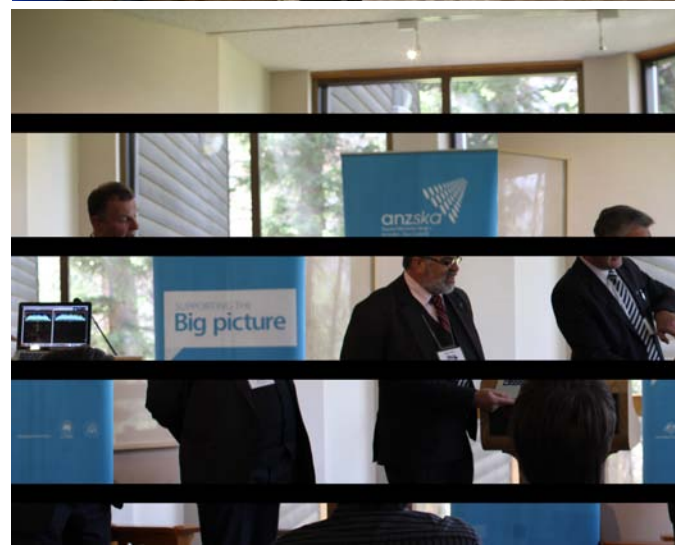
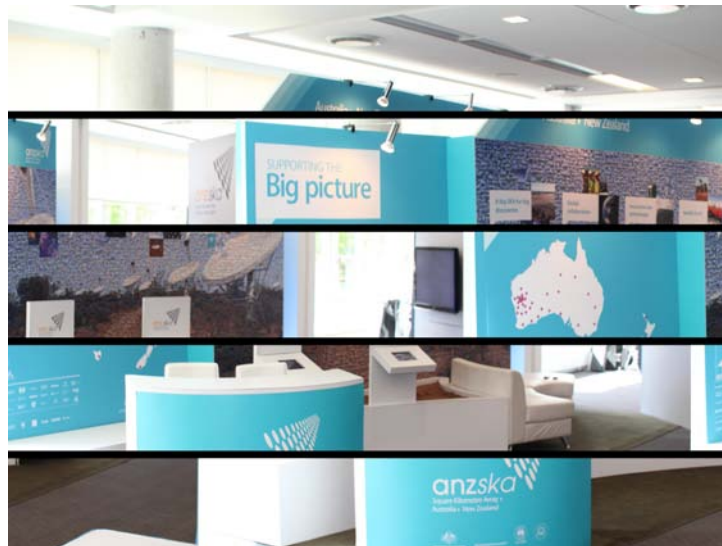
After the Response

- Site Interviews – December 15th 2011
 - Answering follow-up questions
- Planning for all possible outcomes
 - Preparing for site negotiations
 - Who will administer ANZ SKA funds?
 - What structures will support SKA activities in Australia?

After the Response

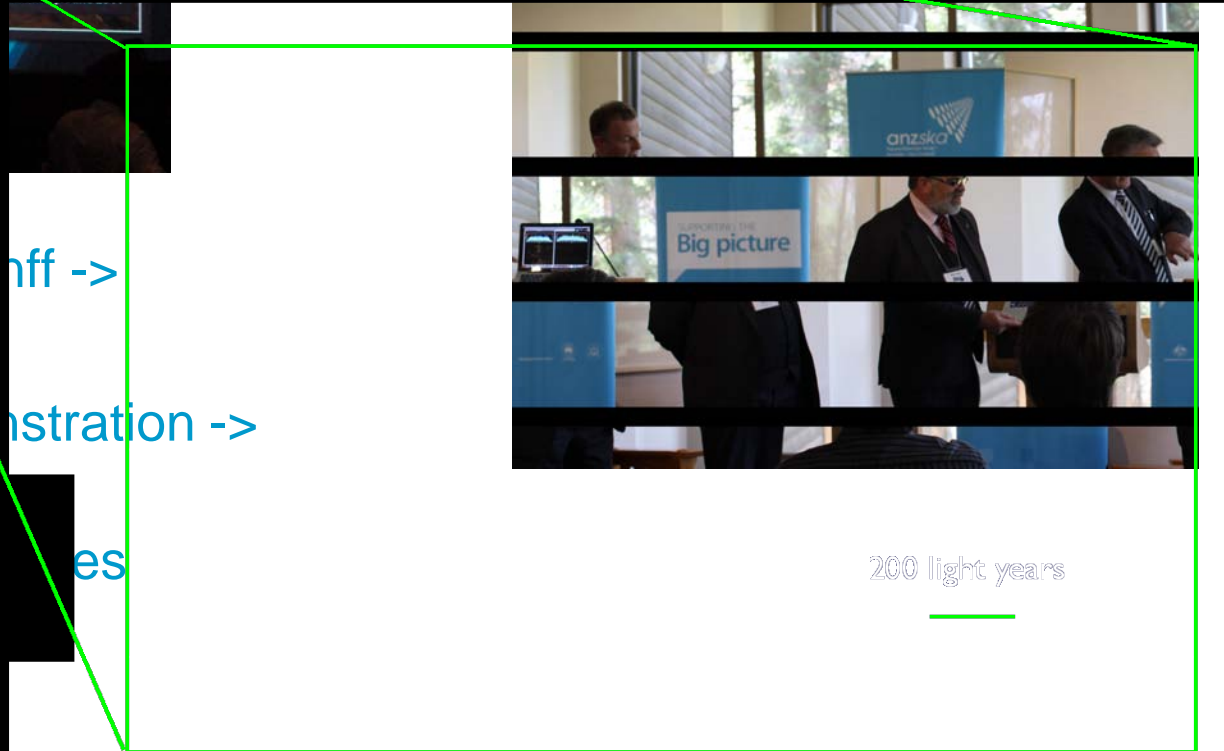
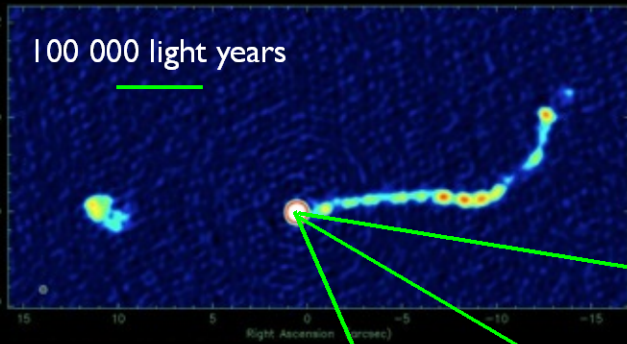
- Site Interviews – December 15th 2011
 - Answering follow-up questions
- Planning for all possible outcomes
 - Preparing for site negotiations
 - Who will administer SKA funds?
 - What structures will support SKA activities in Australia?
- **Cementing public and political support**
 - **Media, Public Engagement**
 - **Supporting Inter-Governmental Activities**

SKA Forum - Banff



Quasar 0637-752

Distance: 5.75 billion light years



Observation: 28 June 2011
with
Australasian SKA Baseline
Demonstrator
(ASKABaD)





CSIRO - Lisa Harvey-Smith - SKANZ Meeting 2012

Discover
SKA
THE WORLD'S
BIGGEST TELESCOPE

Generating Public Support for SKA



Endgame for massive radio telescope

JILL ROWBOTHAM The Australian February 11, 2012 12:00AM

LOBBYING for the \$1.8 billion Square Kilometre Array radio telescope has reached the endgame, with science minister Chris Evans leading a delegation to China and Italy next week to make Australia's case.

Senator Evans will make a separate trip to the Netherlands, the UK, and possibly Canada, ahead of what is expected to be an April announcement by the seven-country SKA Organisation.

The visits are to persuade board member countries that the joint Australia-New Zealand bid to build the massive project near Murchison in Western Australia, is not only technically superior to that of the rival nine-nation southern African consortium, but has rock-solid government backing.

"We are keen to reinforce our commitment to the bid and determination to win," Senator Evans said. "This is a government-to-government approach to reinforce the bid at a political level.

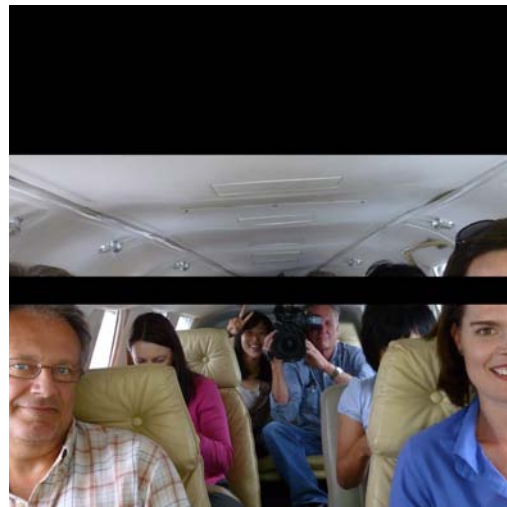
"There is some support for the African bid in Europe because of their interest in supporting development in Africa. Our view is that our bid is supported by economic and political stability."



Those invited to go with him include the Western Australian Minister for Science, John Day, the head of the Australian bid group, CSIRO's Brian Boyle, the deputy secretary of his own department, Patricia Kelly and the NZ Minister for Science and Innovation Steven Joyce.

Construction of the SKA is scheduled to begin in 2016. Its several thousand antennae will be dotted over 5000 kilometres, and operate as a single instrument, surveying the sky 10,000 times faster than any other telescope.

Since the site was shortlisted in 2006, the Australian, New Zealand and WA governments have invested more than \$400 million in enabling infrastructure, such as the



NAVIGATE TO A SECTION 0 SAVED STORIES

After the Response

- Site Interviews – December 15th 2011
 - Answering follow-up questions
- Planning for all possible outcomes
 - Preparing for site negotiations
 - Who will administer SKA funds?
 - What structures will support SKA activities in Australia?
- Generating public and political support
- Preparing the Observatory for SKA

Murchison Radio Astronomy Observatory



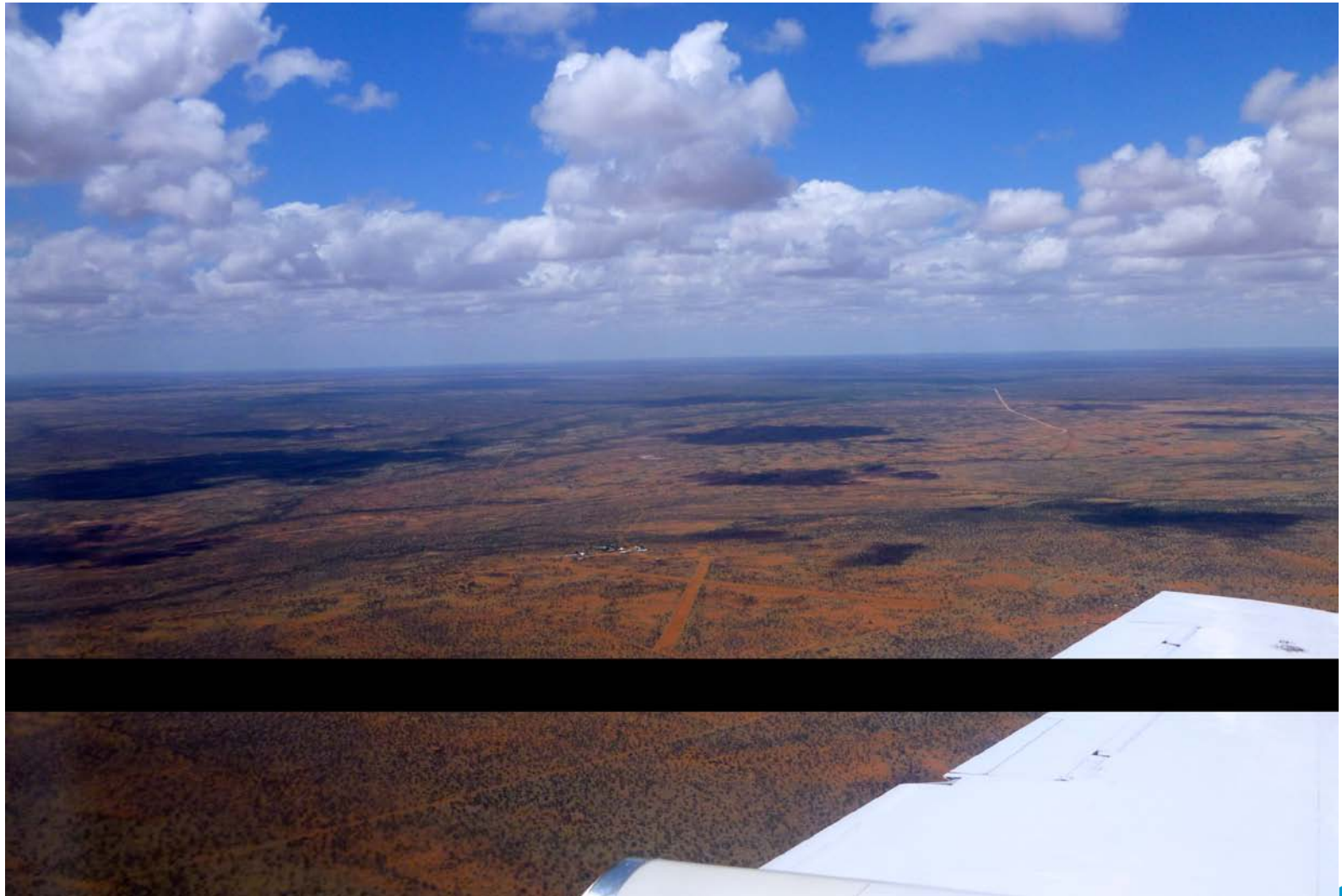
Building Telescopes



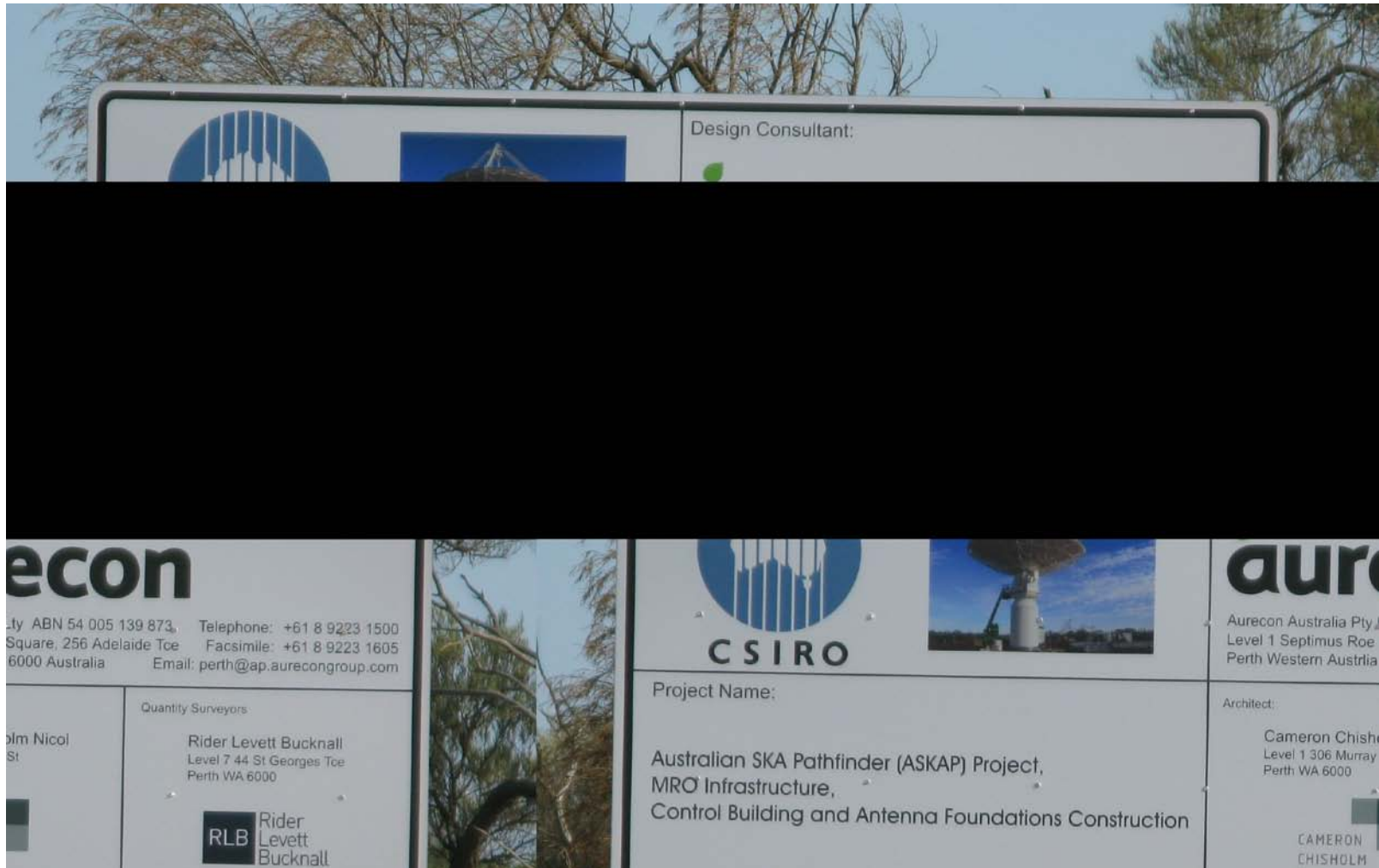
Innovating for Generation-SKA Telescopes



Building an Observatory



Building an Observatory



Building an Observatory



Building an Observatory



Indigenous Engagement



- Internet Access
- Naming Rights
- Cultural Training
- Acknowledgement in Publications

- Contracting Opportunities
- Cadetships
- Mentoring
- School Visits



Radio-Quiet Zone

- CSIRO working with Commonwealth and WA State Government agencies and stakeholders to:
 - Provide scientific advice on spectrum licensing matters in the radio quiet co-ordination zone
 - Identify suitable areas for additional radio quiet zones should they be required for SKA.



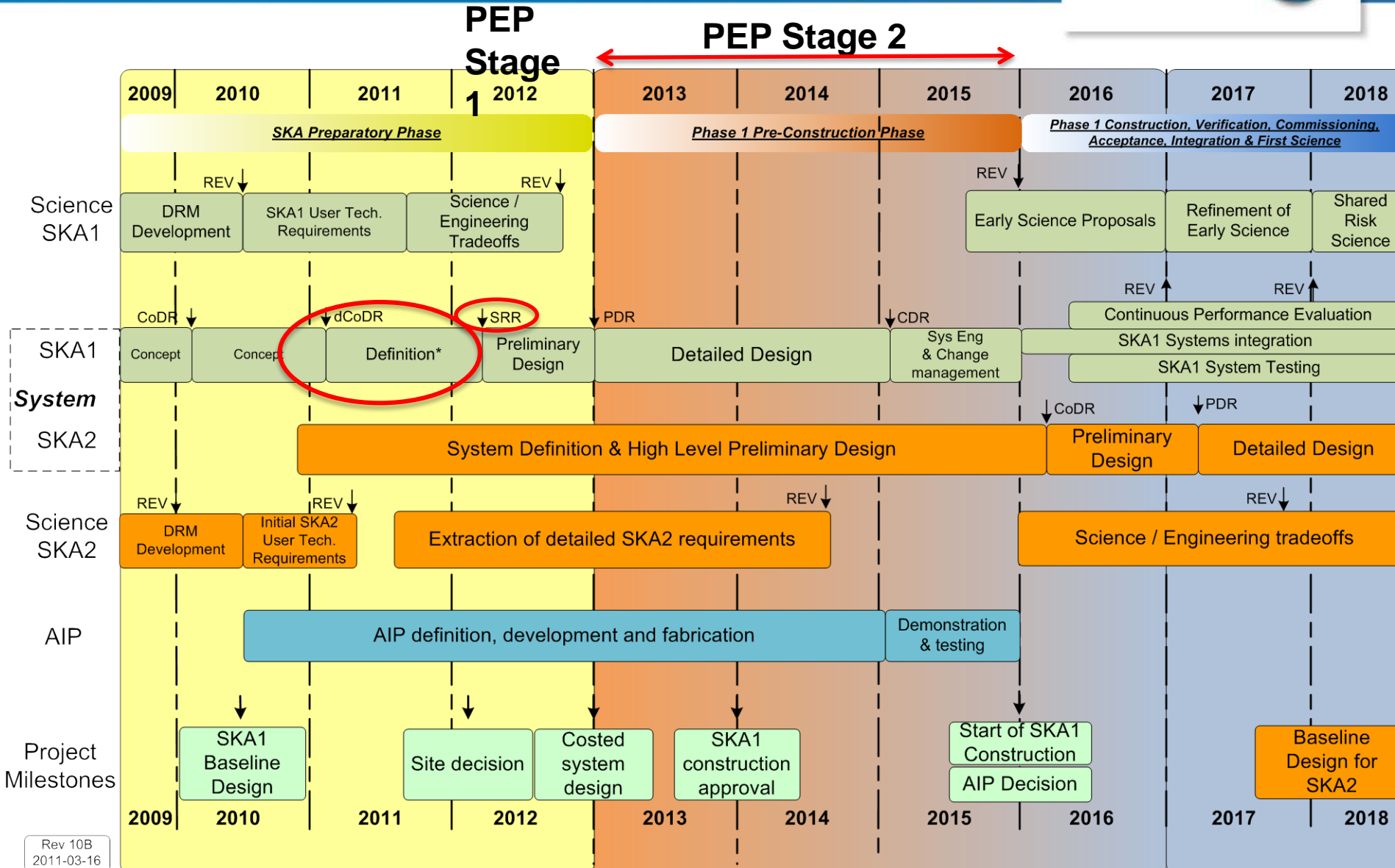
SKA Pre-Construction Phase

Detailed Design Phase

SKA Pre-Construction Phase

- PrepSKA
 - Dish Array – leadership of PAFSKA
 - Software & Computing
 - Networking
 - Digital Signal Processing
- CSIRO heavily engaged in the planning for the SKA “Pre-Construction Phase”
 - Work leading to a detailed design of the project
 - This work will be contracted – no longer a best efforts project.

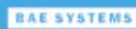
Context for Pre-Construction Phase



Pre-Construction Phase Activities

- In April CASS set up a working group, meeting weekly
- Aim: To work towards a coherent Australia-NZ response
- Academic – Engineering – Industry Co-ordination - ASKAIC

Building Partnerships with Industry



Affiliate NZSKAIC



Pre-Construction Phase Activities

Meetings and workshops

- Academic Meeting, June 2011 (Sydney), 30 participants from ANZ
 - ASKAIC PEP Working Group, August 2011 (Melbourne)
 - SKA Pre-Construction Workshop, October 2011 (Sydney)
 - Power/Networking Workshops, November 2011 (Perth)
 - “Australia’s Got Talent” Sci-Eng workshop series, early-mid 2012
-
- **Defining scope of work for each WP Consortium**
 - CSIRO sent 8 people for 6 -10 days to working week at SPO
 - Defined WBS/SOW required to produce a costed system design
 - Some discussions on consortium building

Pre-Construction Phase Activities

Next stages:

- Finalise consortia building for SKA WPs
- Assist SPO in system engineering effort
- April 2012 – write Expressions of Interest
- Later 2012 - Request for Proposals expected
- Jan 2013 – Start work towards a costed system design for SKA1.

Summary

Activities in Australia have included:

- Joining, as a founding Member, the SKA Organisation
- Response to RfI from SKA Siting Group
- MRO Site Preparations for SKA, RQZ etc.
- Maintaining Public Support for SKA
- Supporting the International SKA Project
 - Major contributors to PrepSKA
 - Definition of work required for Pre-Construction Phase
 - Co-ordinating with industry, other partners on WP bids
- Building ASKAP and co-ordinating science activities

