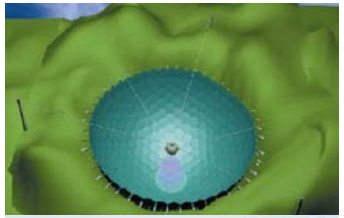
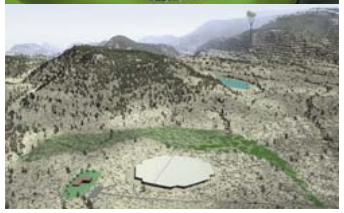


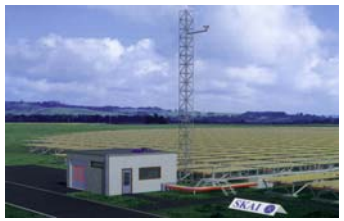

FPA Collaboration & SKA

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Dwingeloo, June 21 2005

V 1.0

Outline

- Yesterday:
  - SKA and antennas
  - Phased arrays and SKA
  - Hybrid SKA possibilities
  - FPAs, AAs and SKA
- Today:
  - Politics and collaboration
  - Re-useable deliverables in SKA demonstrators

SKA Techno-politics

- Technology selection based on demonstration
- Shortlisting 2007; selection 2009
- SKA international funding proposals (2009) rest on credible technology proposals
  - Delayed or impaired technology demonstration will sink the SKA as a next-decade project
- Collaboration is a way of maximizing the likelihood of quality demonstrators
- A favourable industry reaction to SKA will be central to funding success in EU, RSA, Au ….
  - Virtue in early industry links at regional and international level

SKA Timeline

Year	SKA Milestone	Industry Links
2003	Initial site proposals	National site characterization
2004	National/regional SKA demonstrator plans finalized	National/regional SKA technology development programs
2005	Final SKA site submissions	Compilation of national site proposals
2006	Choice of SKA site	Complex decision visualization …
2009	Choice of SKA technology	… risk assessment and management
2010	Start construction of on-site Int'l SKA Pathfinder ('Phase 1' SKA')	Design, construction, infrastructure ….
2014	SKA construction	…large project management, procurement, large-scale construction
~2017	First useable large-scale capability	Commissioning, operations, maintenance
2020	SKA complete	Operations, maintenance

Engineering Collaboration

- Slippage in all major SKA demonstrator programs
  - Now is a good time for a hard look at our joint prospects
  - What can we realistically deliver in 3 years?
    - » Need realistic goals for 2009. Consider the words we'll need in credible 2009 ISKAP and SKA funding proposals.
- SKA demonstration timescales are short
  - No time (or inclination?) to negotiate new detailed, joint, engineering agreements
  - There are some existing collaboration mechanisms (e.g. FP7, EWG task forces, …)
- We can rationalize individual programs to:
  - Better develop critical radio science, and deliver prototype hardware
  - *Accelerate vital astronomy measurements (calibration, ..)*
- Rationalizing might involve IP sharing, or contracting deliverables, or both
  - We have an SKA umbrella mechanism for sharing IP, without risking dilution
- Even ~30M euro programs cannot realistically demonstrate everything
  - We can sensibly agree on emphases across various programs
    - » Enough challenges to go around!

SKA Demonstrators – Some Re-usable Deliverables

- Focal plane arrays – naked and integrated
- Broadband integrated receivers (SiGe/hybrid, RF CMOS, …)
- Short & medium-haul fibre-optic signal transport (digital and analog)
- DSP (beamforming, correlation, non-imaging)
- Software (calibration and post-processing)
- Array control and monitoring (s/w and h/w)

Discussion Issues -1

- Accelerating regional demonstrators
  - IP transfer, contracted deliverables, ….
  - "Chunking" demonstrators: who does what?
    - » More realistically: where are the emphases?
  - Satisfying regional expectations in a chunked world
  - Aligning critical milestones in demonstrators
- Managing collaboration – how?
  - ISPO is a lean body
  - Suitability of FP7, EWG task forces, …. for various roles
  - Role of bi-lateral agreements (e.g. for delivery contracts)
- Underlining importance of international links
  - Everyone draws heavily on collective wisdom
    - » Wisdom is, and should be, re-used freely
  - We (after all) purport to be an international project!
    - » An outsider might reasonably expect increasing project-level collaboration and coherence
  - Regional engineering projects can stress more the value of international collaboration

Discussion Issues - 2

- Providing a united SKA front to trans-national industry
  - E.g. HPC, SiGe RF processes, small dishes, …
- Engaging valuable industry partners in SKA from pre-competitive → procurement phases
  - Are <2009 demonstrators “pre-competitive”?
    - » Answer *should* be “yes”

Chunking Discussion

Possible Emphases Across Funded Demonstrators

System	Au	Ca	EU NL	EU UK	EU	RSA	USA
Dishes					X	X	X
FPA Design	X	X	X	X			
FPA Deliverable		X	X				
Integrated Receivers	X			X	X		
F/O Transport – Analog					X		X
F/O Transport – Digital	X			X			
DSP Design	X	X	X	X	X	X	X
DSP Deliverable		X				X	X
Imaging Software	X		X			X	X
Telescope Cntrl & Mon			X			X	X

+ PRC FAST plans to be determined
+ India LNSD

Big Issues

- How realistic are the current engineering milestones?
- How do we speed up SKA technology demonstration?
- Do we need to modify what we promise for 2009?
  - Credibility is a major issue
- How do we optimize the 2009 engineering deliverables in terms of the global SKA project?