



FPA Collaboration & SKA

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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?