ASKAP project update

ATUC

Antony Schinckel | ASKAP Director

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CSIRO ASTRONOMY AND SPACE SCIENCE
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ASKAP - BETA Operations

- Regular observing from the SOC
- 6 antennas (1, 3, 6, 8, 9, 15) , Mk I PAFs
- 9 dual polarisation beams
  - 16,416 spectral channels over 304 MHz
- Mk I PAF performance as expected (above 1100 MHz degrades, Tsys at 1500 2.8x 900 MHz value)
- Antenna locations known to few mm
- Pointing: more work needed on pointing model
- Third axis rotation used regularly – seems important to cleanliness of images (primary beam)
- Data captured at MRO, transferred to Pawsey
  - ASKAPSoft, also miriad, CASA, DIFMAP etc
- CASDA progressing

ASKAP Highlights

- ACES team expansion
  - Members from Operations, Astrophysics, and external members from SSTs
  - Busy days in SOC

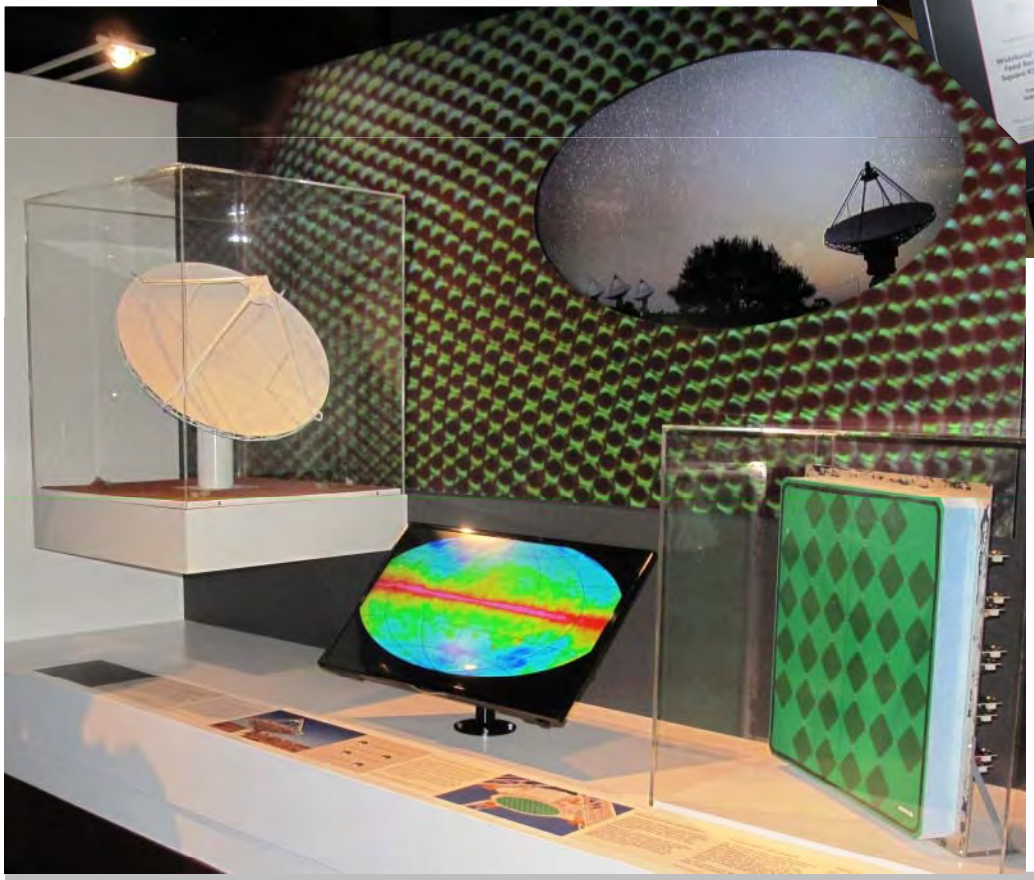
- Several “firsts” :
  - 6 antenna continuum image
  - 6 antenna spectral line data cube
  - Comparison with other telescopes images e.g SUMSS, LVHIS
    - B1830-211 – redshifted HI absorption at 753MHz
    - NGC253 (11 hours, c.f. ATCA image)
    - etc
  - Very high signal-to-noise results (up to 50,000:1 on cluster field ?)
  - Dave to present

ASKAP Highlights

- Mk II Prototype
  - Assembly, testing and verification process (RFI)
  - More testing here at Marsfield rather than MRO
- Commissioning – increased use of remote (SOC) observing
- “Galaxy” at Pawsey now live
  - ASKAPsoft etc installed
  - Used for most of the imaging
- Large scale procurements for 30 Mk II PAFs underway
  - Procurement of parts – over 6 million individual parts
- Some schedule slippage due to:
  - Prototype completion – faulty chequerboard, RFI testing etc
  - Procurement processes
  - (CSIRO re-structure and budget ?)

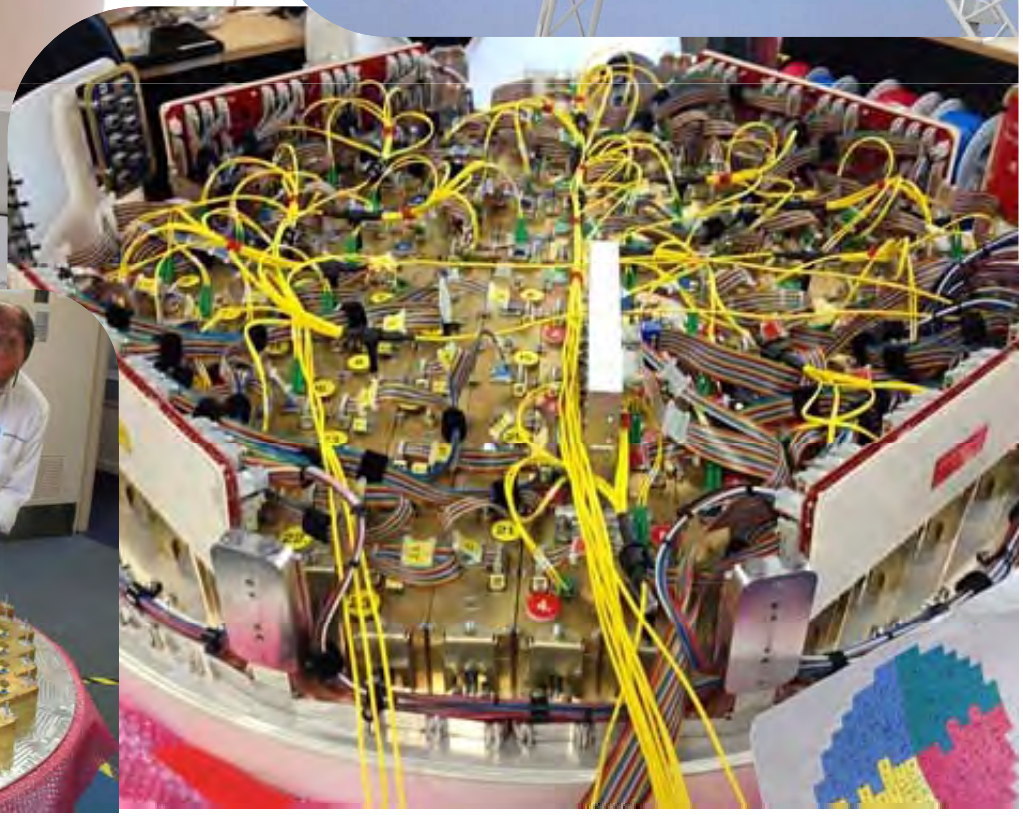
PAF wins

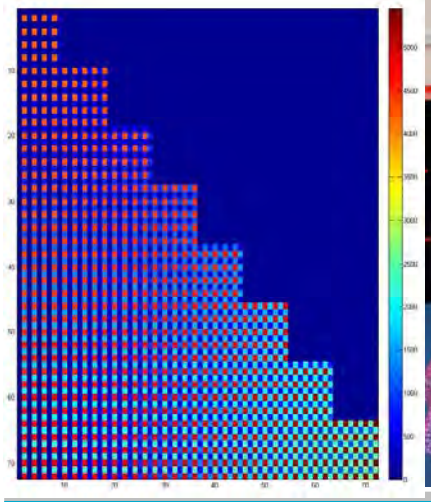
Engineering excellence



Mk II PAF

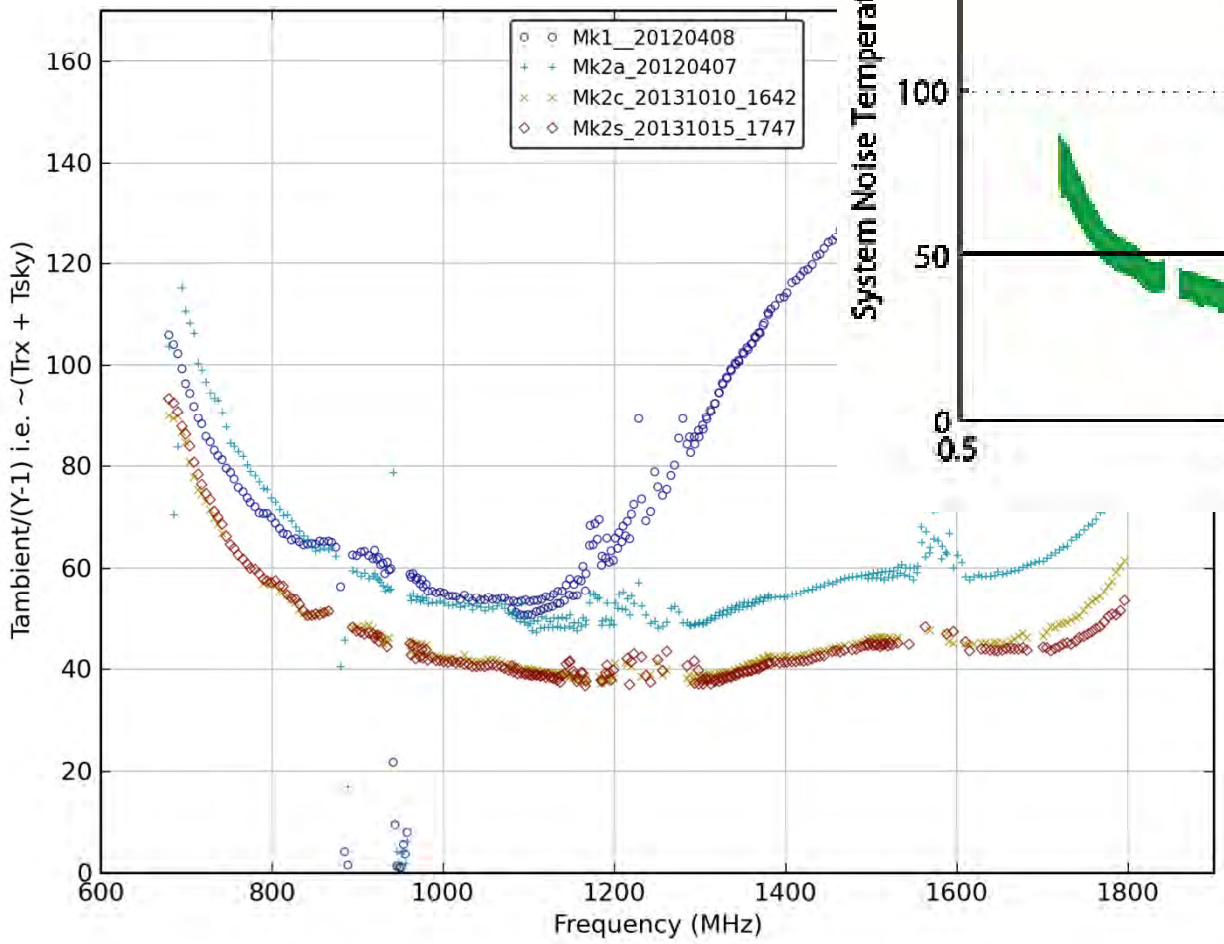
Full size prototype assembly, verification, test

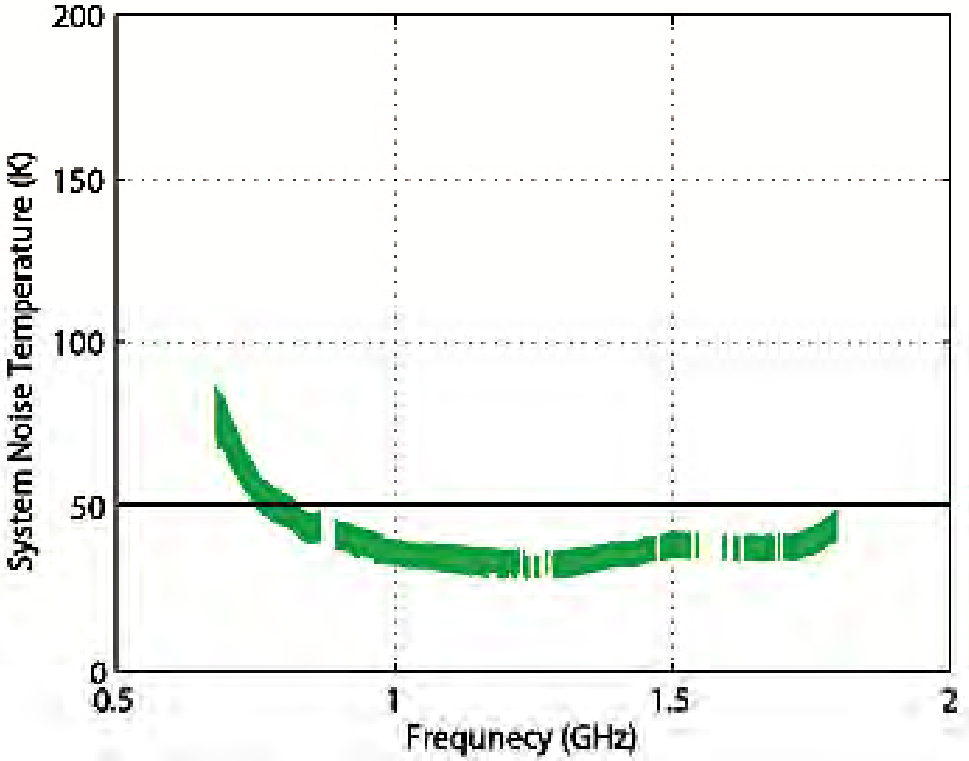




PAF performance (Ap A)

Small scale prototype – 5 x 4





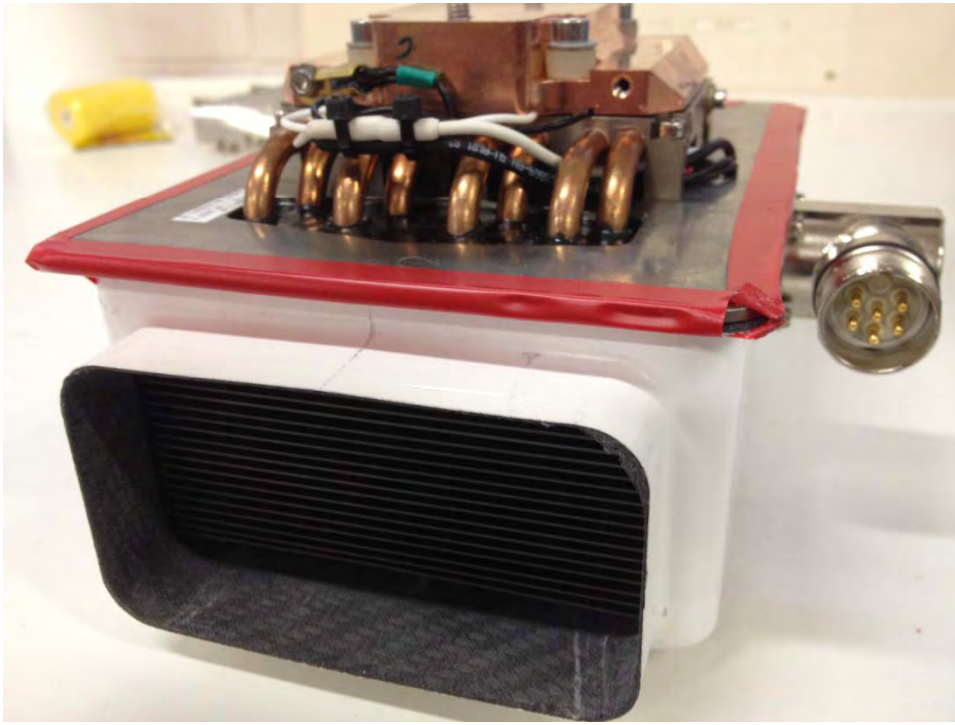
ASKAP Mk II Prototype – RFI testing

- Successful stress/integrated testing of the ADE Back End systems & EMC testing of active front end

- First end to end testing of full-size PAF prototype conducted successfully

ADE Prototype

- Recent progress in ADE integration:
  - Performance testing of the optimised (Rev B) peltier modules
  - EMC testing of the optimised (Rev C) PAF case



Pre-production ground planes bonded with Nomex dielectric & shrouds

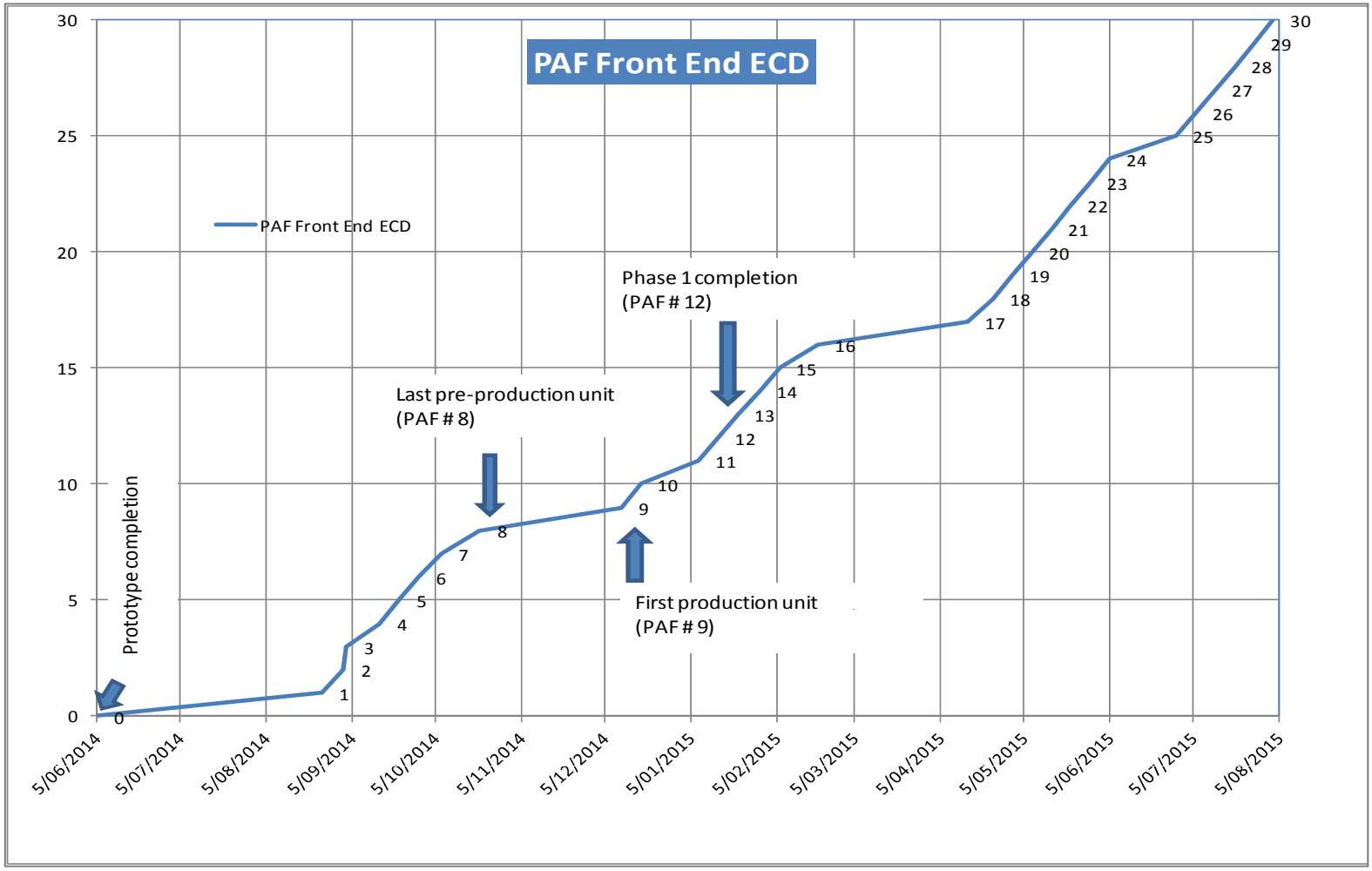
Pre-production digital receiver, beamformer & correlator test installations in room 172

Bare rack

Beamformer Cards

Correlator

PAF front end production (cash flow dep.)



Production schedule under review to align with Puzzle's production line capacity

Funding

- Additional funds secured
  - $6m from CSIRO capex
  - $6m from SIEF
  - An additional $6m CSIRO capex
    - Matching the AAL managed, NCRIS2 funds supporting ASKAP Operations
- Funded for:

  6 Mk I PAFs

  30 Mk II PAFs

  Total = 36 PAFs

- Cash flow dependent manufacturing model
- Still working on sequence / plans to replace Mk I PAFs with Mk IIs
  - October 2014 workshop

We acknowledge the Wajarri Yamatji people as the traditional owners of the Observatory site.

Thank you

CSIRO Astronomy and Space Science
Antony Schinckel
ASKAP Director

t +61 2 9372 4101
e antony.schinckel@csiro.au
w www.csiro.au/cass