



CALIM 2011



Telescope Status

Range of technologies: AA, PAF, Dish

- ASKAP (Tim) → 6 antennas installed, 2nd PAF on its way
- LOFAR (Ronald) → Science users
- MeerKAT (Ludwig) → KAT-7 commissioning started
- MWA (Daniel) → Imaging & pulsar detection commissioning results
- EVLA (Sanjay) → Science users



Telescope Status

Range of technologies: AA, PAF, Dish

- ASKAP (Tim) → 6 antennas installed, 2nd PAF on its way
- LOFAR (Ronald) → Science users
- MeerKAT (Ludwig) → KAT-7 commissioning started
- MWA (Daniel) → Imaging & pulsar detection commissioning results
- EVLA (Sanjay) → Science users



Telescope Status

Range of technologies: AA, PAF, Dish

- ASKAP (Tim) → 6 antennas installed, 2nd PAF on its way
- LOFAR (Ronald) → Science users
- MeerKAT (Ludwig) → KAT-7 commissioning started
- MWA (Daniel) → Imaging & pulsar detection commissioning results
- EVLA (Sanjay) → Science users

- This CALIM has taken us from:
Simulation → Implementation → Application
- To the point that implementations are now evolving iteratively following data results (Urvashi/George)
- Combination of simulation and application (Ian)

- This CALIM has taken us from:
Simulation → **Implementation** → Application
- To the point that implementations are now evolving iteratively following data results (Urvashi/George)
- Combination of simulation and application (Ian)

- This CALIM has taken us from:
Simulation → **Implementation** → **Application**
- To the point that implementations are now evolving iteratively following data results (Urvashi/George)
- Combination of simulation and application (Ian)

- Different software packages seem to be converging on common methods
 - Pre-averaging calibration
- Utilizing experience from other projects (direct result of CALIM?)
 - JAWS
- Multiple implementations of common algorithms → redundancy of testing

- Different software packages seem to be converging on common methods
→ Pre-averaging calibration
- Utilizing experience from other projects (direct result of CALIM?)
→ JAWS
- Multiple implementations of common algorithms → redundancy of testing

- Different software packages seem to be converging on common methods
 - Pre-averaging calibration
- Utilizing experience from other projects (direct result of CALIM?)
 - JAWS
- Multiple implementations of common algorithms → redundancy of testing

- Algorithms are evolving quickly
 - Major change every year
- Hardware is also evolving
 - Major change every two years
- How will this be dealt with during science operations?

- Algorithms are evolving quickly
→ Major change every year
- Hardware is also evolving
→ Major change every two years
- How will this be dealt with during science operations?

- Algorithms are evolving quickly
→ Major change every year
- Hardware is also evolving
→ Major change every two years
- How will this be dealt with during science operations?

- Hybrid CPU/GPU processing (e.g. MWA)
- GPU processing for LOFAR (Panos/Vamis)
- OpenCL vs. CUDA (John)
- Convergence of GPU and CPU programming

- Introducing 3GC to current data: TV-DDE
- The more advanced our calibration methods become the more issues we will discover
- Still challenges in the calibration of existing telescopes such as Arecibo and WSRT (Sam/Oleg)

- Looking to the future
- How do we scale to SKA-lo size AA? (Christophe)
- Is it possible to sparsely represent the beams when taking into account issues such as mutual coupling?
- Are non-ideal solutions to PAF calibration sufficient? (Stefan)
 - experiment results better than model

- Looking to the future
- How do we scale to SKA-lo size AA? (Christophe)
- Is it possible to sparsely represent the beams when taking into account issues such as mutual coupling?
- Are non-ideal solutions to PAF calibration sufficient? (Stefan)
→ experiment results better than model

- Even if the hardware can be parameterized can the computing scale?
- Scaling of ASKAP central processing is better than target (Tim)
- Reduced performance increases (Chris)
 - possible heterogeneous solutions

Power consumption may be the limiting factor

- Even if the hardware can be parameterized can the computing scale?
- Scaling of ASKAP central processing is better than target (Tim)
- Reduced performance increases (Chris)
→ possible heterogeneous solutions

Power consumption may be the limiting factor

- Even if the hardware can be parameterized can the computing scale?
- Scaling of ASKAP central processing is better than target (Tim)
- Reduced performance increases (Chris)
→ possible heterogeneous solutions

Power consumption may be the limiting factor

- Gridding is a bottle-neck
- Fast gridding methods on GPUs (John)
- Snapshot imaging is also looking like a good alternative to standard w-projection (Daniel, Tim)
 - long baselines still problematic

Scaling to SKA long baselines is prohibitive

- Gridding is a bottle-neck
- Fast gridding methods on GPUs (John)
- Snapshot imaging is also looking like a good alternative to standard w-projection (Daniel, Tim)
 - long baselines still problematic

Scaling to SKA long baselines is prohibitive

- Gridding is a bottle-neck
- Fast gridding methods on GPUs (John)
- Snapshot imaging is also looking like a good alternative to standard w-projection (Daniel, Tim)
 - long baselines still problematic

Scaling to SKA long baselines is prohibitive

- We should be aware of our fundamental limits (Tobia)
“Calibratability is the degree to which the gains are invertible”
- Unknowns vs. Constraints
- Still new methods emerging to increase those constraints
(Ahmad)

Are we fulfilling the CALIM objectives?

- **Share information and insight**

Annual meetings

- **Forge collaborations**

Demonstrated by “active and healthy” interactions

- **Enhance, re-use and common interface**

The first of these is certainly true. A common interface has not appeared, but a common terminology is evident. Greater degree of familiarity with cross-project software/hardware.

- **Improve rate of progress**

Progress appears steady

Are we fulfilling the CALIM objectives?

- **Share information and insight**

Annual meetings

- **Forge collaborations**

Demonstrated by “active and healthy” interactions

- **Enhance, re-use and common interface**

The first of these is certainly true. A common interface has not appeared, but a common terminology is evident. Greater degree of familiarity with cross-project software/hardware.

- **Improve rate of progress**

Progress appears steady

Are we fulfilling the CALIM objectives?

- **Share information and insight**

Annual meetings

- **Forge collaborations**

Demonstrated by “active and healthy” interactions

- **Enhance, re-use and common interface**

The first of these is certainly true. A common interface has not appeared, but a common terminology is evident. Greater degree of familiarity with cross-project software/hardware.

- **Improve rate of progress**

Progress appears steady

Are we fulfilling the CALIM objectives?

- **Share information and insight**

Annual meetings

- **Forge collaborations**

Demonstrated by “active and healthy” interactions

- **Enhance, re-use and common interface**

The first of these is certainly true. A common interface has not appeared, but a common terminology is evident. Greater degree of familiarity with cross-project software/hardware.

- **Improve rate of progress**

Progress appears steady

Are we fulfilling the CALIM objectives?

- **Share information and insight**

Annual meetings

- **Forge collaborations**

Demonstrated by “active and healthy” interactions

- **Enhance, re-use and common interface**

The first of these is certainly true. A common interface has not appeared, but a common terminology is evident. Greater degree of familiarity with cross-project software/hardware.

- **Improve rate of progress**

Progress appears steady