The CARMA Software Toolkit

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Combining the existing BIMA and OVRO mm interferometers, and adding a new third sub-array in a combined CARMA mm interferometer will not only bring up new challenges in hardware, but also in software, and the challenges of remote collaborations.

Timeline has forced us to carefully balance using existing software, with wrappers to a new more object oriented approach, and rewriting from scratch. New hardware, such as the correlator, has already resulted in new software, but we anticipate re-using a fair fraction of the existing telescope software.

This poster will summarize our ideas on how we plan to do this, as well as outline what we call the CARMA Software Toolkit and the associated Software Engineering aspects.
Operating System(s)

- **Old:**
  - BIMA: 1 central control computer (solaris)
  - OVRO: central control computer (VaxStation)
    antenna computers (microVax)
  - SZA:

- **New:**
  - ACC (Array Control Computer) linux
  - AC (Antenna Computer): real-time linux
Software Reuse?

• Pros:
  – less new code writing, etc. etc.

• Cons:
  – different packages have different compiler needs
Basics Tools

- CVS
- autoconf, automake (ant for java?)
- RDMS:
  - MySQL, oracle, sybase, DB2, postgresql
- Compilers:
  - gcc, g++, g77
  - java
Libraries

- PGPLOT
- CFITSIO
- MIRIAD (also as package)
- wcstools
- SWIG (inter-language interface builder)
- CORBA
- ephemeris
Packages

- MIRIAD
- ephemeris
Hardware interfaces

- GPIB
- CANbus
- COBRA (correlator – written in-house)
Software Engineering

• “classical” approach
  – Requirements (nearly done)
  – Design
  – Implementation

• Distributed workers (4 locations, 3 timezones)
  – CVS source code control
  – nightly builds, with emulated hardware
  – weekly tele-conferences
  – regular face-to-face meetings