EVLA Computing

End-to-end (E2e) software

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Main E2e Subsystems

- Proposal preparation/handling
- Observation preparation
- Observation scheduling
- Monitor & Control
- Data capture
- Archive
- Pipeline
- Post-processing

E2e Accomplishments I – Proposal Tool

- Goal:
  - common look and feel for all NRAO telescopes; instrument dependencies isolated
- Architecture agreed upon by:
  - ALMA IPT
  - all major NRAO instruments
- Schedule:
  - Focus on GBT first, for June 2005 deadline
  - Currently being tested by GBT scientific staff
  - Later in 2005, VLA and VLBA
  - EVLA specific resource page added in 2006 at the earliest
- NRAO User Database
  - Is being developed in parallel
  - To be integrated with proposal tool – as it will be with other tools (e.g. archive)

E2e Accomplishments II – Science Data Model Monitor Data Archive

- Science Data Model
  - Conducted study of ALMA Science Data Model (ASDM)
  - Produced document with suggested modifications/extensions to the ASDM to meet EVLA/VLBA requirements
  - Proposed: core model with instrument-dependent extensions
  - Submitted to ALMA IPT responsible for ASDM
- Monitor Data Archive
  - First E2e deliverable because of test antenna
  - Has been up and running since spring 2004
  - Is in active use by Electronics division
  - Collects and archives data from all devices in the two test antennas and on test benches
  - Also is capable of archiving VLA monitor points
  - Stored in Oracle tables at a rate of several Mbytes/day

E2e Development Issues

- Required staff resources
- Available staff resources
- Consequences of insufficient staffing levels
- Plans for 2005

Staff Resources Needed

- E2e deliverables originally were to be provided by DM; now we have to use own – Project - resources
- We started by estimating resources needed *based on requirements*: all priority 1 and 2/3 of priority 2 (in analogy to ALMA)
- For each requirement, we also estimated and took into account fraction that could be borrowed from ALMA
- Result: 31.1 FTE-years needed for FY 2005 through 2009, or 6.2 FTE's over five years
- Only priority 1: reduces to 24.2 FTE-years, or almost 5 FTE's over five years

Staff Resources Available for E2e

- 4.3 FTE's in E2e group
- Currently (2005) only 1.7 FTE's available for E2e work - 2.6 have other (non-instrument specific) responsibilities. These 1.7 FTE have been/are working on:
  - Monitor data archive
  - EVLA Science Data Model issues
  - E2e aspects of Phase 1 of transition plan
- Remaining 2.6 working on:
  - Proposal tool
  - VLA/VLBA archive
- By reducing responsibilities in these areas we expect to gradually increase EVLA specific E2e work to 3.4 in 2008 and 2009
- Total available from 2004 through 2009 for EVLA E2e work: 15 FTE-years
- Since we need 31 (24) FTE-years we have a shortfall of 3.2 (1.8) FTE's
- Note that these estimates already take into account ALMA code re-use where possible

What can (can't) we do with current staffing

- We *have* to do subsystem design. We will do so with full knowledge of ALMA subsystems, but we have to take into account EVLA-specific requirements and constraints
- Leaving E2e staffing at current levels will strongly reduce most planned E2e functionality: we will not be able to address many priorities classified as 1
- In general:
  - Limited passage of information between subsystems
- For specific subsystems:
  - Proposal – no major impact on preparation (is well under way), but no, or rudimentary, proposal handling and management tools
  - Observation preparation – no new tool but adaptation/extension of current JObserve
  - Scheduling – No or very limited dynamic scheduling
  - Pipeline - More or less straight copy from ALMA except for heuristics; no finished images
  - Archive - until very recently: unable to copy ALMA's archive technology because of proprietary NGAS system, but latest indications are this issue has been resolved

Collaboration and Interaction with ALMA

- Some areas in which we are collaborating or intend to collaborate with ALMA:
  - High level design and subsystem design
  - Proposal tool: architecture development coordinated with ALMA IPT
  - Scheduling tool: VLA scheduling tool will borrow code developed for ALMA; prototype for EVLA scheduling tool
  - DCAF: re-use potential if EVLA and ALMA agree on Science Data Model
  - Science data model: EVLA intends to adopt the ASDM with modifications
  - Archive: now that NGAS no longer appears to be proprietary there is lots of potential for reuse

E2e plans for 2005

- Whenever possible, move existing EVLA E2e staff into EVLA-specific E2e applications
- If at all possible, staff E2e effort adequately. Question: what is adequate? How do we compare level of E2e functionality to e.g. hardware?
- Design subsystems, drawing on ALMA expertise wherever possible:
  - Observation preparation
  - Observation scheduling
  - Data capture
  - Science Data Archive
  - Pipeline