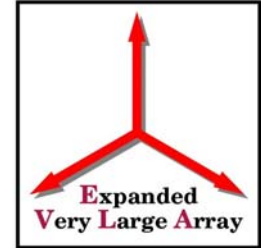


EVLA Software

E2E Perspective



Topics

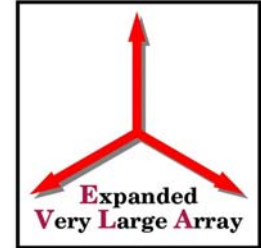


- What is E2E?
 - purpose
 - EVLA roadmap
- EVLA Design Review
- Next steps
 - Coordinated Development Strategy

Gustaaf will cover later what EVLA E2E has actually done, and resource issues affecting what can be done



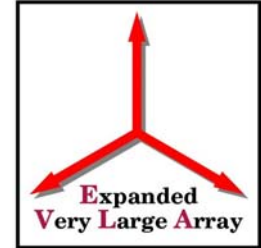
What is E2E?



-
- History
 - E2E oversight and architecture committee formed 1 year ago
 - Goals
 - Coordinate E2E efforts for all NRAO telescopes including ALMA
 - Optimize the impact of limited resources across the Observatory
 - Provide a modern end-to-end data-flow and data management system for all NRAO telescopes.
 - Provide the user community with a common look and feel for observing with all NRAO telescopes
 - Constraints
 - Delivering an operational telescope remains first priority
 - Schedule and budget



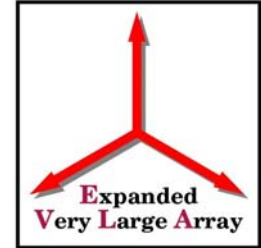
EVLA E2E Roadmap



- Develop common E2E system models
 - *Observatory model, Project model, Observing model, Science Data model*
 - Common system models required for consistent function and to enable software sharing
 - System modeling required for design in any case
- Develop EVLA system design conformant to E2E models
 - Subject of initial E2E review
- Identify common elements
 - Largely done
 - Issues of complexity and risk
- Coordinated development strategy and plan
- Subsystem design



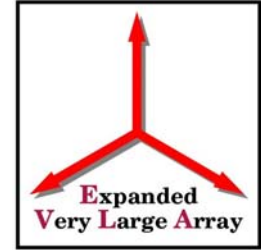
EVLA Design Review



- Design sound "to the level that it has been worked out"
 - Much improved coordination with ALMA and E2E
- Design mainly addresses control system and transition plan
 - Expertise of EVLA team lies primarily in control system
 - Transition plan looks good; EVLA unique in this respect
 - Dataflow through data capture well specified
 - Concern about communications infrastructure
- E2E and post-processing largely not addressed yet
 - Need to get "hooks" for post-processing into telescope system
 - Concept of observing modes absent
 - Uncertain support for project model (e.g., observers intent)
 - Online functionality, future scalability of archive unclear



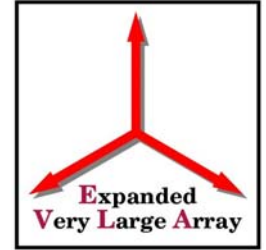
Coordinated Development Strategy



- Primary focus of EVLA team should be on core telescope functionality
 - *What is the minimal core system we have to deliver?*
 - Anything required for basic telescope operations should be done directly by the EVLA team
 - Observe, produce quality raw observation data product for the archive
 - Enable if not achieve automated post-processing
- Leverage ALMA for advanced capabilities
 - e.g., observation planning and preparation, dynamic scheduling
 - Minimize risk
- Most post-processing is common
 - Data capture, archive, pipeline, offline
 - ISD in Socorro responsible for most of this for both EVLA, ALMA

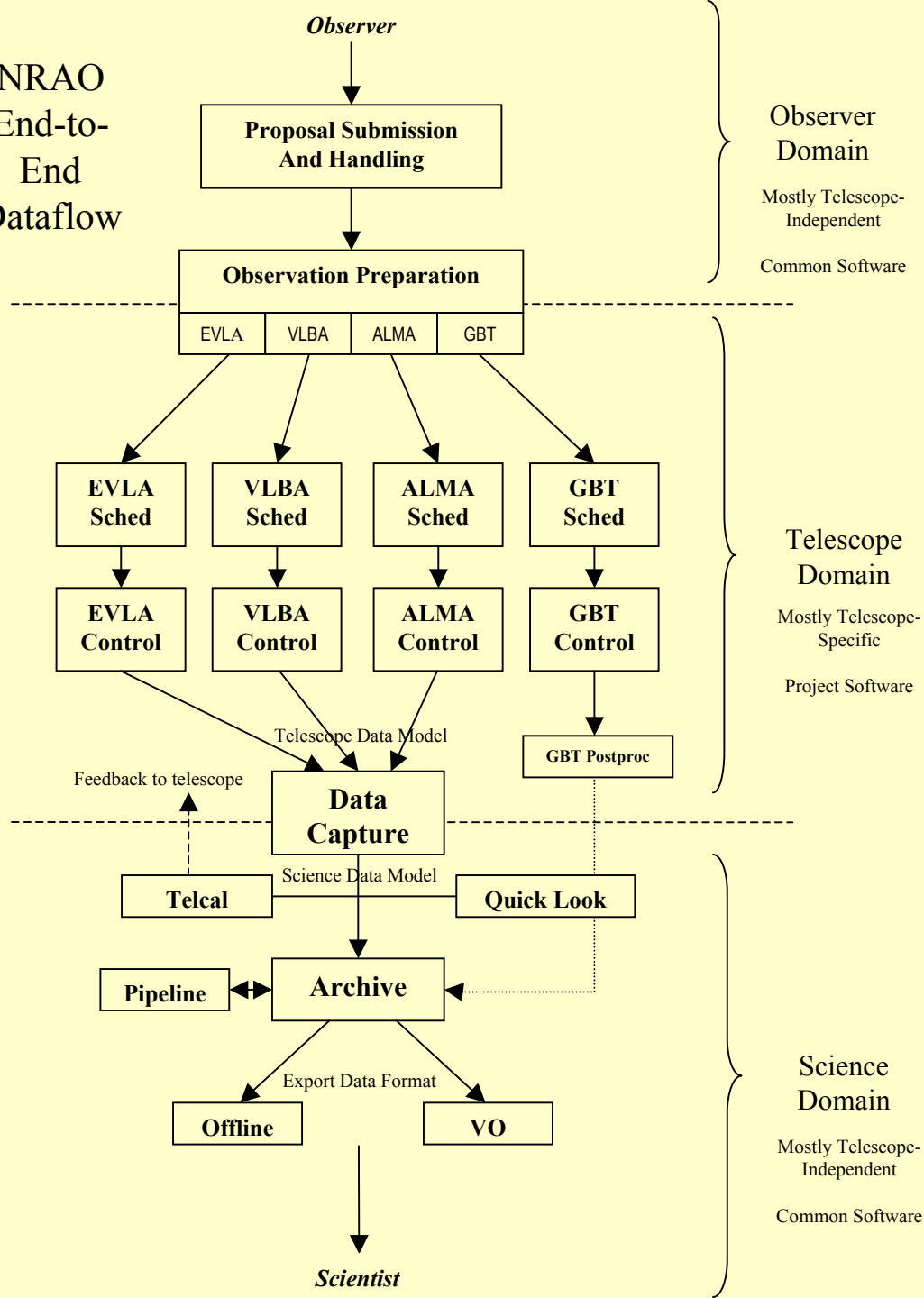


Common Elements



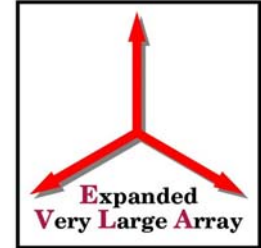
-
- Scope of E2E is all NRAO telescopes, but for EVLA our main concern is the overlap with ALMA
 - How much do ALMA and EVLA have in common?

NRAO
End-to-End
Dataflow





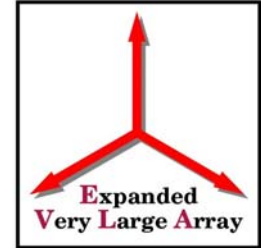
Common Elements



- Information Models
 - Project model
 - used to describe a project and track it through the system
 - proposal, project, observations, etc.
 - Science data model (SDM)
 - describes raw and calibrated science data
 - SDM defined separately from export data format
 - major interface to external community
 - basis for all post-processing



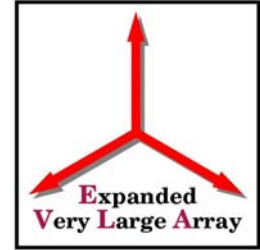
Common Elements



- Proposal submission
 - Proposal submission tool
 - Proposal database
 - Proposal handling
 - Telescope resources different (but similar)
- Observation preparation
 - Contains both generic and telescope-specific functionality
- Scheduling
 - Dynamic scheduling
 - Observing project management



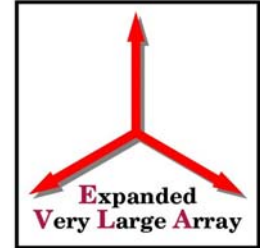
Common Elements



- Data capture
 - Largely the same
 - Telescope models differ
 - EVLA requires parallel data streams
 - Telcal, quick look partly the same
- Archive
 - User interface, data access interface
 - Information and data models
 - Storage manager (e.g. NGAS)
- User database
 - Authentication, user information



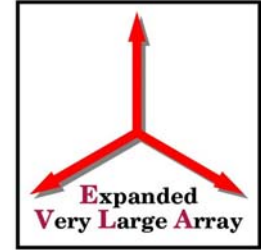
Common Elements



- Pipeline
 - Mechanism the same
 - Heuristics differ
- Offline
 - Software largely the same
 - The most challenging algorithms differ
 - Scalability more important for EVLA
- VO interface
 - Largely the same



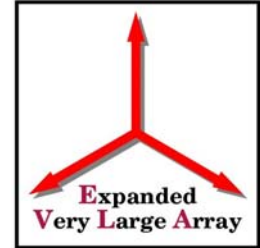
First Cut at a Minimal Core System



- Proposal submission
 - Produce digital description of project
- Simple observation preparation
 - Produce scheduling block
 - More than just a control script
- Simple scheduler
 - Main thing is to use project model
 - Dynamic scheduling capability can be minimal initially
- Control system
 - Takes scheduling blocks
 - Executes control script
 - Feeds metadata to data capture
 - Feeds bulk data to archive ingest store



First Cut at a Minimal Core System



- Data capture
 - Produces SDM, basic verification
 - Telescope calibrations (Telcal)
 - Minimal quick look capability
- Archive
 - Support for online system
 - Basic data store, data access
- Pipeline
 - Calibration pipeline
 - Support for 2-3 observing modes
- Offline
 - Focus initially on data processing functionality
 - Functionally complete, robust, efficient
 - Minimal user interface initially