



VLA to EVLA Transition Plan

2005-2010



First Version of Transition Plan



The talk includes

- 1) A broad outline of the hardware and scientific goals for EVLA transition.
- 2) Discussion of the some key aspects of this plan.

Note that detailed planning in each area is still very much underway.



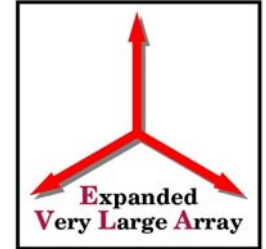
Two Transition Plan Committees



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- Scientific Committee (Owen, Butler, Carilli, Claussen, Chandler, Frail, Perley, Rupen, Myers)
 - Overall Operations Committee (Owen, McKinnon, Van Buskirk, Van Moorsel)



Assumptions



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- Accelerated funding continues.
 - Hardware Milestones are met.
 - Software is available on schedule.
 - Necessary Personnel are available.
 - EVLA Phase I only is considered.



EVLA Hardware Milestones



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- Dec 2005: 5 EVLA Antennas
 - Apr 2006: Prototype WIDAR Correlator
 - Dec 2006: 10 EVLA Antennas
 - Jan 2007: Interim WIDAR Correlator
 - Dec 2007: 16 EVLA Antennas
 - Jul 2008: Full WIDAR Correlator
 - Dec 2008 22 EVLA Antennas
 - Oct 2009 27 EVLA Antennas
 - Dec 2009 28 EVLA Antennas
 - Jun 2012 Final EVLA Receiver
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Science Goals



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- Feb 2005: Start Integrating EVLA antennas into VLA
 - Apr 2006: Begin Prototype Correlator Testing
 - Jan 2007: Begin Using New Frequencies on EVLA antennas with old correlator
 - Mar 2007: Begin Science Commissioning of WIDAR
 - May 2008: Begin “Shared Risk” Observing
 - Oct 2009: Regular Observing with 27 Antennas



Individual Areas



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- Progress is still needed in some key areas to achieve these goals.
 - In a number of areas decisions still need to be made on what we need to attempt within the scope of EVLA phase I.



Post-Processing: Priority 1



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- EVLA continuum sensitivity probably requires imaging sources over the full primary beam even at the highest frequencies.
 - EVLA gets its continuum sensitivity mostly by using large bandwidths.
 - We currently have no algorithm which can image wide-field, wide-bandwidth data adequately.
 - The highest priority for post-processing is to produce such algorithms we need for EVLA.



Post-Processing: 2005-2006



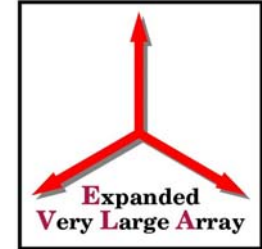
- 1) New Algorithms: Imaging, Interference
- 2) Computing Hardware Requirements
- 3) A Conceptual Model for How we will reduce EVLA data in 2009

Need to keep both AIPS and AIPS++ paths open for now to reach these goals and maintain our existing operations.

Usability issues wait till 2007 when when our staff start to work with WIDAR.



e2e



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- E2e needs more people to meet the minimum goals in the EVLA I proposal: both programmers and astronomers.
 - Desires exist for services beyond the EVLA I goals which will require more people.
 - However, we can descope e2e if necessary and run EVLA more like VLA.



Computing Hardware



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- In 2008-2010 timeframe it is hard to see how most users can reduce EVLA data from the large configurations at home.
 - Probably need to do calibration and imaging at the AOC for many (most?) projects.
 - Some sort of computing cluster with a very large memory is likely needed but more work is required to define the details.



Array Operations



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- Major and continuing changes will occur from 2005-2010
 - One or two additional operators may be needed in the 2006-2009
 - A move of most EVLA operations to the AOC in 2010 and some decrease in operations staff is planned.



AOC Operations



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- The nature of the AOC operations seems likely to change starting in 2008.
 - EVLA data volume, computing requirements, and new calibration techniques may require most users to come to the AOC at least in the early years.
 - AOC infrastructure and services will need to adapt.



Scientific Staffing



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- In 2005, VLA Scientific staffing will be at a historical low point.
 - Scientific Staff needs to expand, especially in 2006-2009 timeframe to deal with EVLA requirements.
 - After 2009, the staffing levels of 2000 may be adequate for the long term for EVLA I.



EVLA Scientific Staff Tasks



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- Hardware Commissioning:
Antennas, Receivers, WIDAR Correlator, Sensors,
Misc EVLA testing
 - Software Specifications, Advising, Testing:
e2e, Algorithms, Postprocessing
 - User Support:
Dynamic Scheduling, Handholding, Documentation
 - Scientific Operations Planning



EVLA Scientific Staffing Profile



- 2006 +2.5 FTE's (4-5 scientists)
- 2007 +0.5 FTE's (1 more scientist)
- 2008 +0.5 FTE's (1 more scientist)
- 2010 begin to return to pre-EVLA level

Increases can be a combination of new tenure track astronomers, scientists, postdocs and visiting appointments



EVLA II and beyond



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- When and if EVLA II is funded, we can add its requirements to the current plan.
 - However, NRAO may want to think about EVLA II in choosing transition options for EVLA I.
 - For example, EVLA I may not require FPGA assisted CPU's but EVLA II (and SKA) will. Maybe we should plan AOC computing with the future in mind ?



Questions ?



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- This plan is fairly aggressive and could well slip in time due to any of several factors.
 - However, it may seem to the community that EVLA capabilities come fairly slowly.
 - Does it seem too aggressive or not aggressive enough to the committee ?
 - What areas of the transition plan need more discussion ?