Future EVLA Operations

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The Yin and the Yang

- Yang--The Operations Vision
  - Make the EVLA a telescope for all astronomers, not just radio astronomers
  - Provide a common NRAO “look and feel,” ease of use, and advanced data products
- Yin--The Operations Limitations
  - Aging VLA infrastructure
  - Constrained long-term budgets from NSF

EVLA Operations

- Component 1: Routine telescope operations and telescope/facility maintenance
  - Must be done to carry out any scientific programs
- Component 2: Science support
  - Higher levels of support lead to broader availability, hence “better” science
  - More effectiveness through shared resources?

EVLA-I Proposal

- Executive Summary: “It is anticipated that the operational costs of the EVLA will be comparable to those for the existing VLA.”
- P. 24: “We believe that operational costs of the array after completion of Phase I will not exceed current levels, despite the major increase in operational capacity”
- Note: Enhanced user services were “promised,” but not funded in construction or operations planning

EVLA/VLBA Ops FTEs (w/o science support)

Function	2000	2007	2008	2009	2010	2011	2012
A.D. Office	5	3	4	4	4	4	4
Business	9.5	9.5	10	10	10	10	10
Array Ops	26	20	20	20	19	19	19
Electronics	77	64	66	68	69	69	69
Engr. Services	48	42	42	43	43	44	44
Comp. Infra.	9.5	10	10	10	10	10	10
Ops Software	9	10	10	11	15	16	17
TOTAL	184	158	162	166	170	172	173

Issues for General Ops

- Re-staffing from construction to operations
  - Those people who have been building new hardware now need to start maintaining that new hardware
  - Modern components, but more of them, with many embedded processors
- Infrastructure
  - Generators, transporters, antenna structures, railroad, site buildings, vehicles, power bills

Array Science Center

- EVLA was criticized for lack of vision, and appearance that EVLA would be operated "just like the VLA"
- Developed comprehensive Array Science Center plan, analogous to NAASC
  - "Core": basic support and pipeline operation
  - "Full": adds postdocs, visitors, instrument development

Core Science Support

Function	2000	2012
EVLA Science Support	7	5
VLBA Science Support	6	4
User Support Services	4	6
Post-processing Software	10	6
Management + Time Allocation	2	4
Pipeline Maintenance & Operations	0	5
Data Archiving	0	2
Algorithm Development	0	3
Computing H/W + S/W support	0	4
TOTAL	29	39

Full Science Support

- Original plan had 23 FTEs above “core”, totalling 33 above 2000
- Deleted 7 positions for “science quality” images and 2 for instrument development
- Postdocs, visitors, and instrument development logically may be part of an NRAO-wide program
  - ALMA instrument development is in Chile

Integrated Science Center (1)

- Integrated VLA/VLBA Science Support for last 15 years. Lessons learned:
  - Staffing sized for the services we provide
  - Sharing data analysts and scientists provides flexibility, but saves money only in shared management
  - Critical mass of co-located staff: scientists need to be co-located with engineers, software engineers, and ops personnel

Integrated Science Center (2)

- Concept development (Frail), and comparison of requirements, with ALMA Ops (Chandler & Hibbard)
- EVLA requirements compared to NAASC and ALMA Chilean Operations
  - ALMA bottom-up requirements similar to those derived from VLA/VLBA experience, after accounting for NAASC/JAO split

Integrated Science Center (3)

- "Distributed Integrated Science Center"
  - Regional centers in Socorro and Charlottesville
  - Each supports both EVLA and ALMA
- Cost-saving opportunities from shared services?
  - Proposal handling, algorithm development, archiving?
  - BUT some ALMA functions are JAO activities and not North American functions
  - CASA already shared
- No obvious cost savings from sharing with GBT

Integrated Science Center (4)

- Possible enhanced support if users have access to two regional centers
  - E-mail helpdesk (as planned by ALMA) would make “local” center less important
- Balance against importance of specific instrument expertise
  - More detailed questions require intimate knowledge of instrument

Conclusions

- Routine operations funding is a concern
  - Supervision in EVLA or e2e Ops does not greatly change the number of people needed to do the same work
- Integrated Science Center offers possible cost savings of no more than a few FTEs
  - Core support planned so that people are fully engaged
  - Possible service advantages and disadvantages
  - Cost savings by combining “beyond-core” activities