



## European ALMA Regional Center: Context

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# Talk Overview

- Joint ALMA Observatory
  - Summary of operations concepts, structure
- ALMA Regional Center (ARC)
  - Concepts and missions
- European ARC
  - The role of ESO
  - The role of the community
- Role of European ARC Manager
  - Inward: ESO & JAO
  - Outward: European ARC node network

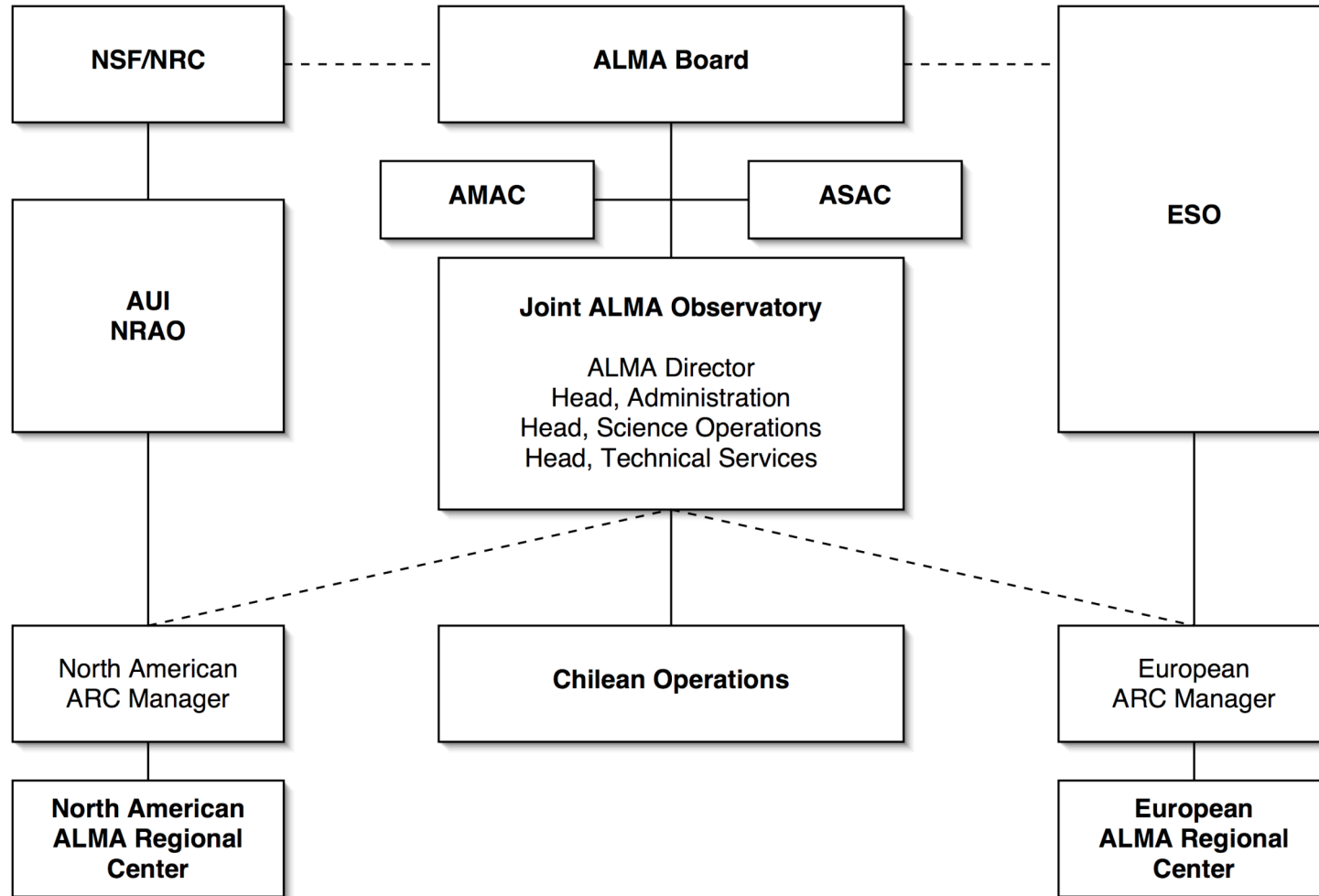


## Joint ALMA Observatory

- Array Operations Site (AOS): 5000 m
  - Main array + Atacama Compact Array
- Operations Support Facility (OSF): 2800 m
  - Technical support, array operations center
- Santiago Central Office (SCO)
  - Master Archive node, master science pipeline
  - Offices for administration staff, science staff
- **ALMA Regional Center (ARC)**
  - Science support services
  - Technical support services



# High-Level Organization





# Operations Startup Milestones

- Obvious: antenna slip = operations start slip
  - **Silva gut feeling: not official, subject to change, eat before reading, etc.**
  - 2005 Q2: antenna contract signed
  - 2006 Q4: vendor delivers first antenna at OSF (was 2005 Q4)
  - 2007 Q3: vendor delivers second antenna, then one per month
  - 2008 Q2: First Call for Proposals (was 2007 Q1) - **optimistic**
    - ARC science support service begins
  - 2009 Q1: Science Operations begin (was 2007 Q3) - **optimistic**
    - In Silva opinion, this milestone still **very uncertain**
- Good News: more time to setup ARC properly



# Initial Capabilities: Goals

- **More good news: new time-line = new opportunities?**
- **Baseline Goals (official)**
  - 6 - 8 antennas released to operations
  - 2 receiver bands (Band 3 + one other)
  - Baselines out to 1 km
  - *For more details, see Operations Plan, Sec 5*
- **Stretch Goals (not official yet)**
  - Start with Science Demonstration projects
  - Up to 10 more antennas
  - Up to 4 more bands (2 EU/NA + 2 Japanese)
  - ACA (???)
  - Science Pipeline = automatic images (???)



# Operations Concepts for Users

- Service Mode only
  - Phase 2 process, Scheduling Blocks, dynamic scheduling
  - User support in the local region (Europe or North America)
- End-to-end data flow system
  - Proposal-to-Archive
  - Observatory-based Calibration Plan + Quality Assurance process
  - Basic product: calibrated, de-convolved images
    - Automatic products **never** “best-possible”
    - Data processing & imaging software released from start
  - ALMA Archive containing all information flowing from observatory



## ARC: Core Services

*Funded within bi-lateral ALMA operations budget*

- Scientific support services
  - Proposal & observation preparation user support
  - Basic data analysis support
  - ALMA Archive operations: host copy, data package delivery
  - OSF Astronomer-on-Duty shifts
- Technical support services
  - ALMA module repair (i.e. receiver cartridges)
  - Software maintenance
  - Development projects (receivers, backends, data processing, etc.)
  - *Not under further discussion today*



## ARC: Enhanced Services

*Not funded within bi-lateral ALMA operations budget*

- Research support activities
  - Extended archive & data processing support
    - Examples: one-on-one data processing support in a dedicated physical location, specialized pipeline versions, re-processing of large and/or complex datasets, advanced simulation development
  - Support for special projects
    - Examples: public surveys, legacy (large) programs
  - Science community development
    - Examples: Non-ESO post-doctoral fellowships, training schools & workshops



# ARC Implementation Models

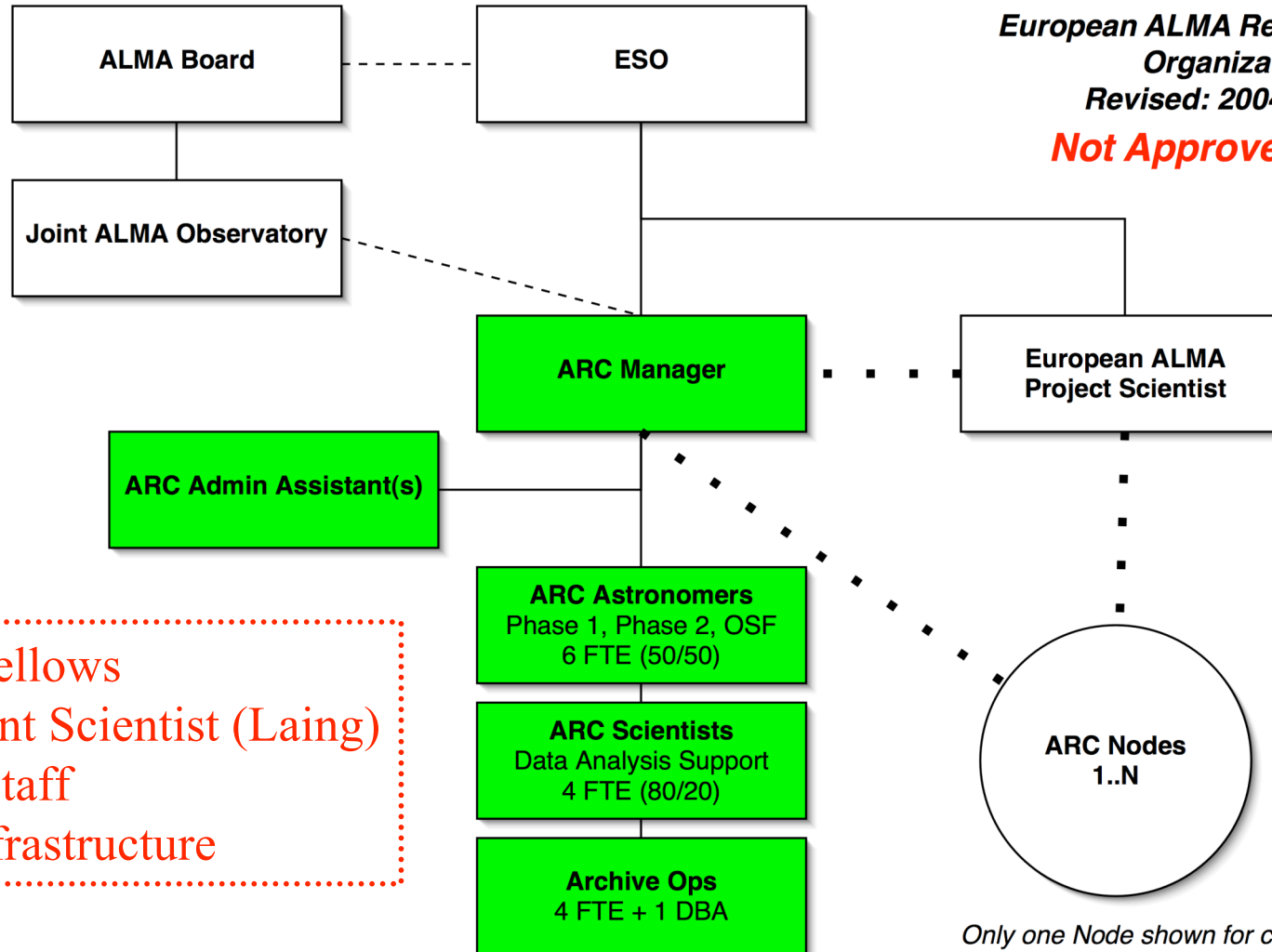
## *Organization of ARC responsibility of the regional Executive*

- North American
  - All ARC functions co-located in Charlottesville
  - Name: North American ALMA Science Center (NAASC)
    - Head: Paul Vanden Bout
  - Reported NRAO goal: request NSF funds for core and enhanced services
    - Status of request unclear, outcome not known until 2005
- Japanese
  - Current planning unknown
  - Details of operations interfaces still under discussion
- Europe
  - Core services based at ESO/Garching (funding: ESO Long-Range Plan)
  - Enhanced services based in the community (funding: under development)



# European ALMA Regional Center: Science support services

*European ALMA Regional Center  
Organization  
Revised: 2004 Sept 6  
**Not Approved Yet***



- + 2 ESO Fellows
- + Instrument Scientist (Laing)
- + Project Staff
- + DMD infrastructure

*Only one Node shown for clarity*



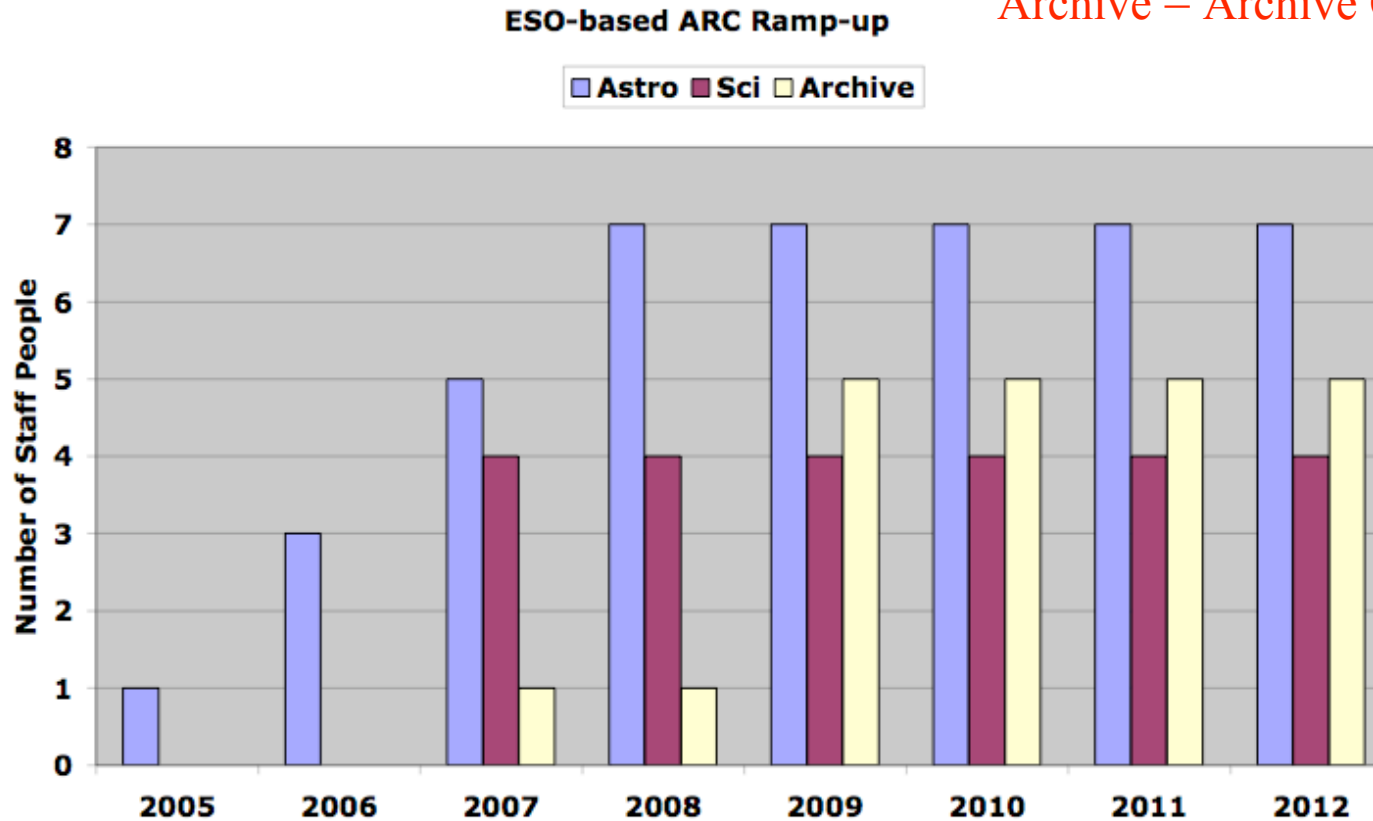
# ESO-based ARC Staff Ramp-up

*Old plan – will stretch now*

Astro = User Support

Sci = Data Analysis Support

Archive = Archive Operations





# ESO-based Community Outreach

- ALMA Community Day - annual (?)
- ALMA Familiarization Workshops
  - Workshop 1: Proposal Preparation Workshop
    - 1 day, 1 month before first proposal submission
    - System status, capabilities, tools, user support services, etc
  - Workshop 2: Data Processing Workshop
    - 1 - 2 days, synchronized with first PI data releases
    - Calibration issues, data products, data processing tools, etc.
    - On Day 2: chance to work on real data
  - Workshop 3: repeat Workshop 2 every 12 - 18 months as appropriate



## Community-based ARC Activity

To provide enhanced user support services, ESO (as endorsed by ESAC, STC, and Council) has proposed:

*“...a network consisting of a small number of science support centers, operating in a highly collaborative manner and making optimum use of the existing European millimeter wave and aperture synthesis expertise.” (From ESO Request for Expressions of Interest)*

**This is what we are here to discuss today.**



## Role of ARC Manager: Inward

- Manage all Garching-based ARC activity
  - All science support activity based within the Data Management & Operations Division (DMD)
    - ARC Manager = DMD department head
    - Will be hired in 2005
  - All technical support activity within ALMA Division
- Coordinate European ARC activity with other ARCs
  - Science support activity only
  - Exact details TBD via multi-lateral discussion
- Coordinate European ARC activity with Chile-based operations
  - Science deliverables, staff rotation through OSF, etc.



## Role of ARC Manager: Outward

- Coordinate European ARC network
  - No direct management responsibility or authority for non-ESO ARCs
  - Chairperson: ARC Coordination Committee (ACC)
    - ACC = ARC Manager, one person from each node, European ALMA Project Scientist, invited guests (depending on topics)
    - Semi-annual face-to-face meetings, bi-weekly telecons
  - **Further responsibilities to be discussed during this meeting**



## Summary

- European ALMA Regional Center shall be established
- **Euro-ARC will be an ESO/community collaboration**
- ESO-based ARC resources have been budgeted
- ESO-based ARC build-up will commence in 2005
  - ARC Manager position to be advertised and filled ASAP
  - Staffing ramp-up will slow to conform to startup slip (TBC)
- Collaboration with community still under development
  - **See discussion during this meeting**