

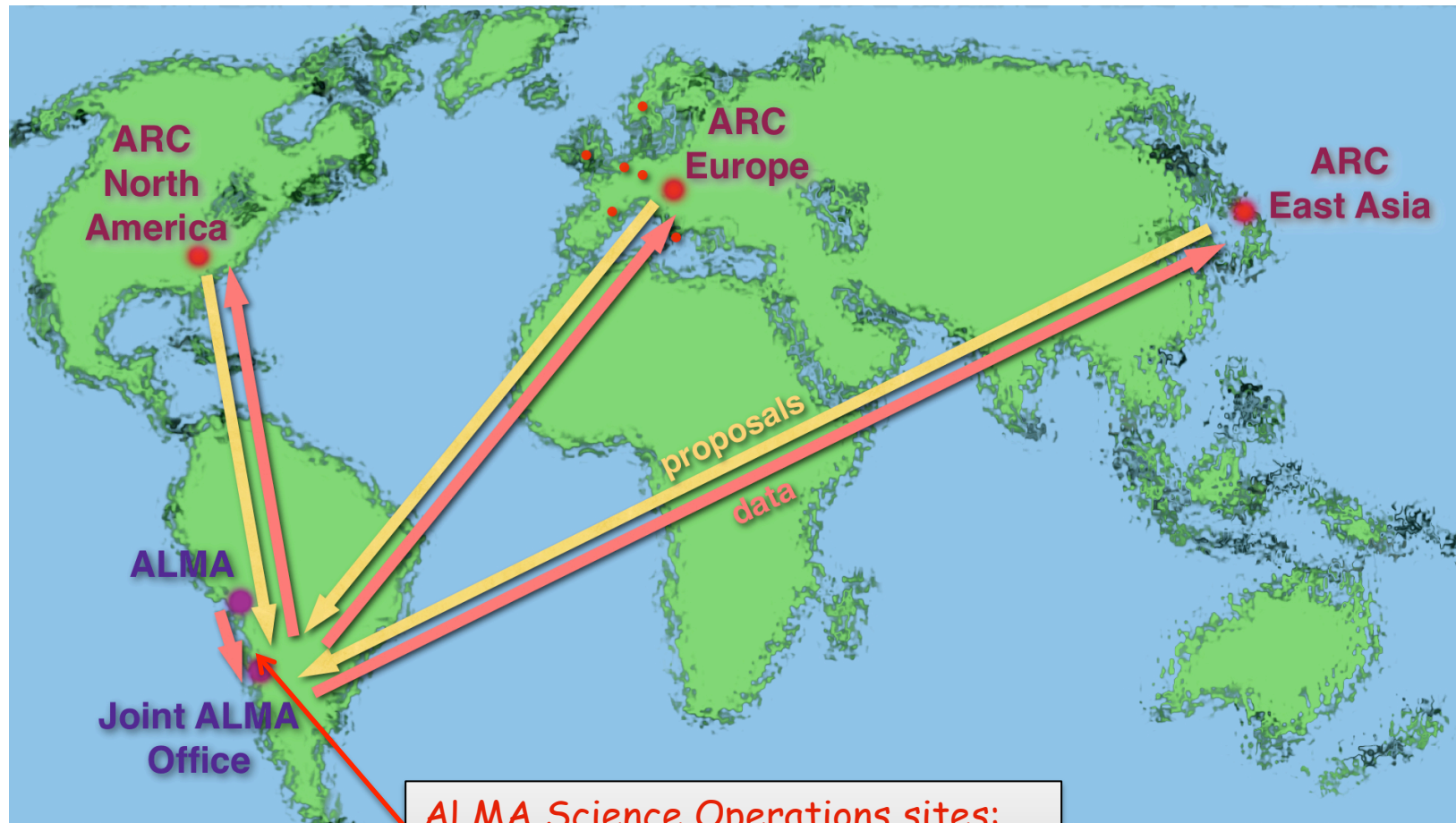


The European ALMA Regional Centre (ARC): a model of users support

EU ALMA users' support
Interface with the ALMA Observatory
Collaboration with the North American (NA)
and East Asian (EA) ARCs

Paola Andreani, ESO

The ARCs and their relation to the JAO



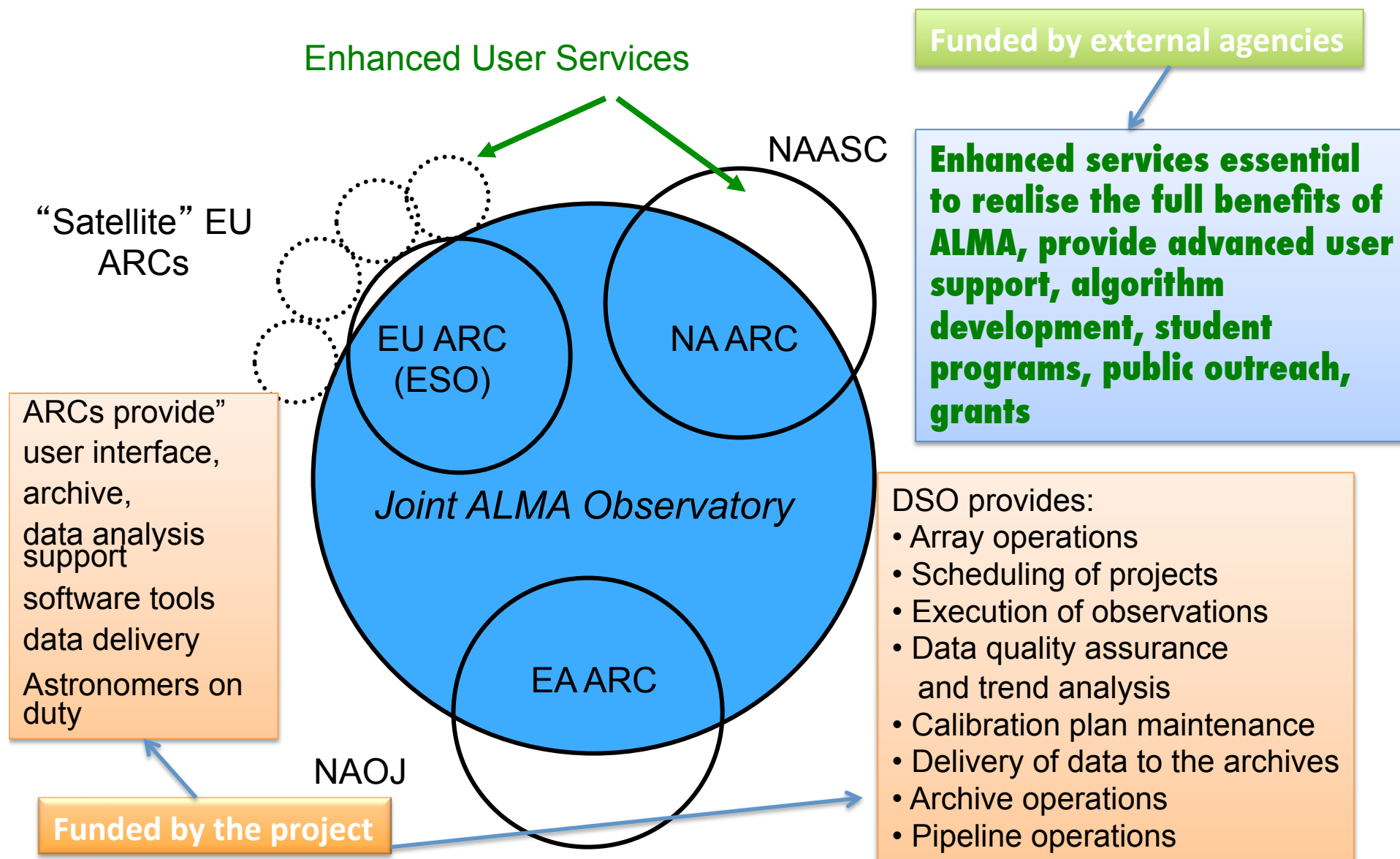
ALMA Science Operations sites:
Operations Support Facility (OSF)
Array Operations Site (AOS)
Santiago office

more in De Gregorio's talk



EUROPEAN ARC
ALMA Regional Centre

The Regional Centres are integrated parts of the ALMA Observatory



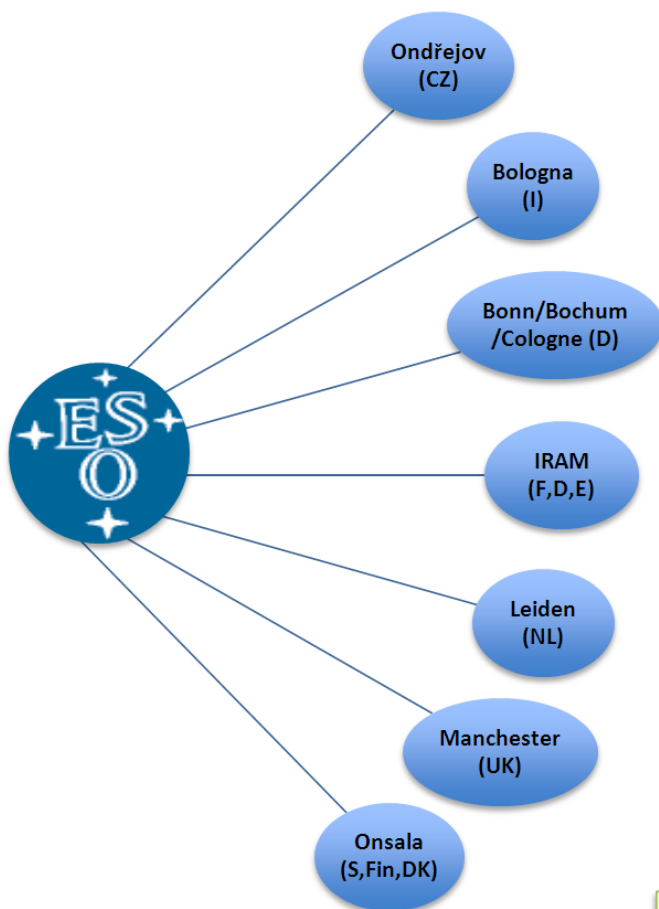


The European ARC

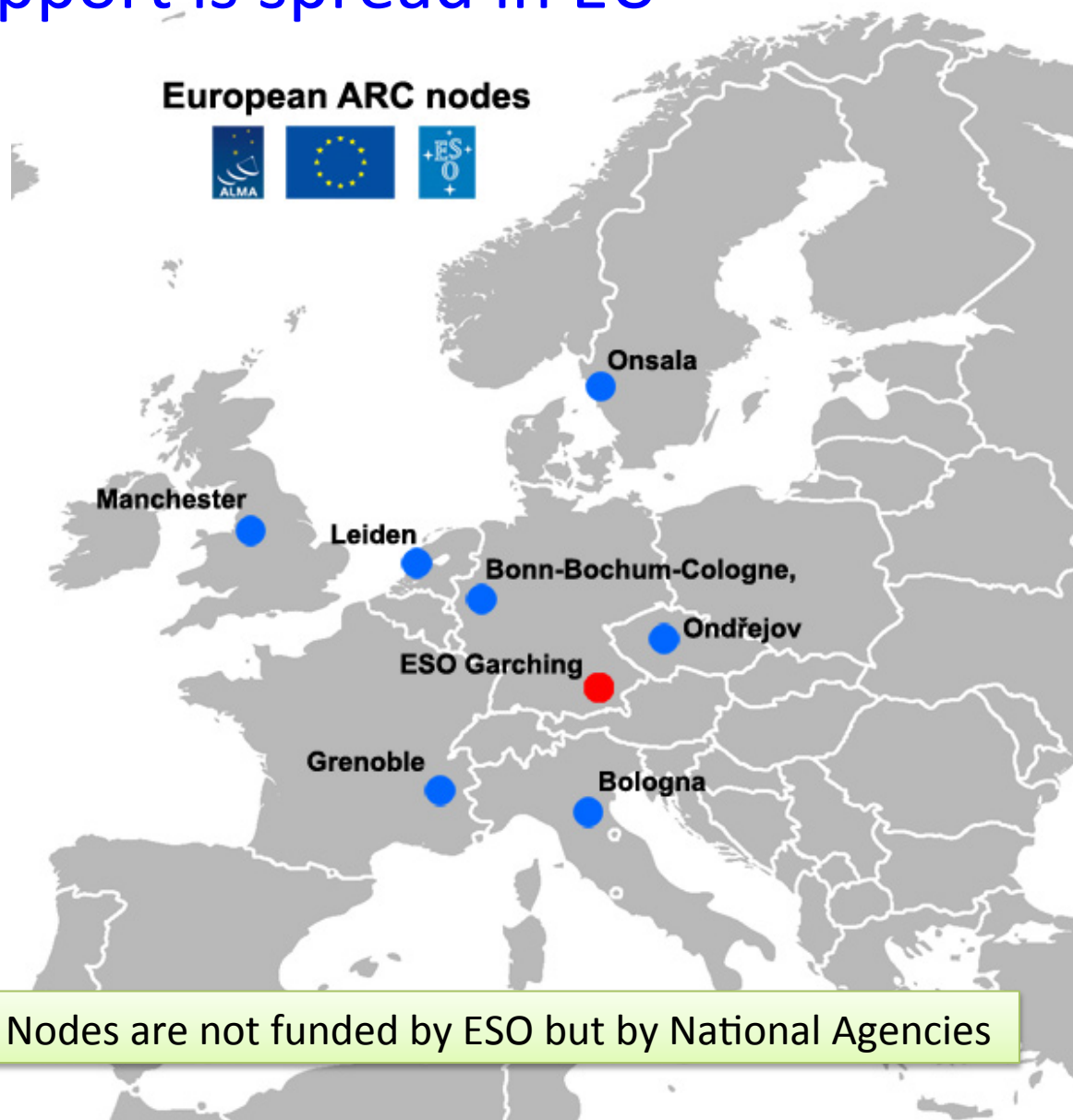


User support is spread in EU

EU ARC = ESO + 7 Nodes



European ARC nodes



Nodes are not funded by ESO but by National Agencies

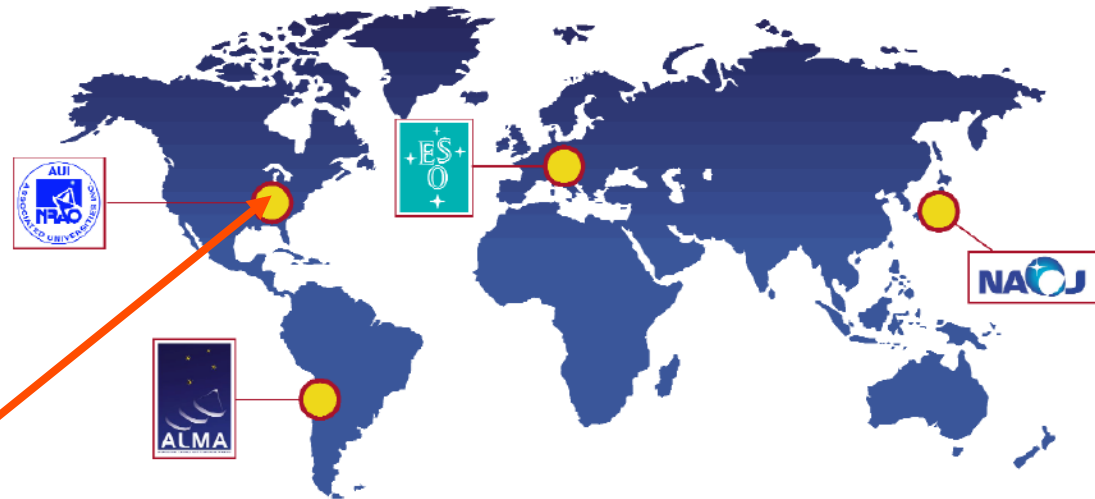


NAASC: North America ALMA Science Center (NRAO headquarters, Charlottesville, VA)



The North American **ARC** is a partnership between the US, Canada (7.25%), and Taiwan

The NAASC is a combination of the NAARC and US funded Full Science Support

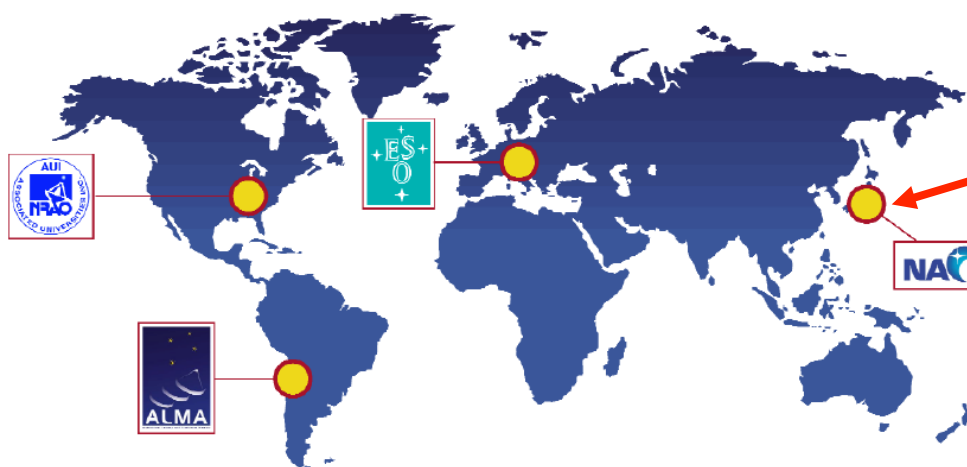


One-stop shopping for NA-related astronomers

- Proposals
- Observing scripts
- Data archive and reduction



East Asian ARC



- Located in Mitaka (at NAOJ)
- Partnership with Taiwan and South Korea

EA-ARC non-core development:

- Joint archive of ALMA, Nobeyama 45m, (SMA?)
- Data base with quality parameters for existing telescope (45m, SMA) data
- Data filler to CASA (45m, SMA, NMA)
- Laboratory molecular line database (Toyama),
 - cross-identification with other-wavelength data
 - <http://www.sci.u-toyama.ac.jp/phys/4ken/atlas/>
- VO—collaboration with JVO group (NAOJ)



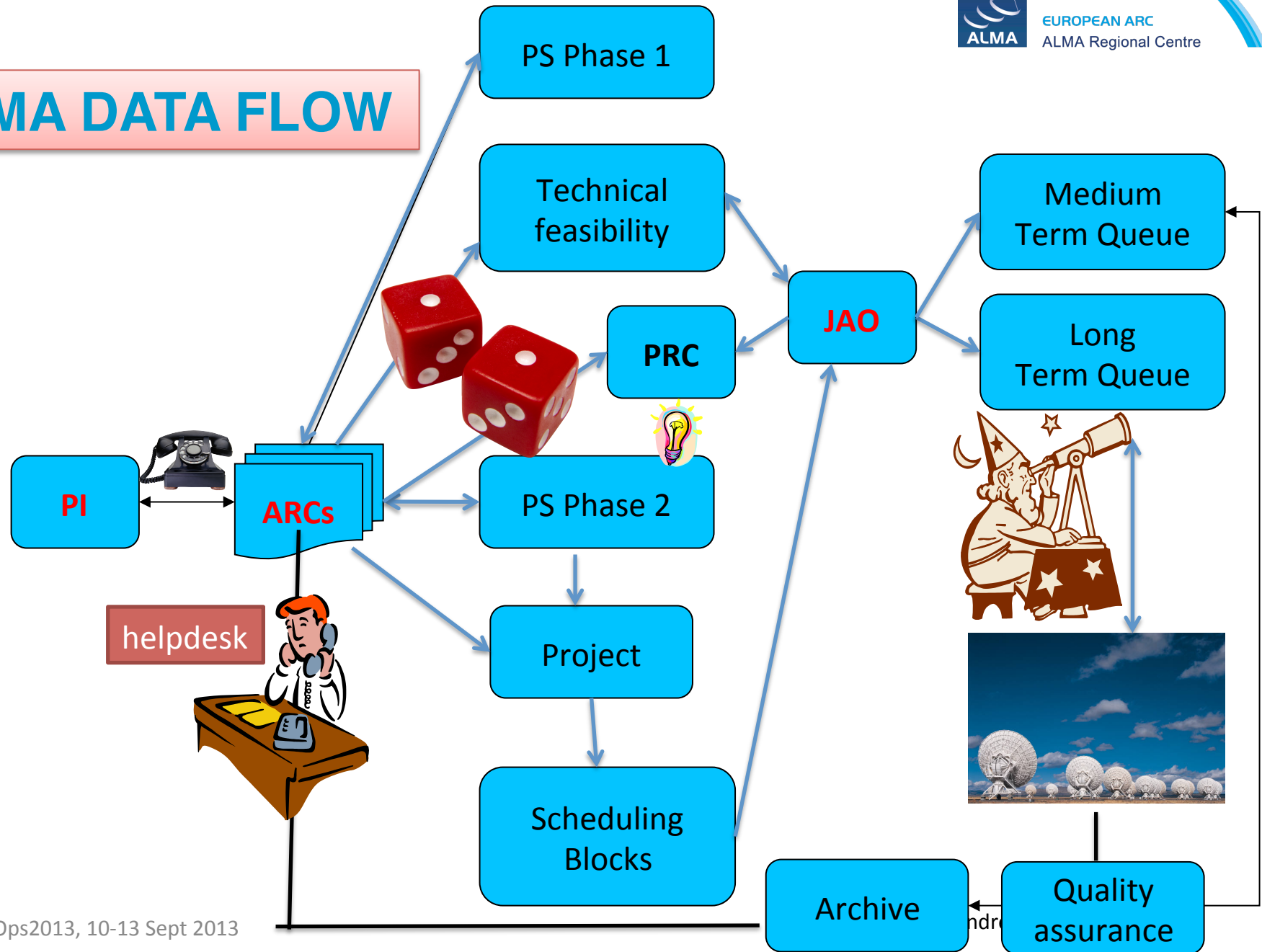
Users' support and interface with the Observatory

- ESO member countries' users support
 - Support+Train users to best exploit ALMA capabilities
- **Phase I:** science portal, helpdesk, users documents, emergency helpdesk 72hrs before submission, Community days
- **Phase II:** preparation of project (scheduling blocks, SBs), contact scientists
- **Data quality process:**
 - assistance in Data Quality Assessment (stage 2)
 - Collect feedback from PIs (QA3)
 - PI data reduction help (tutorials in data reduction for PIs)
- **Run archive + Data delivery**
- **leading scientists** for the Observing Tool, Archive, EU CASA development, and Pipeline
- **Manage the EU ARC network** (f2f support, community outreach, training, quality assessment of data before delivery)

more in van Kampen's, Randall's, Stoehr's talks and Petry's poster



ALMA DATA FLOW





ALMA Observatory support

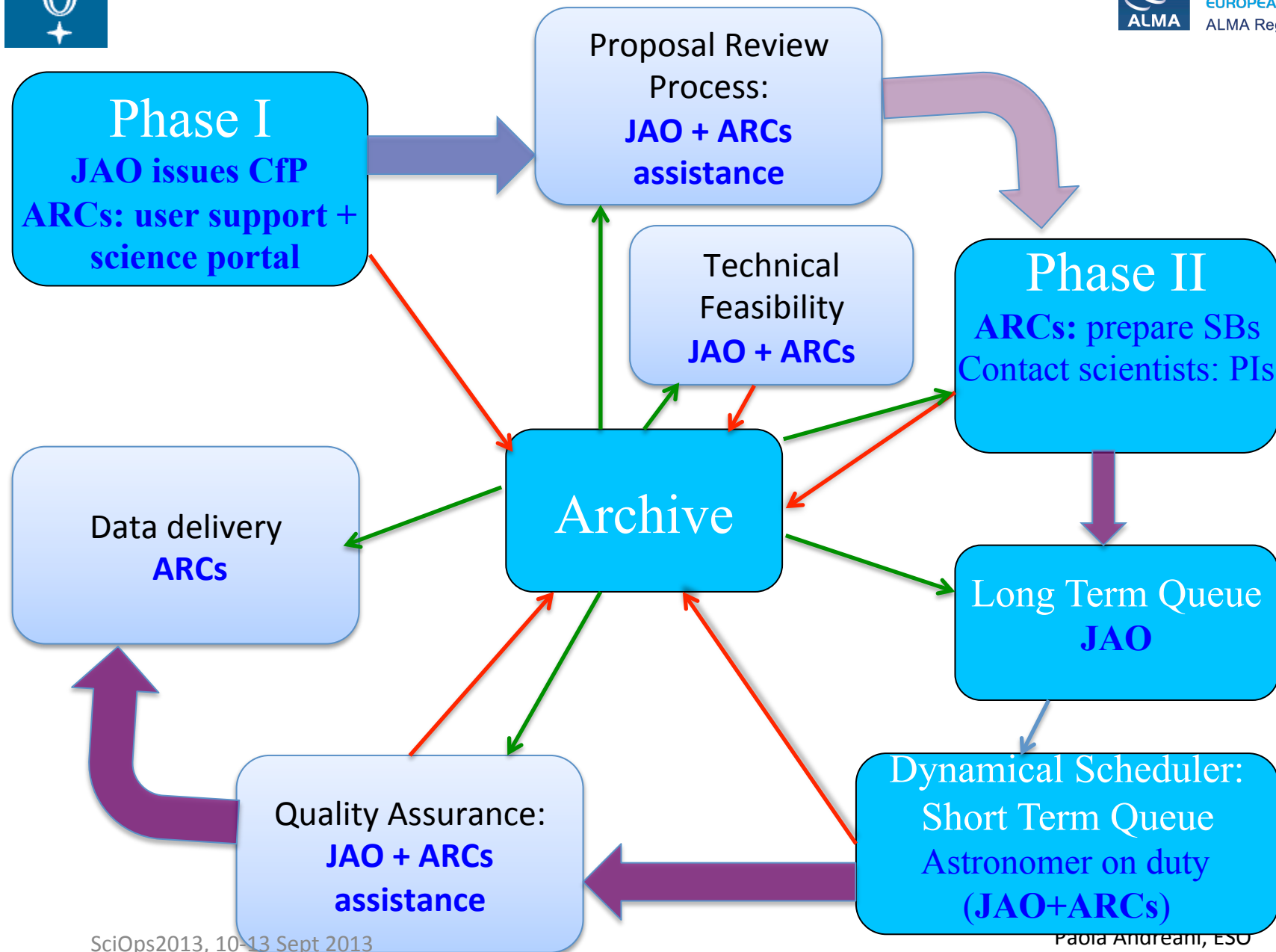
- At the Operations Support Facility
 - Support Commissioning (CSV) and Operations activities in Chile
 - CSV shifts and Astronomer on duty shifts
 - Support testing and requirements of SW systems:
 - subsystem scientists of ALMA-related SW projects
 - Assess data quality before delivery and feedback after data analysis
- Proposal Review Process:
 - Technical assessment (Chile workshops)
 - Technical secretaries



ARCHIVE: key role in the DATA FLOW



EUROPEAN ARC
ALMA Regional Centre

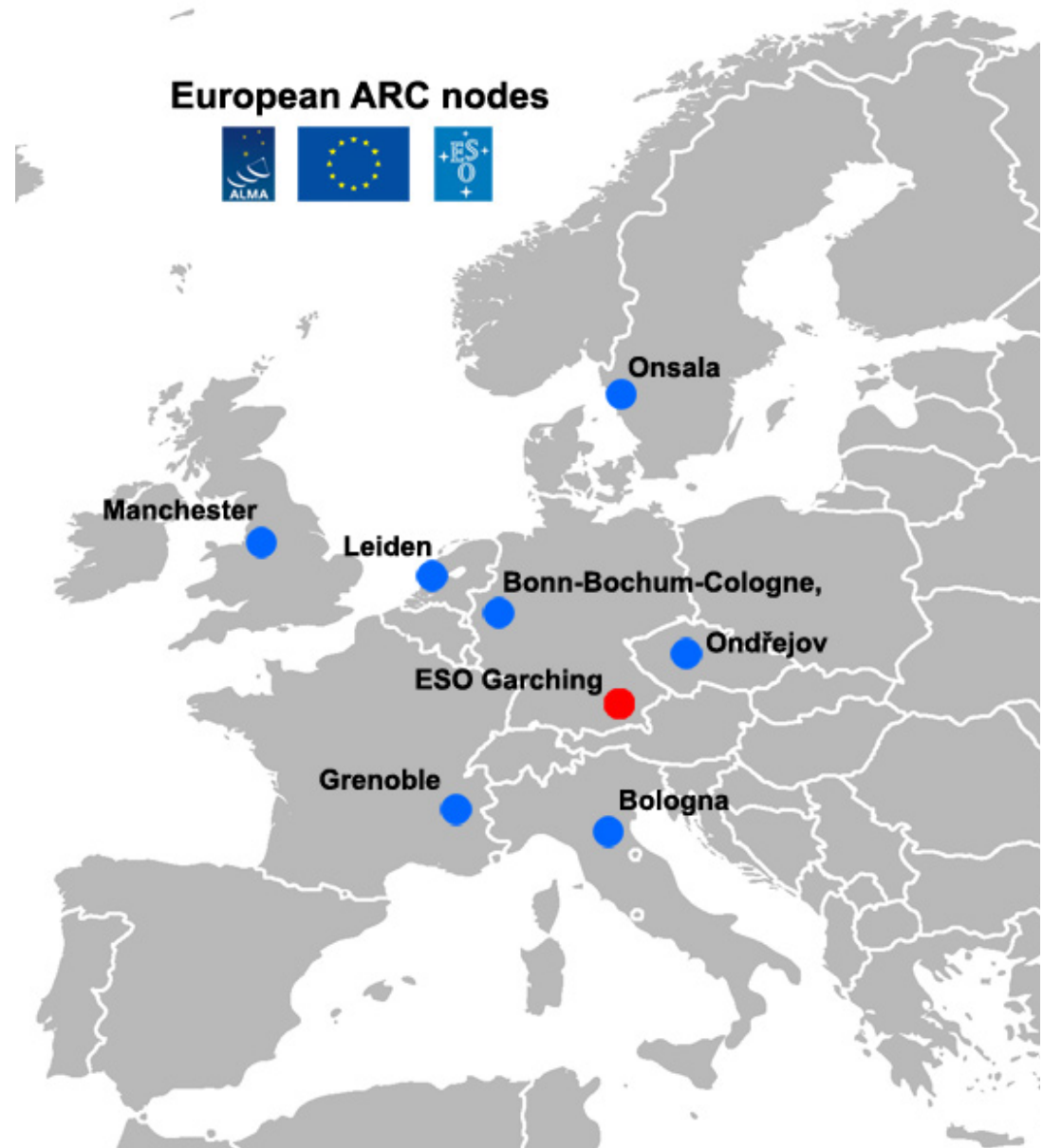




Role of the ARC nodes

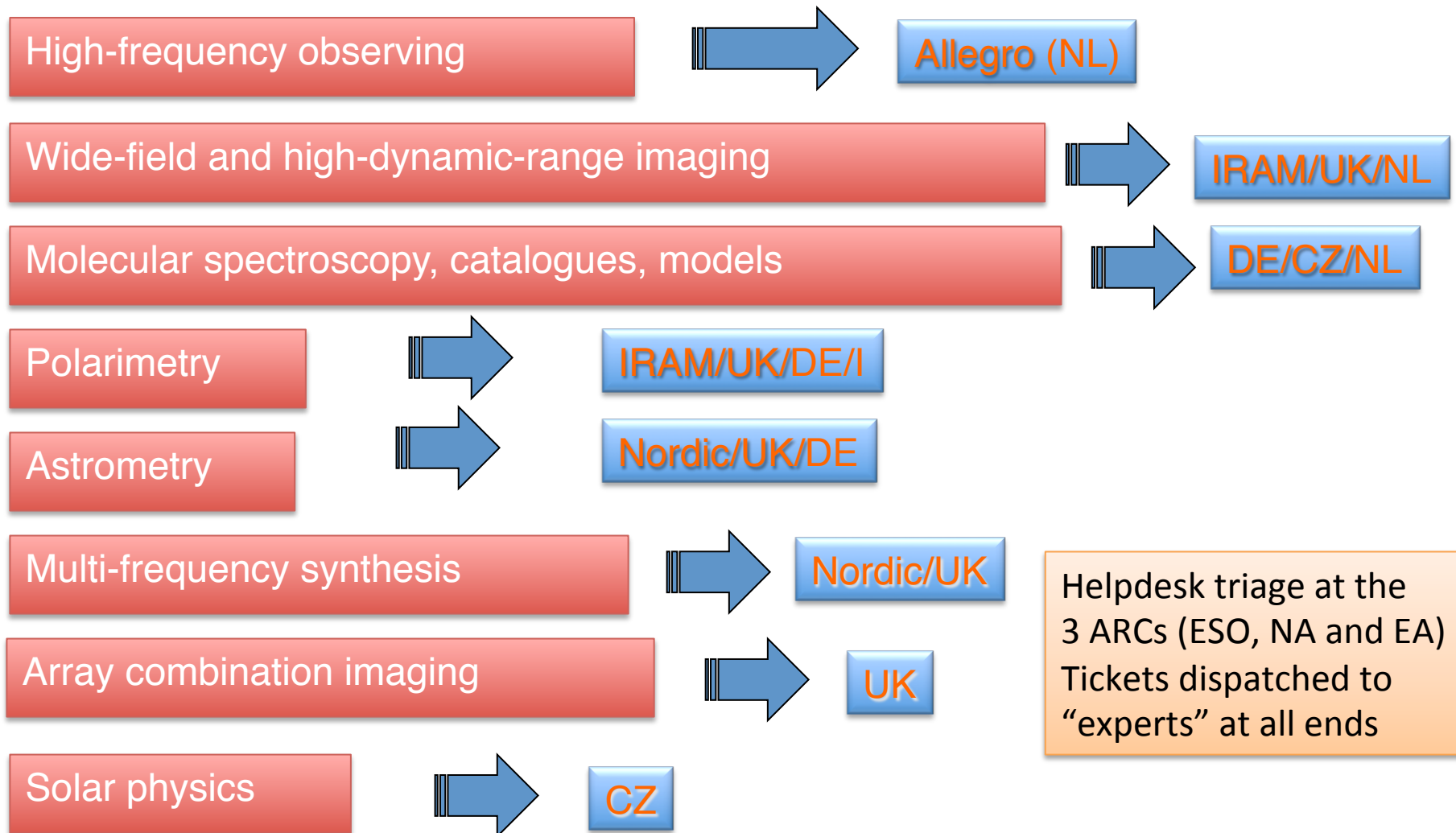


- **Provide face to face support**
 - Proposal preparation
 - **Contact scientists**
 - SBs preparation together with PIs
 - **Help in quality assessment**
 - Data reduction
- **Participate in the ALMA helpdesk**
- **Participate in Commissioning**
- **Develop/suggest new SW and data reduction technique**
- **Community outreach and tutoring**





Expertise @ the EU ARC used in the helpdesk/ face-to-face visits





ESO ARC and the ARC nodes preparing the community for cycle 0



ROPEAN ARC
MA Regional Centre

**EU ARC retreat
March 2011**

**December 2010
Nordic ARC-node workshop**

**May 2011
Nordic ALMA Proposal Workshop**

**April 2011
Early Science workshop**

**February 2011
German ALMA Early
Science Community Day**

**December 2010
UK ARC Community Days**

**June 2011
Preparing for ALMA**

**May 2011
Leeds Early Science workshop**

**November 2010
Observing with ALMA - Early Science**

**May 2011
ALMA proposal/OT tutorial workshop**

**June 2011
Training School Astrochemistry with ALMA**

**ALMA community
days April 2011**



ESO ARC and nodes events in preparation for cycle 1



il Centre

**EU ARC retreat
Feb 2012**

**2 April 2012
ALMA evolved stars workshop**

**7-8 June 2012
Cycle 1 and CASA workshop**

**May/early June 2012
Cycle 1 workshop**

**5-6 June 2012
Cycle 1 workshop**

**27-30 March 2012
ALMA session at NAM**

**October 2012
mm-interferometry
school**

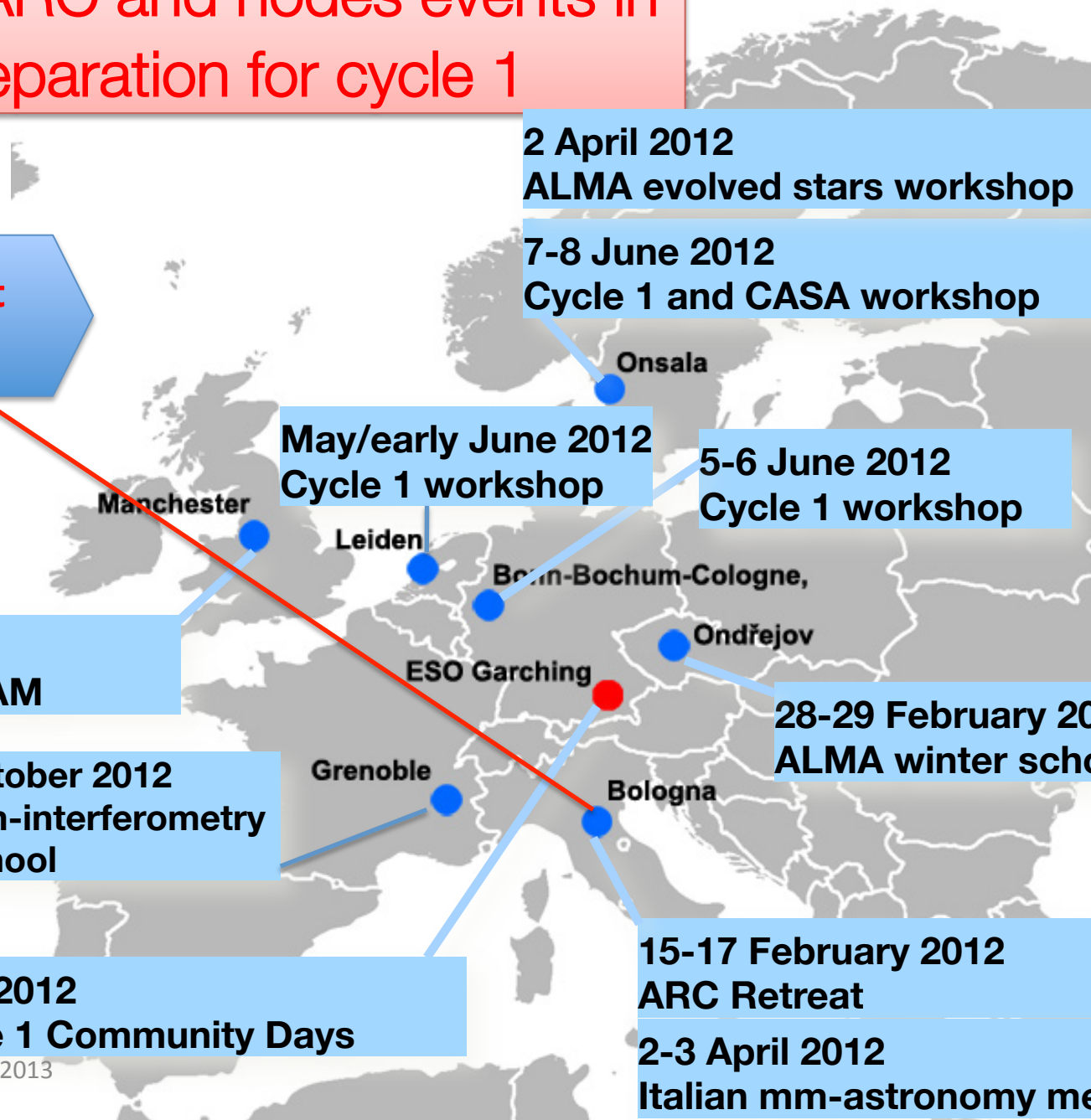
**25-26 June 2012
ALMA Cycle 1 Community Days**

**15-17 February 2012
ARC Retreat**

**2-3 April 2012
Italian mm-astronomy meeting**

**28-29 February 2012
ALMA winter school**

SciOps2013, 10-13 Sept 2013





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il Centre

2013 EU ARC events and preparation of cycle 2

EU ARC RETREAT
June 10-12

Sept 2-3 2013
UK Community days

Sept 8-13
European Radio
Interferometry
school

19-20 March 2013
Science with ALMA band 11

14-17 January 2013
Solar ALMA workshop

Sept 13-20 2013
IRAM single dish
school

IRAM 30m School

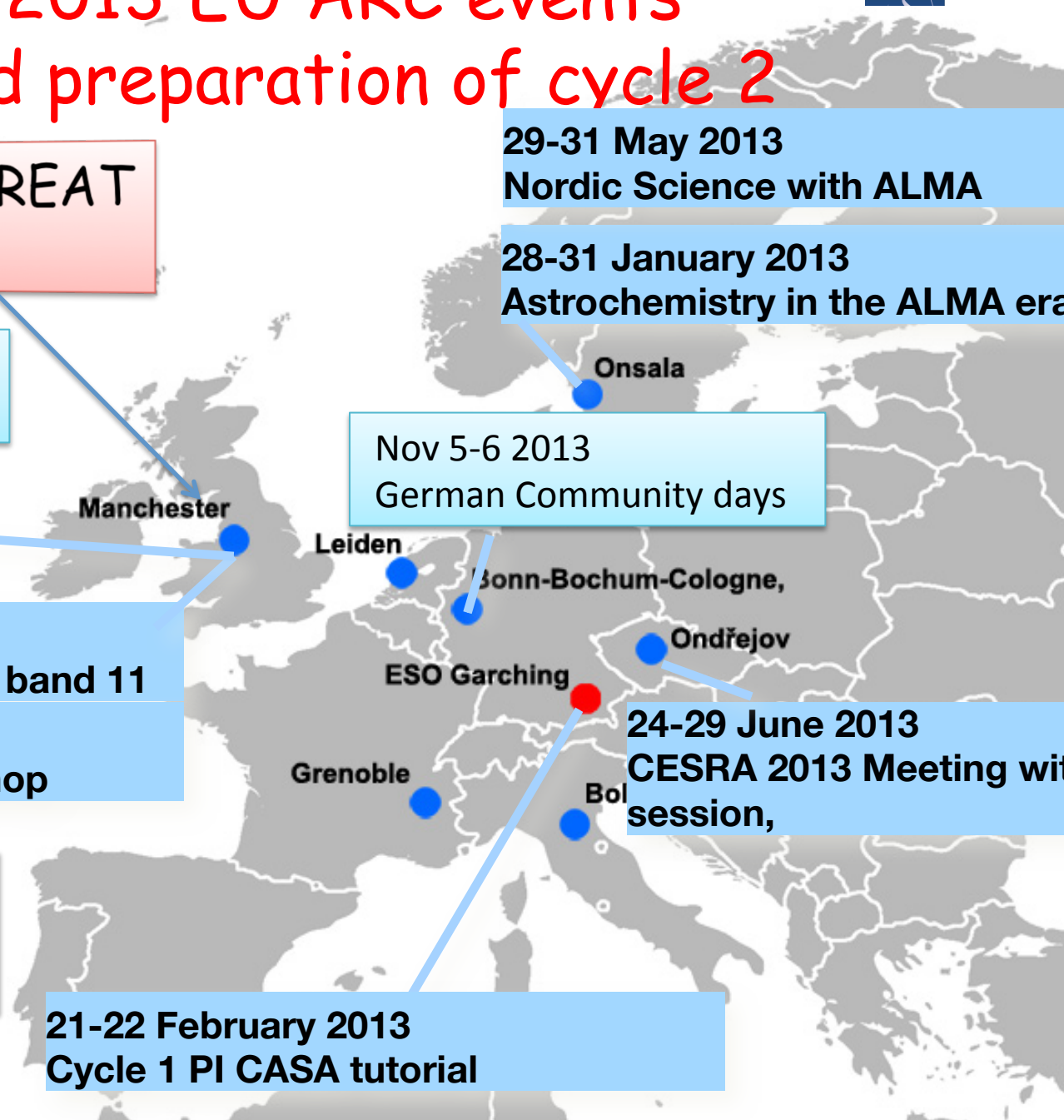
29-31 May 2013
Nordic Science with ALMA

28-31 January 2013
Astrochemistry in the ALMA era

Nov 5-6 2013
German Community days

21-22 February 2013
Cycle 1 PI CASA tutorial

24-29 June 2013
CESRA 2013 Meeting with ALMA session,





Guide to the European ARC



Guide to the European ALMA Regional Centre



Version: 19 November 2010

Authors: European ARC and ARC nodes, edited by Martin Zwaan

Available from:

<http://www.eso.org/sci/facilities/alma/arc/>

<http://almascience.eso.org/document-and-tools>



Limited but successful experience



- *Alma is still in the Early Science phase*
 - ALMA went through cycle 0 (completed)
 - ALMA started cycle 1 which is by far not complete
- *As far as we can tell this model has been successful so far*
 - **EU submitted proposals have the largest share**
 - **Users' feedback is very positive**
 - **European share in number of ALMA science papers larger than other regions**
 - **high quality of the ALMA science output**



Lessons learned

- *Why is this model successful? (so far!)*
 - **Closeness to the users**
 - **Users recognise the expertise of the people at the nodes**
 - **a large fraction of the active community not just consumers, but actively integrated into the project**
(increase motivation, esteem of the project and make them as “ambassadors”)
 - ALMA has been well advertised through well organised **Community events**
 - Shared **information/operations model**:
 - Frequent meetings/common events
 - Frequent (monthly) telecons



Challenges and improvements

- Communication

Information flow is critical: if interrupted this set-up breaks down

- Share the same/similar expertise and knowledge
- More direct exchange between ARC node staff/ESO
ARC/JAO

Not easy to delegate work on a daily basis

- **Big challenge:**
 - **How to keep a distributed network integrated ?**