

Roles and activities in the East Asia ALMA Regional Center

— focusing on the science operations from Japan —

東アジアALMA地域センターの役割と活動
～ 三鷹における科学運用を中心に ～

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ALMA Project, NAOJ

TMT科学運用に関するミニワークショップ, June 23, 2021

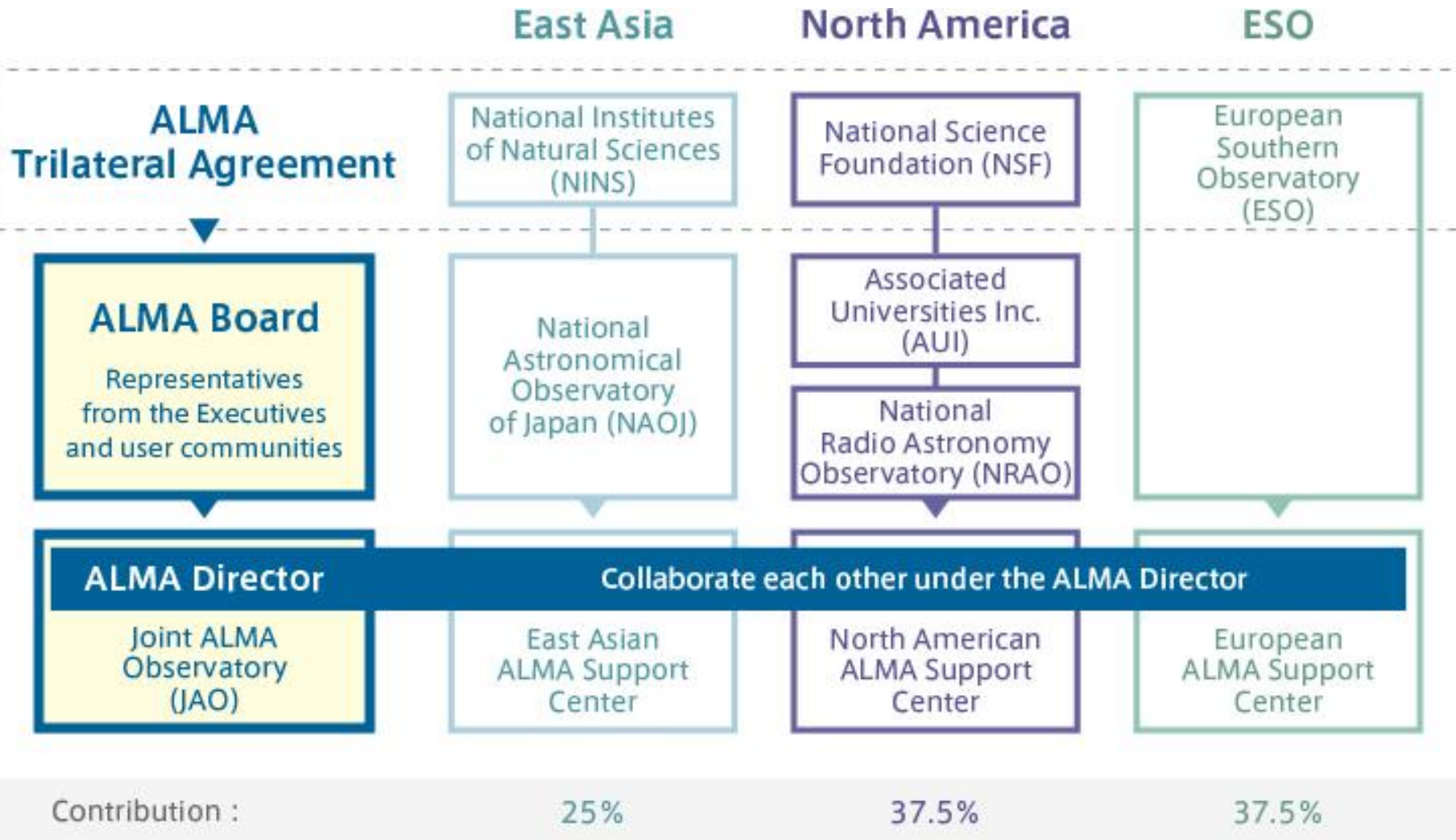


- Total 66 antennas (12-m x 54, 7-m x 12) are located at the altitude of 5,000 m
- The maximum baseline of 16.2 km (size scale of the Yamanote Line) provides the angular resolution of 0.01"
- Science observations started in 2011





Global collaboration



In December 2015, the **trilateral agreement** on the operation of ALMA was signed in Tokyo. The framework for international cooperation was established.

https://alma-telescope.jp/news/mt-post_628

Observing time allocated to each region is in proportion to its contribution, excluding Chile and open sky.

<https://alma-telescope.jp/en/globalcollaboration>





Global collaboration

Japan, US, and Europe collaborate to realize the world's most powerful radio telescope



- Proposals
- Data
- Software etc.

- Users' demands
- Array operations status
- Operational policy making etc.



Credit: ALMA (ESO/NAOJ/NRAO), A. Marinkovic/X-Cam





Role of the ALMA Regional Centers (ARCs)

Joint ALMA Observatory
Effective array operations: Execution of programs under suitable conditions
High availability of the array for science : Repairs, Preventive maintenance

Science operations in regional centers with **functions agreed in EA, EU, and NA, in close coordination with JAO**

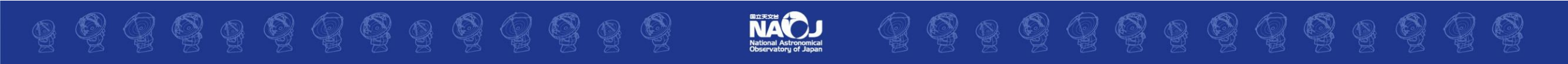
EA ARC
EA ALMA users

EU ARC
EU ALMA users

NA ARC
NA ALMA users



ARC provide support for users in the respective regions so that they can concentrate on observing proposals and data analysis.





East Asia ARC

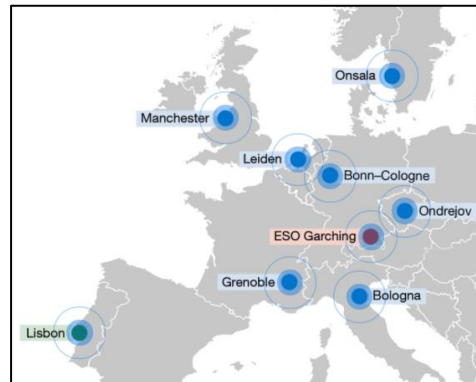


Central office is at NAOJ Mitaka:

- Core functions: Agreed on internationally
- Enhanced functions: Flexibly planned and executed in each ARC
 - ✓ Native language support
 - ✓ Realization of users' demands

Two nodes in Taiwan and Korea:

User support optimized to the individual regions in addition to the core functions of the ARC



- “Executive”: Region at the proposal submission, related to the observing time allocation
- “Preferred ARC”: Region to support the user (can change depending on the change of user's affiliation)

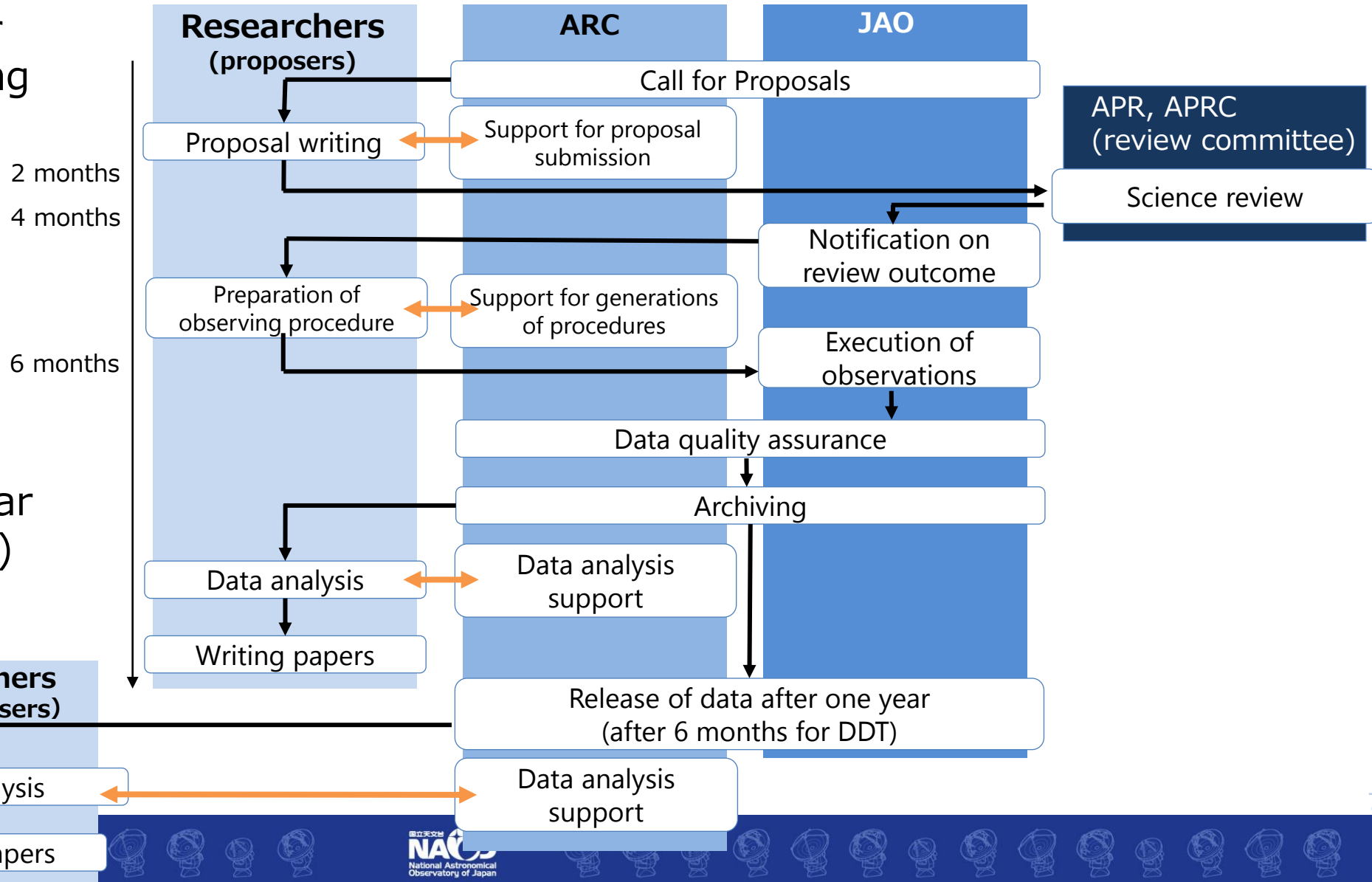
EU has several nodes in addition to the central office at ESO, Garching.

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



Open-use cycle

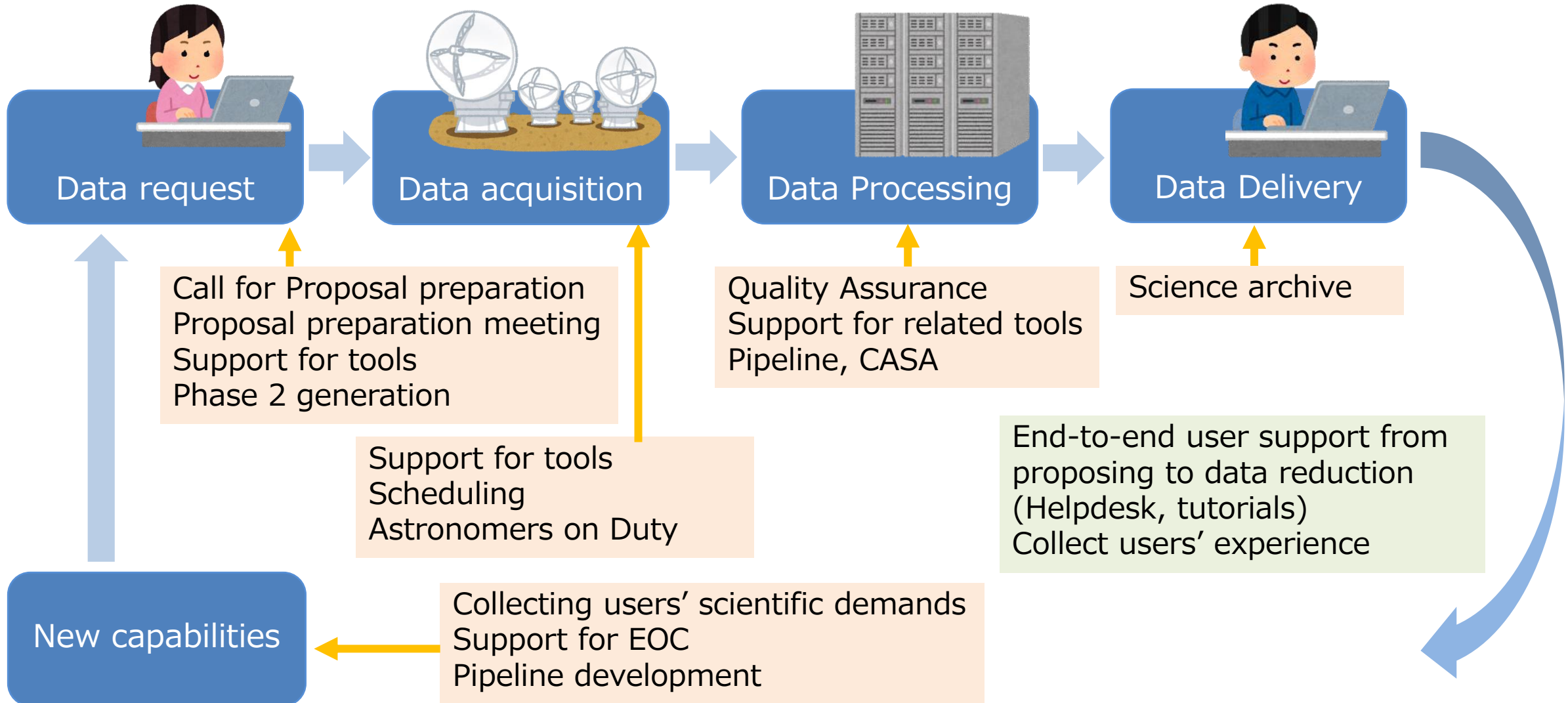
- 1 "Cycle" for one year
- Single proposal ranking
- Service (queue) observations only
- Grade A, B, and filler
- Regular, ToO, Large, VLBI, DDT
- Quality assurance of obtained data
- Data become publicly available after one year (or 6 months for DDT) in the Archive



2021/6/24



Cycle and user support

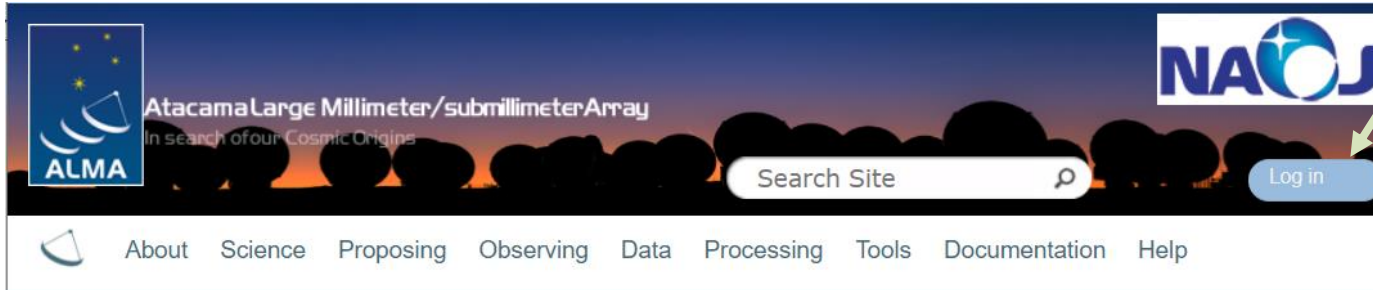




Science Portal

Science Portal – almost everything is here!

Registration is necessary to propose observations, getting data under the proprietary period



Observatory News

Amplitude calibration issue affecting some ALMA data
Jun 15, 2021

ALMA Cycle 7 Science Observations Status Update
May 31, 2021

Cycle 8 2021 Proposal Submission

NAOJ News

ALMA Cycle 8 2021 Proposal Preparation Meeting
May 27, 2021

East Asian ALMA Science Workshop 2021
Dec 03, 2020

ALMA/45m/ASTE Users Meeting 2020
Dec 03, 2020

Status

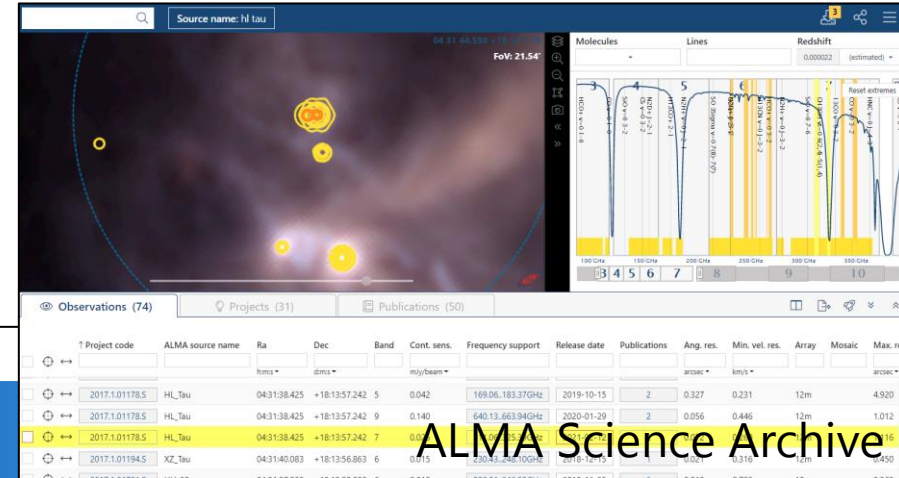
ALMA Proposal Review

Refereed publications: 2370

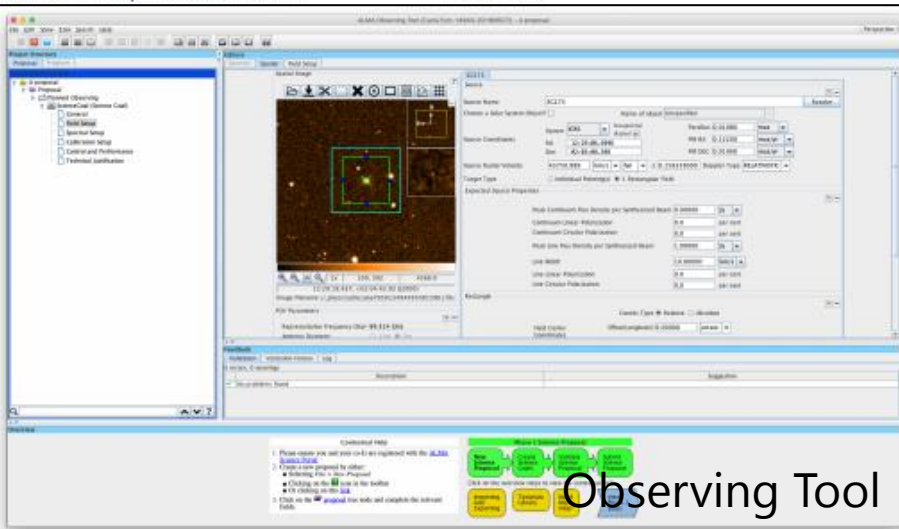
Last observed source: NGC7025

Current configuration: C43-6

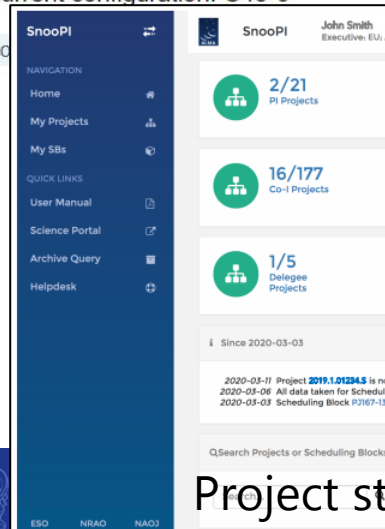
<https://almascience.nao.ac.jp/>



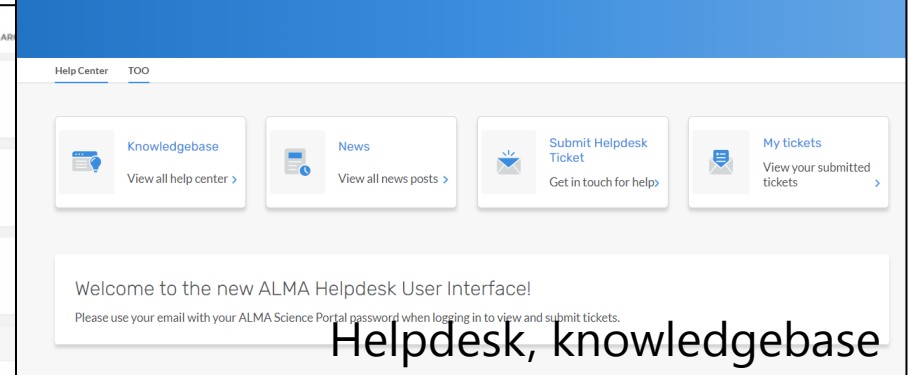
ALMA Science Archive



Observing Tool



Project status tracking tool



Helpdesk, knowledgebase

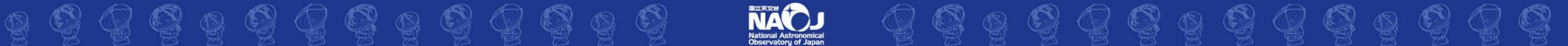
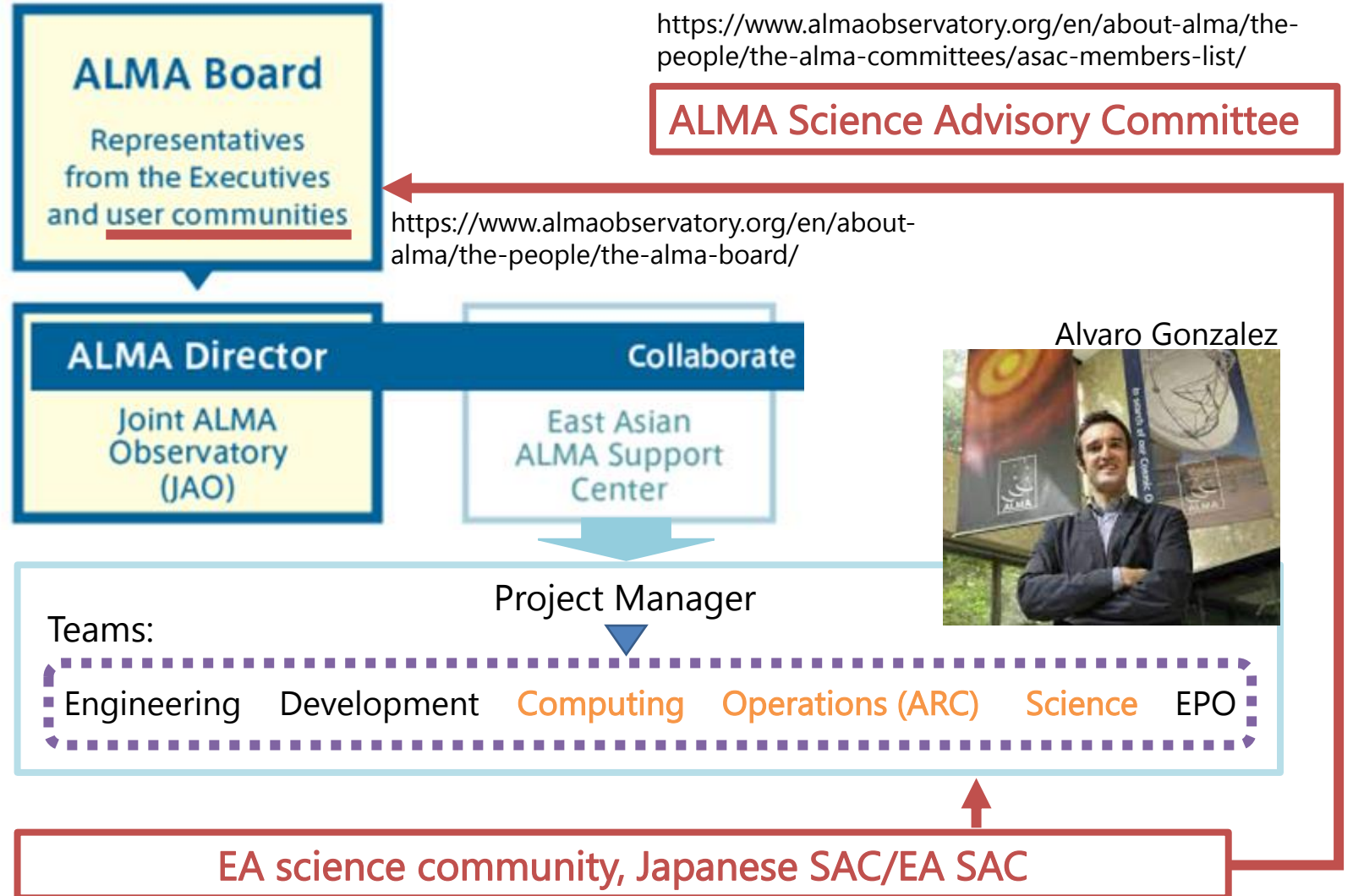


Receiving inputs/feedback from users

Two paths

- Regional/ALMA Science Advisory Committees
 - ✓ Working on the charges by the Board.
Recommendations and advice to the Board on various issues including future science capabilities, improvements in operations
- Various tools/opportunities
 - ✓ (see next page)

Note: ALMA also deeply involves the community in the developments.





Receiving inputs/feedback from users

Towards the telescope also for non-radio astronomers

Interaction with ALMA users

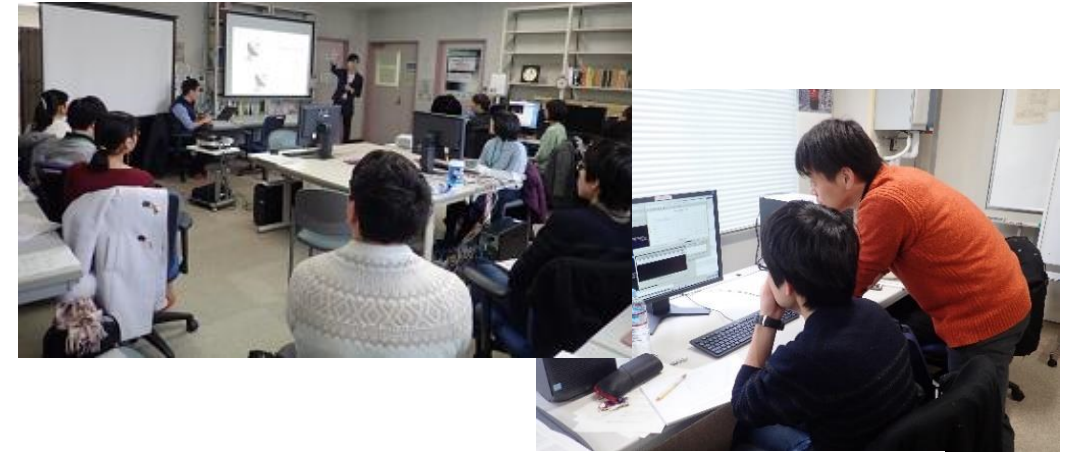
- ALMA Helpdesk (daily)
- Surveys, interviews (irregular)
- Users Meetings (annual)
- Data reduction tutorials, workshops (irregular)



Checking statistics, making prioritization within the limited resource

User support for the Japanese community

- Calibrated data delivery service etc.
- Budgetary support for publication, workshops, ALMA Grant Fellows etc.
- Material in Japanese



このサイトは随時更新中です。

ALMA データ解析に関する情報

研究者向けの公式情報は全て ALMA サイエンス・ポータル (<https://almascience.nao.ac.jp/>) にあります。このサイトは、なるべく日本語で情報を提供するとともに、東アジア・アルマ地域センター (EA ARC) が提供するデータ解析に関連したサービスの詳細をお知らせすることを目的としています。



データ解析講習会

過去の講習会の情報やテキストを掲載しています。



論文出版サポート

ALMA のデータを用いた論文へのサポートです。



解析サポート

ヘルプデスクを通じたサポートや対話的サポートを行っています。

<https://www2.nao.ac.jp/~eaarc/DATARED/index.html>



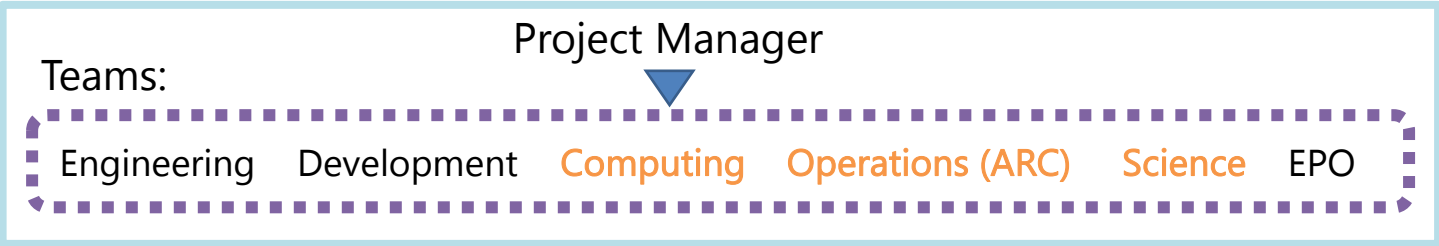


Working as "one ALMA" on daily basis

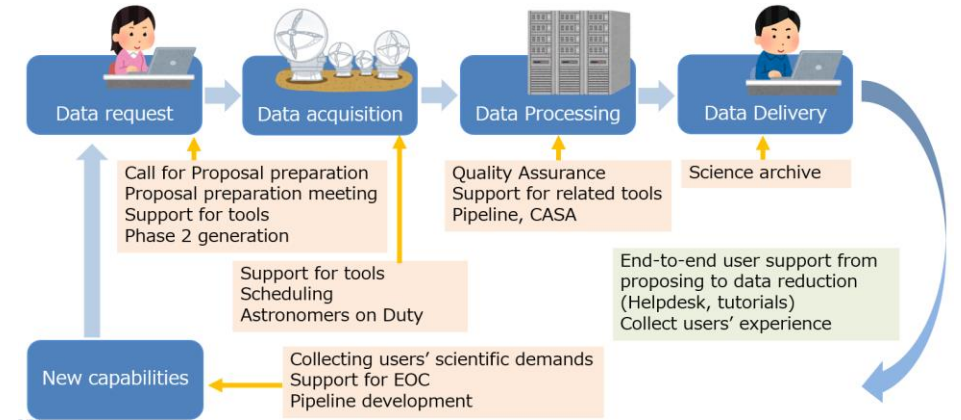
- Each management team consists of representatives from all the regions.



Teams:



- Subsystems and working groups basically consist of representatives from all the regions.
 - ✓ Quality assurance, Pipeline, CASA, Phase 2 generation, Observing Tool, Archive, Science Portal, AQUA, Source catalog, Scheduling, SnooPI, project tracker, etc.
 - ✓ Each subsystem/WG has their own workflow and timeline
 - ✓ Communication is always challenging although it is exciting to work with the colleagues globally!
- Science side is closely working with the Computing team members such as about the pipeline/CASA development, quality assurance, Archive, and Science Portal.



10 ARC staff, supported from a few additional staff and postdocs in the NAOJ ARC

<https://researchers.alma-telescope.jp/j/ea-arc/>





One of the important tasks in the ARC:

Quality assurance, data archive

Observatory confirms that there are no issues with the data, and that the data meet the requested angular resolution and sensitivity by performing data calibration and imaging before delivering them to the PI

→ Researchers do not have to work on calibration, leading to the speed-up of publication

- Development and maintenance of the pipeline and CASA
- Establishment and operations of data processing environments (hardware)

Collaboration is on-going with the Japanese Virtual Observatory in Astronomy Data Center in NAOJ

(taken from NAOJ News, Jan 2013)

