ALMA BOARD MEETING
November 13-15, 2019

PUBLIC SUMMARY

The ALMA Board convened at ESO Head Quarters in Garching, Germany, between the 13th and 15th of November, with the following attendees:

Chair	Karin Öberg (NA)
Vice-Chair	Toshikazu Onishi (EA)
Board Members	Ralph Gaume (NA)
	Xavier Barcons (EU)
	Saku Tsuneta (EA)*
	Willy Benz (EU)
	James Di Francesco (NA)
	Daniel Weselka (EU)
	Tony Beasley (NA)
	Linda Tacconi (EU)
	You-Hua Chu (EA)
	Luis Chavarría (CL)**
Board Assessors	Joseph Pesce (NA)**
	Andreas Kaufer (EU)
	Satoru Iguchi (EA)
JAO	Sean Dougherty (ALMA Director)**
	Stuartt Corder (ALMA Deputy Director)
	John Carpenter (Observatory Scientist)
	Frank Ruseler (Head of Administration)
	Norikazu Mizuno (Head of Engineering)**
	Ivan Lopez (Safety Manager)**
	Jorge Ibsen (Head of Computing)**
	Elizabeth Humphreys (Head of Science Operations)**
Executives	Leonardo Testi (ESO ALMA Programme Manager)
	Phil Jewell (NRAO ALMA Program Manager)
	Álvaro González (NAOJ ALMA Program Manager)
ASAC	Stephen White (ASAC Chair)
Board's Secretary	Alejandra Voigt (ALMA Executive Officer)

**Did not attend.*
***Attended remotely*

PUBLIC SUMMARY

The ALMA Board held its November 2019 meeting, at the ESO Head Quarters in Garching, Germany.

The Board's Chair, Dr. Öberg, welcomed the new Board Member appointed by the NSF, Ralph Gaume, who has been designated as the NA Party Spokesperson.

Dr. Öberg also welcomed Leonardo Testi, Phil Jewell and Alvaro Gonzalez, ALMA Program Managers; and Stephen White, the ASAC Chair. She also noted that the ALMA Director, Joe Pesce, Luis Chavarria and CMT members participated in the meeting remotely by videoconference.

In addition to other matters during the meeting, the Board:

1. Received the 2019 ALMA International Visiting Committee Assessment.
2. Approved that raw data is, in general, made available to PIs.
3. Approved the 2020 ALMA Budget.
4. Adopted the 2020-2024 Forward-Look Plan.
5. Noted the cancellation of the Correlator Upgrade Project.
6. Appointed 3 ASAC members.
7. Approved the 2020 Goals for ALMA, the ALMA Director and Deputy Director.

ALMA Overview

The Board noted the presentation given by the ALMA Director, regarding the achievements since April and the challenges for ALMA in the coming year, including:

- Scientific output of ALMA is comparable to other major astronomical facilities
- Cycle 6 & 7 – high-demand for ALMA from the community
- Entering steady-state operational phase
    - 450+ hours in some months; >90% observing efficiency; 60+ antennas.
    - Timely delivery of data to PI's: <30 days for pipeline processed data.
- Effective globally distributed operations & maintenance model – non-trivial and a major achievement
- JAO Culture development and Climate
- Successful IVC Visits and complete assessment
- Chilean Events and crisis management
- ALMA Conference in Cagliari: Science Results and Cross-Facility Synergies
- Successful implementation of the Safety Program at the JAO (low incidents rates)
- Successful implementation of the JAO EPO Program (prominent public profile in Chile)
- Main goals for 2020:
    - Manage the JAO activities and budget execution to mitigate risks to overall program and consistent with the strategic objectives of the Observatory.
    - Implementation of the ALMA Development Roadmap

    - Strategic HR initiatives: Internal Communications; Fundamental Statements; Leadership
    - Support unity and cohesion of the ALMA Partnership, through improved communication and collaboration
- Main challenges: Volatility of Fuel and FX, Power Generation, Obsolescence & Replacement.

ALMA Operations

The Board noted the presentation given by the Deputy Director, regarding the latest activities, and operational status since April 2019, including:

- Cycle 6 performance summary
- Cycle 7 start and status
- Cycle 8 capabilities, noting that Polarization & single dish continuum and bands 9+10 spectral line represent the close out of "full operations".
- Cycle 9+ Progress, noting that various additional modes are possible for Cycle 9 and beyond. Priorities to be updated by the ASAC in the next coming reports.
- Initiatives & activities update, such as Flexible Technical Time, Hardware in the Loop Simulation, Condition based maintenance, Program success KPI definition, Data centric and driven management and Obsolescence: 2020 kick off broader initiative.
- Critical contributions from Science Operations, Computing and Engineering worldwide
- No more non-standard modes concept for PIs
- Raw data upon request Policy
- ALMA-only phased array capabilities (primarily for pulsar use) – Raw data to be delivered.
- Risks, such as Building maintenance, weather recovery speed, road robustness.

Scientific Matters

The Board noted the presentations given by the Observatory Scientist, the Chair of the Board's Science Committee and the Chair of the ASAC, regarding:

- The outstanding scientific results since the April 2019 Board Meeting.
- The lessons learned from the Cycle 7 APRC (main call) and the ongoing distributed peer review in the ACA Supplemental call
- The intention to implement the double anonymous review.
- Cycles 8+9 priorities for capabilities to be offered to the community, pipeline priorities and Cycle 8 APRC, which will be held again in Atlanta, USA.
- The intention to move to the distributed peer review model from Cycle 9 onwards.
- The potential impacts and mitigations of the cancellation of the Correlator Upgrade Project (Phase 1)
- The recommendations from the ASAC regarding the scientific and technical performance of the Observatory and the expectations from the scientific community, including the impact of the development Program.

The Board agreed that raw data will be available for download by the PI for any observing program, provided they express acceptance of the following conditions when starting the download process:

a. The proprietary period for the MOUS (Member Observing Unit set) containing the downloaded Execution Blocks (EBs) will start as soon as any of EBs from that MOUS are downloaded for the first time from the archive.
b. Data will only be made available after successful QA0 (Step 0 of the Quality Assurance) (i.e., QA0_PASS and QA0_SEMIPASS).
c. The delivery of the final QA2 data products per MOUS will continue even for the MOUS containing PI downloaded raw data.
d. No extension of the proprietary period will be considered for any raw data downloads.
e. Helpdesk requests about raw data downloaded from the archive will be responded to during the course of the relevant QA2 processing performed by the ALMA staff.

Financial Matters

The ALMA Board noted the report of the ALMA Budget Committee on the 2019 budget execution and financial results and projections to the end of the year.

Subject to the FY2019 budget appropriation process in the USA and the approval by ESO Council and the Japanese FY2019 budget appropriation process, the Board approved the proposed 2020 ALMA Operations Budget (D.1) totaling 79.63 MUSD (plus 69.0 FTE resources deployed in the regional ARC's). ALMA On-site budget is 50.63 MUSD (32.9 kMCLP) of which 32.27 kMCLP is for the five JAO Operations' Departments and 0.64 kMCLP for Infrastructure Improvement Projects.

The Board also discussed the risks and challenges ahead and the management approach to identify opportunities for efficiencies and efficacy within the Observatory. In this sense, and due to the difference in the exchange rates assumed in the proposed budget and the current actual rates, the Board will review the budget by the End of 2020 Q1 and reconsider the risks to the observatory program and, if required, propose any necessary mitigating actions.

Finally, subject to the yearly Party guidance and approval of the respective yearly ALMA Budgets, the Board adopted the 5-year forward look as submitted by the ALMA Director, to be used for planning purposes only.

ALMA International Visiting Committee, 2019 Assessment

The Chair of the International Visiting Committee (IVC) summarized the findings, conclusions and recommendations after the 2019 assessment of the ALMA observatory. The JAO will draft a response to the report and a proposal for an action plan, in collaboration with the Executives, addressing each recommendation.

The IVC Report, which is classified for internal ALMA distribution only, will be shared with the ALMA staff, both at the Support Centers and at the JAO through the respective supervisors.

The ALMA Board thanked the ALMA International Visiting Committee members and praised their thorough and comprehensive assessment of the status of ALMA. The ALMA Board appreciated the completeness and clarity of the report and its recommendations. These will help ALMA to improve and strengthen its mission to be a world-class radio astronomy observatory, providing high-quality scientific data products to the astronomical community to enable transformational science. Specially, the ALMA Board thanked the Chair of the IVC, for his extraordinary commitment and leadership in the conduct of the 2019 assessment of ALMA.

The 2019 Committee was composed by Jim Oschmann (Ball Aerospace), who is also the Chair of the IVC, Andrew Baker (Rutgers University), Ewine van Dishoeck (Leiden University), Kathryn Flanagan (US Space Telescope Science Institute), Thomas Henning (Max Planck Institute for Astronomy), Noriyuki Kawaguchi (Japan), Kazuhisa Mitsuda (JAXA/ISAS) and Patrick Roche (Oxford University)

ALMA Development Program Update

The ALMA Board noted the presentation by the ALMA Deputy Director on behalf of the AMT regarding the status of the ALMA Development Program. This covered the on-going projects and studies, the projects that will be submitted for approval in the near future and a summary of the scope of upcoming calls for proposals within the three regions.

The Board also noted the update on the status of the ALMA Development Roadmap Implementation Plan that will define the processes to accomplish the highest-priority directions for the Development Program as identified in the ALMA's long-term vision.

Finally, the Board agreed with the JAO proposal to allow the ALMA Phasing Project II (APP2) to use M87 as one of several test sources for the validation of band 7 (~350 GHz) performance of the Event Horizon Telescope (EHT), given it would potentially hasten a broader band 7 VLBI network and generate considerable community interest. Such observations would be limited to those necessary to validate the technical performance of the array and the resulting correlated data products and all the necessary calibration data would follow the approved ALMA Test Data Policy.