

# 40th Directing Board Meeting – Summary Minutes

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*Location:* Las Palmas de Gran Canaria, Spain  
*Date:* 21 March 2019  
*Note taker:* Dirk Behrend  
*Version history:* 21 March 2019

Attending Board members: Axel Nothnagel (Chair), James Anderson, Dirk Behrend, Patrick Charlot, Francisco (“Paco”) Colomer, Alet de Witt, Rüdiger Haas, Hayo Hase, Ed Himwich, Nancy Kotary, Laura La Porta, Jinling Li, Arthur Niell, Evgeny Nosov, Chet Ruszczyk, Oleg Titov, Gino Tuccari, Takahiro Wakasugi.

Excused: David Hall, Guangli Wang.

## 1. Welcome (Axel Nothnagel)

Axel Nothnagel welcomed the new Board members (Laura, Nancy, Chet, Alet, James, and Jinling).

## 2. Approval of Agenda

The Board approved the agenda for the 40th DB meeting.

## 3. Approval of Minutes of the 39th DB Meeting (Axel Nothnagel)

The Board approved the minutes of the 39th DB meeting. For future meetings the notes should be named minutes.

## 4. Changes to ToR (OOC Director) (Axel Nothnagel)

Axel presented draft updates to the IVS Terms of Reference (ToR) for including the Office for Outreach and Communications (OOC), changes to the Corresponding Members from the IAU, and adding regional sub-groups. The Board unanimously approved the changes w.r.t. the OOC. The Board now consists of 17 members.

The changes to IAU naming basically reflect the changes of the IAU structure w.r.t. divisions and commissions. The Board felt that the wording for the regional sub-groups needed some changes; the discussion will be continued at a later time.

## 5. Reports of Action Items of last DB meeting (Axel Nothnagel)

All action items have been worked on.

## 6. Comments and Questions on written reports

The activities of the various components were described in written reports provided to the Board members prior to the Board meeting. The following only reports on additional comments, if any.

**6.1 IVS DB Chair's report (Axel Nothnagel):** no additional comments.

**6.2 IVS CC Director's report (Dirk Behrend):** The Board agreed to only have an electronic version of the major IVS publications (General Meeting Proceedings, Biennial Report). If a local host of a GM is willing to support a printed version in their own publication series, this should be accommodated. The Board was concerned that in the last elections only 33% of the Associate Members voted.

**6.3 Observing Program Committee Chair (Dirk Behrend):** The knowledge that R&D proposals can be submitted needs to be made more prevalent; an open call for R&D proposals should be distributed. The Analysis Coordinator was tasked with requesting specific Analysis Centers with taking over responsibility for certain session series in order to improve them (feedback loop).

**6.4 ICSU World Data System (WDS) (Dirk Behrend):** no additional comments.

**6.5 Technology Coordinator (Gino Tuccari):** Gino will continue to lead the VTC. If there was another person to take on VTC leadership, he would be happy to pass on the baton.

**6.6 VGOS Technical Committee:** Laura reported that a test was performed for distributed correlation using the Bonn Correlator as the main correlator.

**6.7 Observatory monitoring and control:** Axel stated that telescopes were encouraged to work with Alexander Neidhardt to record and store data at the station.

**6.8 Network Coordinator (Ed Himwich):** For VEX2 some 2–3 weeks of work would be needed in order to implement the parser. After that, the version would need to be sent to the community for comments. Lastly, there would be a need to run both versions (VEX and VEX2) in parallel for some time (having two separate ecosystems). Chet mentioned that most VGOS stations have reached a reasonably stable signal chain. However, in addition to debugging the signal chain at the stations, also the processing chain would need to be looked into.

**6.9 Analysis Coordinator (John Gipson):** A special issue on CONT17 was in the works for Journal of Geodesy. The deadline for submissions would be the end of the summer.

**6.10 Committee on Training and Education (Rüdiger Haas):** The Board congratulated Rüdiger on the nice work of organizing the 3rd VLBI Training School. The next VLBI School will be organized in concert with the General Meeting in 2022.

**6.11 Distributed correlation (Gino Tuccari):** Bonn together with five branch correlators tested distributed correlation as a possible way to deal with the huge workload foreseen for VGOS. A 24-hour session was divided into time blocks which were processed at different correlation centers. Bonn acted as main correlator (i.e., prepared the files to be used for correlation, as well as the control file for fringe-fitting the data), collected the DiFX and Fourfit outputs of the branch correlators, and compared them with its own. No differences were found between the products of the various correlators.

**6.12 WG7 on satellite observations with VLBI (Rüdiger Haas):** Rüdiger stated that not much had happened, but that he planned on resuming activities.

**6.13 Task Force on seamless auxiliary data (Alexander Neidhardt):** no additional comments.

**6.14 WG8 on Galactic Aberration (Dan MacMillan):** The Board unanimously approved the Final Report of the WG. The WG was officially closed.

**6.15 European VLBI Group for Geodesy and Astrometry (Rüdiger Haas):** no additional comments.

**6.16 Asia-Oceania VLBI Group for Geodesy and Astrometry (Takahiro Wakasugi):** Takahiro said that he would leave the VLBI field at GSI at the end of March and would not be able to continue as AOV Chair. Elections were planned to determine the next AOV Chair.

**6.17 IERS (Rüdiger Haas):** Rüdiger reported that the IERS was still continuing its combination strategy for UT1. Prediction is their primary objective. The call for ITRF2020 was distributed and the Analysis Centers informed. The cutoff for data input was set to the end of 2020.

**6.18 IAU Division A, ICRF3, EVN (Patrick Charlot):** The Board congratulated the ICRF3 Working Group on getting the ICRF3 adopted by the IAU.

**6.19 Committee on Radio Astronomy Frequencies (CRAF) (Hayo Hase):** The biggest impact on VLBI frequencies is to be expected from 5G. Paco reported that a CRAF manager position was announced, to be hired by JIVE.

## 7. Discussions of

### 7.1 Proposal for a Southern VLBI Operations Center (SVOC)

One of the main motivations is to establish something more tangible for CRF work that could be shown to the funding agencies. A decision on the proposal was postponed. The discussion will be continued via email and then voted on as soon as feasible.

### 7.2 New IVS Representative to the IERS Directing Board

Guangli Wang relinquished his position. The Board agreed that Sigrid Böhm would be the second IVS Representative on the IERS Directing Board.

### 7.3 Starting activities at the OOC (Nancy Kotary)

The main goals of the Office for Outreach and Communications are to promote knowledge of the IVS services and activities as well as VLBI capabilities to a wider public, to collaborate with regional and global organizations, and to amplify and coordinate with existing outreach efforts. The current plan includes a Web site (vlbi.org), social media presence, new brochures and posters on IVS and VLBI, contact with participating organizations, and the promotion of related information such as the IAG100 events.

## **7.4 VGOS progress and open issues (alignment/coordination of developments, standards)**

Some stations were worried not to get sufficient information on the developments of VGOS. There was a need to show progress to their funding agencies, including an inventory of different VGOS developments. There was also a need to communicate where VGOS correlation and analysis activities stand and what the plan is.

## **7.5 IVS scheme of operations, funding of components**

Axel wanted to discuss possible ways to finance IVS operations. One scheme could be that any station operating in the IVS pays the correlator. A way of operating might be to establish 'secondment' instead of transferring money between organizations.

## **7.6 Data storage and transportation issues**

In the current data storage model, the stations contribute physical media to the media pool. However, the correlators do not have a budget for data storage of data that are e-transferred from the stations. Possible models include: (1) stations contribute NAS storage at the correlators; (2) correlators provide the NAS infrastructure; (3) cloud resources.

## **7.7 Reliability of IVS data and products**

Axel said that the reliability of IVS data had more to do with auxiliary data. For instance, the location of the barometer at a station is crucial.

## **7.8 Operating pairs of / twin telescopes in global networks**

The main operational scheduling program, *sked*, supports scheduling sibling antennas, but it does not work smoothly. *sked* could be upgraded to include twin telescopes or the IVS schedulers could learn to use additional scheduling programs.

## **7.9 The role of the IVS w.r.t. astrometry**

The IVS needs to be made more prominent in astrometry results presented to outside entities to get the needed credit. For a future ICRF4, establishing a joint working group might do the trick.

## **7.10 Start time at 0 h UT**

The Board decided not to shift the start times of the legacy S/X sessions to 0 h UT due to an adverse effect on several stations.

## **7.11 UT1-Intensive Combination Center**

This was discussed at the Analysis Workshop.

## **7.12 Countermeasures against aging workforce**

The Board had no reasonable idea on how to counter the impact of the aging workforce.

## **7.13 Other items?**

None.

## **8. Recent and upcoming Meetings**

Upcoming meetings include the following:

- IVS Technical Operations Workshop (TOW) at Haystack, May 5–9, 2019.
- IUGG General Assembly in Montreal, July 8–18, 2019.
- Unified Analysis Workshop (UAW) in Paris, October 2–4, 2019.
- Journées 2019 in Paris, October 7–9, 2019.
- GGOS Days 2019 in Rio de Janeiro, November 11–14, 2019.
- International VLBI Technology Workshop (IVTW) in Sydney, November 18–20, 2019.
- AGU Fall Meeting in San Francisco, December 9–13, 2019.

## **9. Summary of Action Items**

There were thirteen action items resulting from this Board meeting (separate document).

## **10. Next meeting**

The next IVS Directing Board meeting will be held in Bonn on September 30, 2019.

## **11. Miscellaneous**

The Board endorsed to make the visibility data sets available at CDDIS.

There is an urgency to do mixed-mode observations. It is important to tie the legacy and VGOS systems together before 5G becomes fully established and possibly interferes too heavily at S-band at most VGOS stations.