

EVN Users Meeting

Sept 21, 2016, St. Petersburg

Version 3.0

Lindqvist presented an update on the EVN Programme Committee activities and the EVN proposal statistics.

Lindqvist noticed the following trends:

- There were fewer proposals in recent years (this will be discussed later in the meeting)
- In 2016 the number of requested hours is lower than previous years.
- The number of scheduled hours is similar to previous years, until now it is 936 hours and it can rise up to 1000 hours for the whole of 2016

Questions from Users received in advance of the User's Meeting:

Q1 What are you doing to get more (new) users?:

The format of the "Call for proposals" has been changed to make it more attractive. A brief version of the Call is also announced in social media. More emphasis is put to describe and advertise the EVN in various astronomical meetings.

van Langevelde stressed that the most important thing to do is to provide the best data and help people from beginning to end in the most effective way. The best advertisement for the EVN is satisfied users. Lindqvist complimented the excellent work that JIVE is devoting to that purpose, this makes it possible for non-specialists to use VLBI.

Vermeulen further elaborated that a smooth user experience is important; this is already under control with the support provided by JIVE. Vermeulen urged the users, in the open discussion later in the meeting (and in the future), to comment on the aspects of the EVN they want to use currently and in the future; this can help to set priorities for further EVN development.

Paragi enquired on the arrangement to submit combined XMM and EVN proposals. Lindqvist replied that this arrangement did not proceed due to issues with reviewing requirements from the Time Allocation Committees and complications in scheduling.

Muxlow also noted that two years ago, the EVN PC tried to respond to the transients community who wished use the EVN for its sensitivity but found the EVN not flexible in scheduling time. The EVN took new initiatives: the "generic e-VLBI trigger" proposals, the "Automated e-VLBI trigger" proposals. Muxlow also mentioned "EVN lite" (where a selection of EVN telescopes observers more often) which has been discussed in the past several years, but never realised. Colomer observed that so far there was limited use of these opportunities. de Vicente pointed out that in a few occasions interested parties contact directly stations, and some observations are done. However the EVN as an array is not flexible in scheduling.

Campbell observed that the purpose of the EVN was to be an array at set times. The facilities for generic triggering and auto-triggering are still developed to take part only during scheduled dates. The only way to be more flexible in scheduling is for the EVN to have full control of individual telescopes for a long part of time. This is not possible in stations that have multiple commitments.

Q2: What are you doing to prevent stations observing the wrong schedule?

Campbell mentioned the measures taken by the EVN Scheduler, JIVE support and the station operators to alleviate the problem by changing the procedures for schedule depositing. These measures are largely transparent to the users.

Q3: The latest projects have taken ages to be correlated, any light in the tunnel?

Campbell noted that indeed there is currently a larger time gap between correlation and distribution, as large diskpacks are used, though this helps the logistics of disk shipping, a late station can delay the correlation, longer than in the past. Data e-shipping may mitigate the problem, but then additional storage at the correlator is required.

Kovalev suggested, based on the RadioAstron experience, that the EVN could offer users the choice of a faster correlation, or a full array with the caveat of a delay due to late shipping from a station.

Campbell and van Langevelde noted that it is not a good practice to exclude stations. The EVN correlator should arrange that all stations are correlated

Q4: When will you schedule my (1.5) project?

Gunn explained that for a project to be scheduled depends on many aspects: the grade, the pressure on GST, disk availability, other non-EVN stations, the frequency requested.

Gunn suggested that it is better to address a question “how do I make a proposal observable?” The most important factor is to achieve a good grade: a grade of 1.2 will get the proposal to the top of the queue. Current statistics show that all proposals with a grade of 1.5 start observing within the lifetime of the proposal, while a grade of 1.6 offers a 50 % chance to do so.

Q5: What is the showstopper for not offering default 2 (or 4 Gbps)

The main reason is disk space limitation but also the need for common frequency ranges for 4 Gbps. For further details see the presentation by De Vicente.

Q6: What are you doing to improve the calibration?

Lindqvist answered that the planned installation of a continuous calibration system (the “80Hz cal”) to all telescopes will improve the a-priori amplitude calibration significantly.

Kovalev suggested that in addition to the online calibration improvement, stations measure more frequent their standard SEFD value. He also enquired whether the global amplitude corrections derived in the experiment pipelines run in the correlator could be passed on to all interested regularly.

Campbell answered that the pipelines are applied to user experiments. Stations can consult this information. JIVE plans to make a database with the amplitude corrections that can be queried per

station basis (the information is already available, it needs to be formatted differently to be accessible). Amplitude correction factors for individual experiments are communicated to users in the cover letters.

De Vicente added that at the TOG web pages there is a table for the station amplitude calibration quality per session. Several scripts that allow stations to retrieve and plot the pertinent information have been developed.

Paragi also noted that users could use the tables changed in the pipeline, as a step for improved amplitude calibration.

Q7: KVN-like multi-frequency:

Some stations are capable of simultaneous multi-frequency observations, but most are not. This issue can be partially addressed with new developments like BRAND (for the lower frequencies).

Q8. Can the various stations' DBBCs get the same capabilities?

Hopefully will come in the next months. This will make scheduling easier.

Q9 The pipeline is great, but can be improved, is that being worked on?

Improvements will be addressed with work supported by a work package of Jumping JIVE.

Q10 When will we have joint EVN-e-Merlin operational?

The inclusion of e-MERLIN antennae in an EVN array took some time to commission but it is advertised since Session 2 2016. However, a few teething problems remain until this time.

Q11: When will you offer e-EVN with multiple phase-centers?

Campbell replied that the capability is there but as it requires extra processing the load on the correlator needs to be reduced, so the number of baselines have go down accordingly. Availability will be assessed in a case by case basis. If there were infinite space in Flexbuffs at JIVE, then the e-data cab be recorded to allow for further processing. However, there is not available disk space for this.

Q12: When will you offer e-EVN with frequency agility?

There is no frequency agility in e-EVN today. In principle such capability is available in a subset of stations.

PRESENTATIONS BY USERS

Short presentations from young and experience users, who described their experience followed. Below is a summary of their main points:

1) E. Varenius (OSO):

- As a new user, he found some options in Northstar confusing. This lead to a proposal with an impossible combination of telescopes. The EVN PC had to consider this carefully but the reply to the

user was clear. Varenius mentioned that he was aware that help was available, but sometimes it was “a tricky thing to know when to ask questions, and what is a question”.

- EVN and e-MERLIN observations were taken quasi-simultaneously, the combination of EVN and e-MERLIN worked with significant effort.

- The long wait time between observations and data available to the user can pose problems for PhD projects.

- Varenius found the pipeline rarely useful, for the final analysis. The scaling factor derived for the amplitude calibration problems was wrong and manual inspection was necessary. Furthermore, some problems were detected in the ANTAB files.

As a user gains experience small issues, can be identified, whereas new users do not know what to look for.

On this topic, Campbell commented that most of the errors in the ANTAB files are identified at the data scrutiny step at JIVE. Mao noticed that the pipeline is only a diagnostic tool and is not meant to be used for the final data analysis. It was suggested that the users should ensure that they are not using the raw station ANTAB files rather than the full/tested ANTAB files from the JIVE pipeline.

- The EVN Archive is fine, however the GUI is not consistent, occasionally some pages are outdated which may lead to a bit of confusion.

- It will be good for the users to be able to submit additional information in the Archive, for example comments, or links to published images in papers.

van Langevelde commented that this suggestion is remarkable. Former assumptions were that users would wish to keep the proprietary right to the final data products. The new suggestion is that the users will provide comments to help someone complete the analysis in the future. The idea is in line with the pressure put on scientists to be open with their data and make it accessible to future re-use.

2) M. Mao (JBO)

- Schedules are checked in detail at JIVE and mistakes are corrected. This is welcome since astronomers are not always aware of fine technical details that may affect scheduling.

- The e-EVN data delivery timescale can help PhD projects, so it is very useful characteristic of the EVN, as it provides quick turnaround and feedback, and can help design full EVN observations.

- Interaction with JIVE Support Scientists starts very early in the process and is very good.

- Pipeline plots are detailed (and better than the VLBA sniffer plots). The feedback page also provides a lot of details. It demonstrates awareness of general problems.

- The detailed "Dear PI" letters, provide the user with all of the details of what happened to the data in observations and correlation.

- Currently the time between correlation and post-correlation checking is too large (this is due to the reduced number of support scientists in early 2016)

- Sometimes more detail EVN PC comments are needed. For example Mao's proposal for 2 Gbps observations, was awarded 1 Gbps with no explanation
- Communication of the participation of e-MERLIN antennae in experiments could be improved

3. J. McKean

McKean discussed his experience as a global VLBI user:

- NorthStar works fine as a proposal tool.
- Exposure time calculator is useful; McKean requested that it is always kept up to date (as even NRAO requests proposers to use it)
- Feedback from JIVE during proposal writing was useful.
- Scheduling is difficult for new users, more consideration has to be given to this issue for the near future. Also programs (like SCHED) that use PGPLOT produce problems with modern computers.
- Access to the GBT and the JVLA is important for most global projects, but there are concerns on their availability and the priority that VLBI gets in their scheduling
- McKean offer his commendations to the EVN Scheduler for managing to schedule GBT time
- There is useful feedback for the correlation and the data release.
- McKean also complained for the long time until data release
- McKean noted that the pipeline products not good for users' science. He sees that it is important that the EVN provides more science quality data.
- The products in the EVN Archive (ie images) are not useful for other users, who do not want to repeat the analysis. McKean suggested to interact with users, and add further information and data products in the EVN Archive.
- McKean suggested to move to CASA as this is more modern software and then users will only have one software package to master.

Van Langevelde responded that it is clear that SCHED is not a long term solution. Resources to address that have now become available., Useful to hear by the user community on how this new software should work. The ALMA scheduling tool is more functional and also presents more complexities. As a step towards CASA, the EVN has offered ParselTongue as a scripting tool. However nowadays it is pertinent to make data path for VLBI data through CASA. Van Langevelde finds vital to have more than one software package available.

McKean suggested to utilize the user community for some of the testing and commissioning. The simpler a software tool, the better to access a wider community.

van Langevelde believes that given full accountability over all data is more important than making it simple to process. Really cutting edge transformation things can be done with the data at the same time.

Paragi asked which aspect of the pipelines was not useful. McKean suggested that an interaction with the user could tailor the pipeline to their need. As datasets are getting larger (with 2Gbps and in the future 4Gbps), individual computing resources are not adequate for efficient processing. A tailored pipeline may provide a lot of the intermediate processing steps.

Richards noted that using more software packages when teaching interferometry is counterproductive, as people tend to concentrate on the input rather than the process. It may be better to concentrate efforts on one software package.

Richards also pointed out that it will be useful to improve the pipeline and provide better data to user, this way more people who are troubled by radio interferometry may be attracted.

Ros commented on the usefulness of the Exposure Calculator, and encouraged keeping the information there up to date. Campbell commented that additional features will be useful, like uptime and uv-coverage plots, as well as the mixed bandwidth capability (combination of 1 Gbps and 2 Gbps capabilities). Some of these items did not get priority yet.

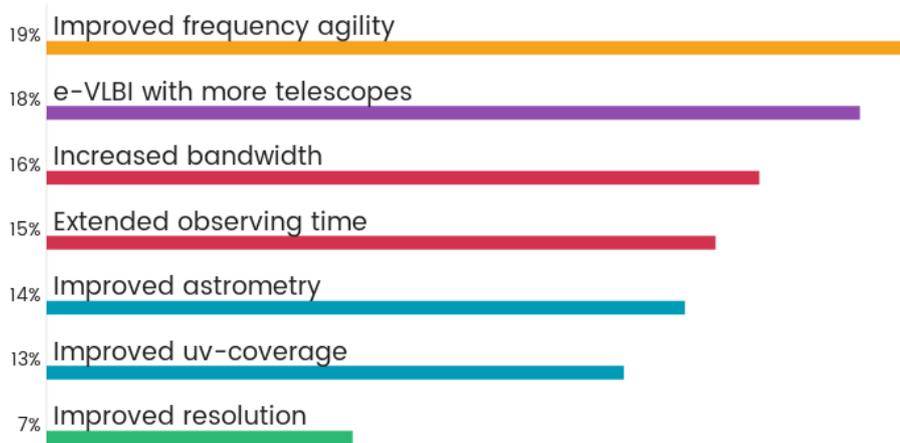
Ros also commended on the EVN Scheduler's efforts to obtain GBT time. He mentioned that sometimes users antagonize themselves by submitting multiple proposals at different instruments for the same purpose. McKean emphasized the usefulness of the GBT, as its lack can compromise one's observations.

Online Questionnaire to Users

An online questionnaire was shown to users and answers were collected.

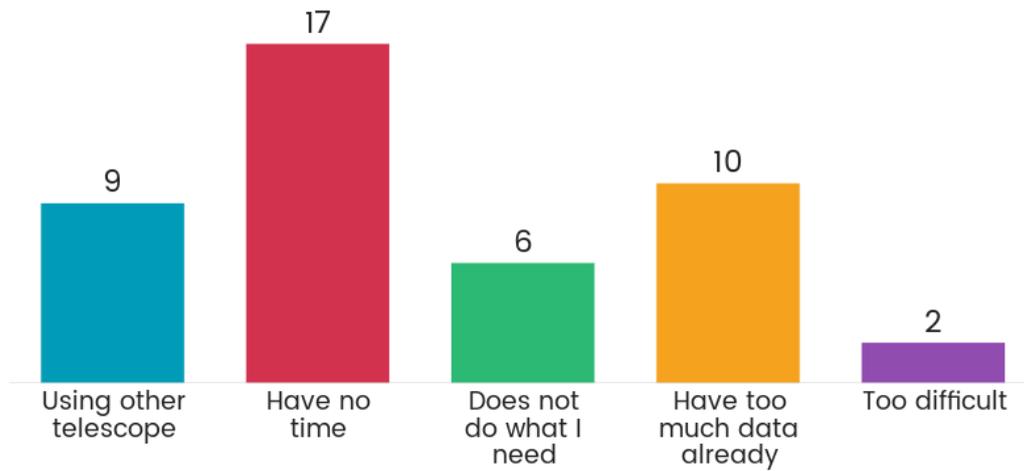
In which direction should the EVN develop?

Mentimeter



What is the reason for not submitting (more)...

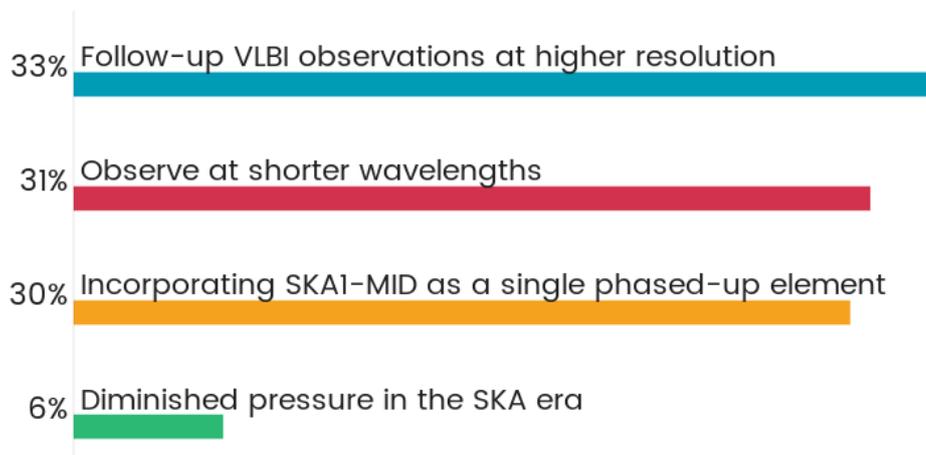
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What role do you see for the EVN in the SKA era?

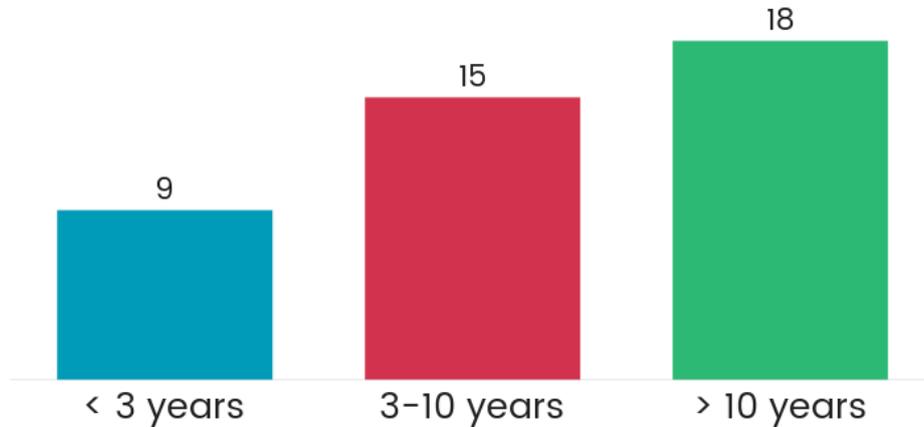
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How long have you been active in the field of VLBI?

Mentimeter



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General Discussion (led by P. Colomer)

Colomer indicated that this is an opportunity of users to express what is still missing in the EVN and not only comment on the current and planned capabilities.

Responding to user comments whether it would be possible to advertise an opportunity for a limited number of proposals, that will get the full support of a scientist very experienced in VLBI, from the start (proposal stage) to the end of the processing so that the user will get the analyzed data, Campbell replied that it is always possible to collaborate with experienced astronomers. It will be useful to advertise further the possibilities of collaboration in conferences to attract new collaborators with less experience in VLBI.

van Langevelde stated that the EVN through JIVE is offering help at all stages of the project, but to offer a service of pushing a project all the way from proposal stage to publication, is probably beyond the scope. We are all scientists and should be able to achieve the scientific goal either by ourselves or through collaboration with someone experienced. van Langevelde added that support in ALMA goes closer to the data analysis, but is still far from delivering full scientific results.

Users were asked whether their need for e-VLBI was due to the quick feedback achieved or due to the limited resources (e.g. disk space) that constrain the amount of recorded observations? It was noticed that the availability of JIVE support scientists is a major advantage for the smooth processing of VLBI data.

Vermeulen summarized the Users Meeting, commenting on the large number of participants and the many compliments received particularly for the support provided by JIVE.

The meeting has helped to define a wish list for improvements, while being cautious of the balance

between making the current experience smoother and striving for new functionality.

The need for additional software development was emphasized. However, it is easy to fall for the temptation for an all singing all dancing pipeline, but it is important to have people in JIVE to scrutinize the results and use astronomers intuition in evaluating results.

The EVN Consortium Board of Directors (CBD) will use the ideas of this meeting as input for planning developments in the near future. There is an obvious need to improve the current facilities and plan for new capabilities in parallel.

Notes taken by Antonis Polatidis, ASTRON