EVN Directors Meeting
Hartebeesthoek Observatory, South Africa, 23 May 2005

Present:

W. Alef (WA), MPIfR, Bonn, Germany
W.A. Baan (WAB), ASTRON, Dwingeloo, The Netherlands (Chair)
R.S. Booth (RSB), Onsala Space Observatory, Sweden
S. Buchner (SB), HartRAO, Hartebeesthoek, South Africa
P. Charlot (PC), Bordeaux Observatory, France
F. Colomer (FC), OAN, Yebes, Spain
P.J. Diamond (PJD), MERLIN/VLBI, JBO, UK
M.A. Garrett (MAG), JIVE, Dwingeloo, The Netherlands
J. Gomez–Gonzalez (JGG), OAN, Yebes, Spain
L.I. Gurvits (LIG), JIVE, Dwingeloo, The Netherlands
J. Jonas (JJ), HartRAO, Hartbestoek, South Africa
F. Mantovani (FM), IRA, Bologna, Italy (vice Chair)
G. Nicholson (GN), HartRAO, Hartebeesthoek, South Africa
J.Quick (JQ), HartRAO, Hartebeesthoek, South Africa
T. Venturi (TV), IRA, Bologna, Italy (Secretary)

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1. Welcome to Hartebeesthoek Observatory

J.Jonas welcomed all participants to Hartebeesthoek Observatory.

2. Welcome to the CBD, acceptance/changes to the agenda

W. Baan welcomed everybody to the EVN CBD meeting, and thanked J. Jonas for the invitation. Apologies were received from H. Hirabayashi, X.Y. Hong, A. Kus, R. Porcas and A. Zensus for not being able to participate.

P. Diamond noted the absence of a representative from NRAO.
The agenda was accepted with some changes. Point `5.5 ToO/Ad Hoc EVN (e-- VLBI) Observations` will be discussed jointly with `6.8 e--EVN & e--VLBI`.

P. Diamond will show some slides related to point `6.9 U--VLBI -- Haystack program`.

J. Gomez–Gonzales will show some slides of the new antenna in Yebes and its dedication, under item `7.1 Observatory Written Reports`.
W. Baan proposed to circulate a questionnaire on agenda item `6.1 EVN 2010`, so as to have a view from the whole Board. After some discussion (R. Booth, P. Diamond, F. Mantovani and W. Baan) it was decided that a general discussion among all CBD members would be more productive, followed by a draft document.

3. Minutes of the last CBD meeting

A few changes were made to the minutes of the CBD meeting held at Jodrell Bank Observatory in November 2004. The final corrected copy will be circulated soon. It was noted that the Field System issue was discussed a lot at the previous Board, but it did not appear on the agenda as a separate item.

The Chairman thanked T. Venturi for preparing the excellent minutes during his tenure. This will be the last meeting during which Titziana will take the minutes.

ACTION ITEM: on all directors to keep paying attention to Field System issues.

3.1 Review of action items from previous meetings

Some action items were taken care of. The list of remaining action items follows.

– The issue of the mobile VLBI backend (Section 8.7 of the May 2004 CBD meeting) remains as action item. It was proposed to focus on one specific station. *R. Booth* pointed out the difference between "generic aspiring stations" and Latvia (see also discussion at agenda item `8.4 Aspiring Network Telescopes`).
– Action item on the *CBD Chair* to explore possible ways of funding Eastern telescopes has been explored but remains ongoing (see also discussion at agenda item `8.5 Aspiring Network Telescopes`).
– Action item on *A.Zensus* on the Effelsberg connectivity is progressing but remains ongoing. It looks that a reasonable date is end of 2006, with no limit on the data rate.

– Action item on *P.Charlot* to circulate the Board the document on the statistics on the proposals.
– Action item on *J. Conway* and *M.Garrett* to ensure that the European radio astronomical community is in contact wrt the software correlator development.
– Action item on *S. Garrington*, *H. van Langevelde* and *C. Reynolds* to form a small working group to sort out the JBO Lovell slewing time problem and make it transparent in SCHED.
– Action item on the *CBD Chair* to keep the issue of Calibration and Antenna–Based problems on any Agenda.
– Actions related to the sessions, i.e.

(i) on *all Directors* to give the TOG Chair the name of the local person who will provide him the information on the disk situation prior to each session;

(ii) on *the TOG Chair* to prepare a disk purchase plan and circulate it to all Directors;

(iii) on all *VLBI friends* to inform the EVN Scheduler on the resources available at their site prior to each session

have generally been fulfilled (at the 90% level), but they should all be kept as a permanent action item.
– Action item on *A. Gunn* to inspect the calibration files of all antennas, in search for major problems.

3.2 Review decisions from the last Executive meeting

F. Mantovani went through the action items from the previous Executive Meeting. They were all taken care of, except for the following:

OLD ACTION ITEM: a group formed by *W. Baan, M. Garrett and A. Zensus* are requested to produce and circulate a document concerning EVN 2010 (see also agenda item 6.1). New deadline added: September 1st 2005.

4. EVN PC matters

4.1 EVN PC Chairman's report

P. Charlot reported. The PC membership was reviewed. A number of replacements have taken place. M. Lindqvist (OSO) and R. Vermeulen (ASTRON) entered the PC last February 2005. J.Alcolea, M. Bondi and A.Lobanov finished their term on February 2005. The meeting was informed that A. Lobanov is confirmed for another term (*W. Alef*), and T. Venturi will succeed M. Bondi (*F. Mantovani*). It was also pointed out that P. Charlot's chairmanship will end at the end of 2005, and a successor should be proposed by the next CBD meeting.
A brief report on the Spring EVN PC meeting was given. The meeting was held in Shanghai in March 2005. It was the first EVN PC meeting ever held outside Europe. 23 proposals were received: 15 EVN–only and 8 global. Among the 23 proposals, 5 requested 1 Gbps recording. As usual, 18 cm and 6 cm are the most requested observing frequencies (i.e.$\sim$ 75%). The number of proposals was higher than the long term average (20). It was

noted that the PI of one proposal comes from Serbia. Beyond the EVN PC meeting, an additional 1 day mini–users' meeting was held in Shanghai, with technical and scientific presentations. The meeting was attended by $\sim$ 30 people.
Some statistics on the proposals over the past two years were shown. The distribution of PIs divided by countries shows that the peak is for The Netherlands, followed by USA, UK, Germany and Italy. It is noteworthy that each continent is present in the distribution. Furthermore, for $\sim$ 24% of the proposals all authors come from non–consortium institutes.
P. Charlot informed the Board that requests for extension of the 1–year proprietary period are being received, and one issue is how to evaluate such requests. The Board pointed out that only exceptional circumstances should be considered, i.e. a student finishing a PhD. Lack of time to analyse the data should not be regarded as an exceptional case. Another issue is the reviewing process for e–VLBI proposals. The EVN PC feels they should undergo the usual refereeing process if they have a science content.
R. Booth asked if the whole pipeline process carried out at JIVE reflects on the number of proposals received, and *P. Charlot* said that it is not yet the case.
M. Garrett pointed out that the pipeline is at present more useful for the productive use of the archive.

5. EVN Operations

5.1 EVN Scheduler's report

P. Charlot reported. The frequency sequence for Session 3–2005 has not been decided yet, mainly due to a backlog of experiments at 30 cm, 5 cm, 3.6 cm, and 1.3 cm still waiting to be scheduled.
P. Diamond informed the meeting that MERLIN may not yet be available at 5 cm for Session 3–2005, so the 5 cm session should be postponed to February 2006. PJD also added that Lovell has another work repair planned for the summer, which will need 16 to 22 weeks. In case more than 16 weeks are necessary, both Lovell and Cm will be replaced in Session 3–2005.

ACTION ITEM: on *P. Charlot* to inform the EVN Scheduler on the problems with Lovell.

A brief discussion was carried out concerning the date of Session 1–2006. *M. Garrett* proposed to advance the beginning of Session 1–2006, in order to have more time at the correlator between Session 1 and 2. It was agreed to leave the dates as they are an R. Porcas' document, i.e.:
Session 1, 2006 – Feb 16 to Mar 09
Session 2, 2006 – Jun 01 to Jun 20
Session 3, 2006 – Oct 19 to Nov 09.

5.2 Report from JIVE

M. Garrett reported. He first showed the new organogram at JIVE as of May 2005. A permanent appointment was given to C. Reynolds. S. Parsley is leaving JIVE. Three new

people were hired, in particular Oerlemans (Huygens project), Berciano and Wucknitz (both FP6 ANGLES).

Concerning the correlator operations, 23 user experiments and 17 NME/tests were correlated in the period Nov 04 – May 05, and 22 user experiments were distributed to PIs.

The summary of the correlator backlog for the sessions May03 to Feb05 was shown. Session 3–2003 and Session 1–2004 are all correlated. There is one experiment remaining from Session 1–2003, due to lack of information from the PI. Three out of 13 experiments from Session 1–2004 are still waiting for correlation (PC–Int and HDF–N), and they will be correlated in June 2005. Finally 1 out of 20 experiments for Session 3–2004 and 3 out of 12 experiments for and Session 1–2005 are still in the correlator queue.

The most recent milestones were reviewed. Among them the first successful 1 Gbps user experiment; the first all disk experiment (now the standard for EVN–only observations); the first global MK5A experiment, including Australian fringes to Europe.

Concerning the disk logistics, the recycling time is improving. Mixed tape–disk operations are now routine, and the fraction of disks increased since November 2003.

The data quality is improving both with regard to the reliability and to the robustness of the correlation. Developments in the real–time mode for the correlation have considerably helped this process.

The data archive at JIVE is up and working. The whole process to access the files and further information concerning a given experiment was shown. A new FITS archive correlator search mask is now available.

On the Users' Support front, the FTP–VLBI tests are continuing. They are crucial in detecting problems prior to the beginning of the observing sessions. A continued effort is done to produce T_{sys} measurements for each station, and to carry out schedule pre–checking.

The Huygens project was briefly reviewed. It is a major success, and there are hopes to extend the contract.

M. Garrett pointed out that Huygens had many positive implications for the EVN and Global VLBI, such as for instance the MK5A units for the VLBA and JIVE. Furthermore, 30 MK5 disk packs were added to the EVN inventory. The development of high-resolution software spectral correlation is under way. And JIVE has featured in more than 200 major national and international mass media; major science publications are expected to follow.

L. Gurvits presented some Huygens VLBI results.

5.3 MPIfR Correlator report

W. Alef reported. The most important developments of the correlator hardware and correlation software were listed. Concerning the operations, the MPIfR correlator has no backlog at the moment, and hardly any recorrelation is needed. The correlation of 512 Mbps observations (the standard for mm VLBI runs), with mixed tape (VLBA) and disk (EVN) operations, is under control and works smoothly.

5.4 Network Performance and Reliability

W. Alef reported on the last two sessions (Session 3–2004 an Session 1–2005), based on a detailed document prepared by Z.Paragi (JIVE). Here some of the most relevant general points are summarised.

– The schedule pre–checking at JIVE is very successful;
– SCHED and the Field System work well for MK5 experiments;
– near real–time fringe checks are successful and improving further;
– tape drive related problems are disappearing.

F. Mantovani asked if the NME tests are still necessary with the advent of the ftp test prior to each session. He pointed out that there are some problems related with the administration. It looks they are still necessary.
Session 1–2005 was good in terms of telescope performances, but the bad weather and snow were a problem at some stations (Eb and Wb). Minor failures were reported at Mc, Jb, Cm and On. *F. Mantovani* commented on the problem of the lack of ftp fringes from Medicina in the K–band. The people in Medicina are working on this, however the reason has not been spotted yet.
W. Alef commented that the last two sessions went very well, and hopes that this will continue in the future. The Board acknowledged these good results, and underlined that it important to keep up with the attention and all the efforts needed. However, despite these encouraging results, the perception of the EVN as a poorly calibrated network is still alive. A major goal is to finally remove this feeling, which comes from the old VLBI days.

ACTION ITEM: on all Directors to make sure that personnel at each telescope remains motivated, so as to ensure and improve the good performance of the EVN over the past few sessions, and to encourage them to submit EVN proposals.

6. EVN technical developments

6.1 Report from TOG

W. Alef reported on the last meeting, held in Jodrell Bank in November. The MK5 system is fairly stable now. For this reason the presence of a Haystack representative in the TOG is less pressing these days. The next TOG meeting will be held in Onsala on July 1st 2005. The agenda for that meeting has not been finalised yet.
W. Alef pointed out that the EVN members gave a major contribution to the TOW held in May in Haystack, both in terms of lectures and tutorials.

6.2 EVN calibration

W. Alef showed a table with the median absolute amplitude calibration error for the EVN stations, derived on the basis of Session 3–2004. The table includes the information at 5 and 6 cm, and in the K–band. The bad performance of Nt and Tr was noted. *M. Garrett* noted with surprise the reasonable quality of the K–band amplitude calibration, despite the opacity and sensitivity problems at this high frequency.
M. Garrett asked for the spread of the errors for each site and frequency during each session, but the information is not available.

The automatic flagging is now taken care of in Nt. Wb is the only remaining station yet to make this feature available.

With major satisfation *the Board* acknowledged the very good performance obtained by Urumqi in K–band, recognizing the hard work the Urumqi staff did to reach this result.

ACTION ITEM: on *W. Baan* to ensure that automatic flagging is implemented at Wb.

6.3 MK5 Status (A & B)

W. Alef reported. The most relevant points can be summarized as follows:

– All EVN stations are now equipped with MK5A;

– all sessions in 2005 have been disk–only (for the EVN stations). Starting from May 2005, MK5 schedules are handled by the Field System:

– at present $\sim$ 100 MK5A systems have been deployed, and $\sim$ 1000 8–pack disks are in circulation;

– the VLBA is going to MK5;

– the disk failure rate is of the order of 0.5% (mostly at the beginning of their life);

– SATA disk modules will be available in late 2005.

– three prototype MK5B under test will be available in late 2005;

– the MK5B compatibility upgrade will be taken care of at a later stage;

– MK5B at 1 Gbps is successful. The aim is to have 1 Gbps default for continuum observations;

– the required disk space for each station, estimated on the basis of 10 days continuum observing at 1 Gbps, is in the range 20–100 TB, depending on the load of each station and on the number of scheduled experiments.

Concerning the MK5 disk status, the inventory was shown, divided station by station. At present there are 678.7 TB available, which is the equivalent of more than 1000 tapes. The need for the Jun05 session is of the order of 200 TB, so in principle there is no problem. There are difficulties in tracking the disks, and not all disks have been accounted for. Another checking system is needed.

P. Diamond asked if the MK5A –> MK5B compatibility at the correlator is under control. *M. Garrett* replied that he relies on the development at Haystack, as agreed in the original Mk5 description. Hardware and software changes are involved, and these days JIVE lacks the manpower to deal with this.
W. Alef pointed out that MK5B may become really necessary if (a) either the VLBA moves to MK5B, or (b) in the more likely case, that an aspiring new station (Latvia, for instance) joins the network, which may well happen before the end of 2006. As a final remark, he suggests that M. Garrett and A. Whitney get in touch on this issue.

ACTION ITEM: on the *CBD Chair* to invite the Haystack Director to the next CBD, in order to facilitate better communication issues of common interest.

6.4 PC EVN developments

No report was received from *A. Mujunen.*
L.Gurvits informed the meeting that Huygens was successfully carried out by PC EVN in Australia, at the LBA stations.

ACTION ITEM: on *W. Alef* to ask A.Mujunen about progress with PCEVN related developments, and to submit report on this issue at the next CBD meeting.

6.5 EVN data archive

T. Venturi briefly reported on the subject. The first part of the project has been completed. The Bologna catalogue of EVN observations points to the Correlator Data Archive at JIVE, so the same information can be accessed both from the EVN Correlator Archive web page and from the EVN catalogue.

6.6 Digital BBC development

W. Baan reported. A Critical Design Review on DBBC development was held on May 2nd. The report on this meeting has already been distributed to the Board. Apart from some technical concerns, the review committee was very positive about the design, and the project looks feasible. G.Tofani has also informed the Chairman that IRA was willing to accept the risks including the production of the dBBC prototypes. The Review Committee made the following recommendations:

– the CBD to commend and endorse the effort of the DBBC team;
– the CBD to consider Haystack as a partner for collaboration;
– the CBD to confirm that the DBBC team gives the highest priority to replicate the functionality of analogue BBCs.

(1) the team to revise the design and provide new timeline and costing;
(2) further review as soon as possible;
The suggested changes shift the timescales of the prototype (now end of 2005).

F. Mantovani confirmed that G. Tofani was willing to take the responsibility and risk (even financial) to produce these prototypes, and asked the CBD to approve the project.
P. Diamond asked for some clarification on point (1), and for new cost estimates. He was answered that G. Tuccari expects some development over the summer.
Concerning the costs, *W. Alef* reported that Haystack and the SETI team are going for very cheap designs (of the order of 8000 USD), while the lower limit for Tuccari's design is 10–12 kEUR. The whole system would cost $\sim$ 40 kEUR to get straight into the MK5B system.
P. Diamond suggested that the review committee looks at the reply G. Tuccari made to their recommendations.
W. Baan requested that the CBD "blesses" the project.
M. Garrett pointed out the the DBBC project has to work, for the EVN to be taken seriously as a VLBI technology developer. He asked if the development at Haystack is in competition with the EVN project. The answer is no (WA).
R. Booth said that the timescale for the revision should be kept under control.

F. Mantovani said that some (very limited) financial support may be necessary, and asked if the EVN is still ready to give such support.
P. Diamond asked for a formal letter with an estimate of the amount involved.

It was decided that the DBBC development is an official EVN project.

ACTION ITEM: on *W. Baan* to commend the DBBC team and report the CBD decisions to Tuccari and the DBBC Team. A revised financial plan and the planning for the project should be communicated to the Board.

ACTION ITEM: on *W. Baan* to get in touch with Haystack on the DBBC issue. F. Mantovani, W. Alef and G.Tuccari should also be part of this process.

6.7 e–EVN and e–VLBI

M. Garrett reported on the progress on e–VLBI. Problems are spotted and solved. A science experiment was carried out on 11 March 2005 resulting in a tentative detection of SN2001em, despite some failures in the correlator. Operation at 64 Mbps is now stable, even on baselines to Arecibo; operation at 128 Mbps is promising, and the effort now is to make it robust; operation at 256 Mbps works at present in tests between On and Wb. Fringes at 512 Mbps have not yet been achieved.
e-VLBI still has some data flow problems. There are problems between JIVE and the stations, and these need to be solved. The situation and plans are presently as follows:

– successful tests were carried out between JIVE and Arecibo;

– problems with Mk5 software led to the failure of e–VLBI experiments at the beginning of the year;

– to establish a reliable e–VLBI network and the start of serious science experiments are now the goal.

M. Garrett reported also on the EXPR*e*S I3 proposal (EXpress Production Real-time *e*–VLBI Service). The proposal has two main goals: reliable e–VLBI service (SA1), and Network Provision for global e–VLBI network (SA2).
A successful demo was carried out at the IST–2004 exhibition. Regular tests are planned in advance and take place every 6 weeks (until June 2005). Another demo is planned for June 2005. An e–VLBI demo will be the highlight of the EC PR event to be hosted at JIVE. EC Commissioner Potocnik is expected to start the demo.

R. Booth suggested to invite a few teams to propose a set of experiments (continuum and spectral line).
P. Diamond pointed out that few people would be interested in applying for e–VLBI at 64 Mbps with few antennas, since the EVN can offer much more in terms of capabilities these days.
L. Gurvits suggested that the EVN PC looks for feasible observations, to be carried out both with standard VLBI and e–VLBI.
R. Booth expressed in favour of a team interested in advancing e-VLBI development and debugging. He also pointed out that more testing would be better, since this is really a new technique.

M. Garrett reminded the meeting that tests are now routinely carried out every 6 weeks. This means that the EVN exists also beyond the regular VLBI sessions, and that the involved people at each site are very motivated. He suggested that this tool should be properly advertised.

ACTION ITEM: on *W.Baan/CBD* to inform J. Conway that the regular e-VLBI test observations should continue. Conway is asked prepare a Call for experimental e-VLBI science proposals to be formally evaluated by the EVN PC that may used be as commissioning experiments during the regular engineering test sessions.

ACTION ITEM: on P. Charlot to include the information on the EVN e–VLBI capabilities in the October Call for Proposals.

6.8 ToO and AdHoc e–VLBI observations

A document provided by *J. Conway* was the basis of the discussion concerning ToO and AdHoc e–VLBI observations. CBD should take a decision on whether e–VLBI should be considered an official facility of the EVN, and/or if further testing is needed.
Some recommendations were made to the CBD. Short term goals should be: (1) to use realistic science observations for technical debugging for e–VLBI, and (2) to solicit experiments using the new capabilites enabled by e–VLBI. Long term goals should be: (1) to develop a policy for Target of Opportunity observations, and (2) to advertise out–of–session e–VLBI in the EVN Call for Proposals.

M. Garrett reported on the ToO issue, referred to as " EVN Rapid Response Observations" (ERROs).The present status of EVN, i.e. more flexible and reliable, makes it necessary to consider the potential of EVN ToO experiments. Furthermore, e–VLBI gives real–time feedback, which is important for the reliability of ToO tests. For comparison, the amount of ToO at the VLBA is of the order of $\sim$ 1–2% of the total requested time. Within the EVN, the major problem is the allocation of Eb and Wb, with a full observing schedule beyond the EVN sessions. At the VLBA the Rapid Response Science (RRS) proposals are evaluated within 24 hours.
M. Garrett asked the CBD to consider the following scheme for ERROs:

– advertise limited RRS by October 1st;
– request 120 hr/yr to each director;
– use the same EVN Cover Sheet, but email it only to a restricted number of people, i.e. the PC Chair, the Scheduler, the Correlator representative;
– PC Chair approves without consultation with the whole PC, and responds within 24 hr;
– the telescopes are contacted and observations take place within 48 hr;
– the RRS data are correlated and made available to the PI immediately;
– the data may be pipelined at JIVE;
– the data is publicly released after 6 months.

W. Alef expressed his worry for the availability of Eb on such short timescale.
F. Mantovani cautioned that the EVN situation is different as compared with the VLBA, and that ToO with e–VLBI requires a whole new structure for the EVN.

ACTION ITEM: on *all Directors* to check the availability and situation at each telescope, such that a decision can be taken very soon.

ACTION ITEM: on *M. Garrett* to produce a document with the proposed guidelines for ERROs, and circulate it among the Board.

6.9 UVLBI – Haystack programme

P. Diamond reported. The proposal for UVLBI was submitted to NSF, for 1, 2 & 4 Gbps VLBI recording. Support letters were received from the EVN, Ar, and NRAO/GBT, however only $\sim 1/3$ of the requested money was received. In 2005 1 Gbps backend will be delivered at GBT only. In the future it is expected that Haystack will support 2 & 4 Gbps acquisition hardware and disk resources at GBT and Ar once/year.
A document/some slides received from Haystack were shown and are summarised as follows:
– UVLBI is a joint effort between Haystack, EVN, JIVE and NRAO;
– an agreement needs to be reached on scheduling between Haystack and the EVN;
– the success of UVLBI is essential to the "health" of VLBI worldwide;
– EVN/Haystack future collaborations on e–VLBI, MK5B, DBBCs and UVLBI are very important.

Considering the above points, it was pointed out that some communication problems are still exist between EVN and Haystack. 1 Gbps recording is now a standard for the EVN, and *M. Garrett* said that the word "UVLBI" should disappear from the Call for Proposals, in this particular regard. In particular, it was important that users should think of 1 Gbps as the EVN default, rather than something that has to be carefully justified.
W. Baan further reported on some comments and proposals made from *R. Porcas*, which suggest: 1) that proposals for UVLBI should be reviewed as any other proposal; 2) that High Sensitive Array (HSA) and NRAO accept the current EVN procedure for globals and for PC review; 3) that HSA commits to support global runs regardless of which proposals are accepted; 4) that acknowledgement of each other efforts is important and must be considered.
R. Booth proposed to invite Haystack director Joe Salah to the EVN CBD. *P.Charlot* underlined it is also important to keep NRAO in the loop.

ACTION ITEM: on *W. Baan* to write Haystack on the UVLBI issues, in order to improve the communication between Haystack and the EVN. The letter should be cc–ed to J. Ulvestad.

6.10 Next generation EVN correlator development SW & HW

P. Diamond distributed a document on correlator developments for MERLIN. The budgetary quotations for the new generation of hardware and software correlator developments were briefly discussed. The price estimated in the document is valid if the new correlator components are produced in 2007, along with the EVLA correlator.

R. Booth expressed his worry for the very high costs, and it is unclear how they could be faced.
M. Garrett pointed out that the EVN correlator has a limited lifetime. Some problems already showed up on some station units, and some options should soon be considered.
F. Mantovani informed the meeting that an Italian group from ESA is also working on correlator developments.

ACTION ITEM: on the *CBD Chair* to keep the correlator development on the agenda for future meetings.

ACTION ITEM: on *F. Mantovani* to provide M. Garrett names and addresses of the Italian group involved in the correlator development issues.

7. Institute Reports

7.1 Observatory written reports

A few additions were made to the written reports circulated ahead of the meeting.
J.Gomez–Gonzales showed some slides on the final steps of the Yebes 40–m telescopes and its dedication, which took place on 26 April 2005.
J. Jonas reported that the surface upgrade at HartRAO has finished, and the 22 GHz receiver should soon be available. The prototype receiver should be delivered by the end of July 2005. The Board expressed satisfaction with the new 22 GHz Rx at HartRAO and the anticipated sensitivity of the long north–south baseline.

7.2 Planned engineering work at the telescopes

The following engineering works are planned at the EVN stations:
– the Lovell telescope will be involved in work repair for 16 – 22 weeks, starting directly after Session 2–2005;
– work in Eb will also take place between Session 2 and 3 (2005).

8. Global relations

8.1 EVN representation on other bodies. IVS & GVWG

F. Mantovani reported on the IVS. The role of IVS is to provide support to geodesy, geophysics and astrometry, and to integrate VLBI in a Earth global observing system. Among the data products are TFR, ICFR, and other Earth observation parameters. The IVS has a directing Board, with permanent, temporary and at large members.
Three meetings were held in Noto at the end of April 2005, 1) the 13th IVS Directing Board Meeting, 2) the 6th IVS Analysis Workshop, and 3) the 17th working meeting on European VLBI for Geodesy and Astrometry, which led to the formal foundation of the EVGA. The IVS vision document VLBI2010 presents the current and future requirements

for the geodetic VLBI system, in particular the mm–precision of the stations positions. The next correlators generation is also an issue for the IVS.
The Third IVS Technical Operation Workshop was held at Haystack (May 9–12 2005). Fifteen EVN people were present, out of a total of 60 participants.
A GeoNet FP6 proposal (European Network of Terrestrial Reference Points for Geodesy and Radio Astronomy) was submitted on 3 March 2005. It is intended to be a coordination activity with 9 Networking Activities, i.e. no research and no instruments are involved, and the requested amount is 2 MEuro for three years. The guidelines of the proposal were shown. A major role is played by the integration between radio astronomy and geodetic activities. This proposal has clear connections with NA3, JRA1 and ALBUS in RadioNet.

L. Gurvits reported on GVWG. There are 4 EVN representatives in the working group, and S. Parsley should be replaced because he is leaving JIVE. Some concern was generally expressed for the low-level of activity within GVWG.

8.2 NRAO report & VLBA operations

No report was received from NRAO. *W. Baan* reported on the planned Senior Review of all NSF supported facilities in the USA. The NSF has to find 30M$ in the budget for developments in the optical and to support ALMA operation. In relation to the future of the VLBA, NRAO Director Fred Lo has requested the EVN to consider possible scenarios for future collaborations in global VLBI operations with the VLBA and EVN.

ACTION ITEM: *W. Baan* to write a letter to Fred Lo. Content to be decided at the Executive Meeting on May 25th 2005.

8.3 VSOP report

Nothing was added to the written report already circulated.

8.4 Aspiring Network Telescopes

L. Gurvits and *W. Baan* reported on progress made at some of a total of 20 telescopes spread among Eastern Europe and Asia. In particular, the telescopes of Evpatoria and Irbene were progressing well in their preparations. Baan and Gurvits have made a visit in March to the Evapatoria/Kharkov group in order to review progress and to discuss participation in EVN with the Ukraine Academy of Science and the Ukraine Space Agency.
W. Baan pointed out that the u–v coverage would improve tremendously with the addition of only a subset of such antennas.
P. Diamond asked the Board if EVN is indeed looking for expansion and pointed out that in such case reliability and help would be a major issue.
L. Gurvits urged the Board to take a clear decision wrt helping to the aspiring telescopes, in particular for Latvia and Evpatoria. It seems that the case of Latvia and Evpatoria is different from the other stations. They have enthusiastic teams with money and allocated resources. However, they need help from the EVN with the installation of MK5 systems and for the initial operations.

F. Mantovani asked how they would purchase the remaining backend, and pointed out that a spare formatter is currently in Medicina. Gurvits replied that they would be able to buy DBBCs once they are available. A Chinese mini-DBBC already exists, though its availability should be checked. A possible "tiger team" is already organized for further help at each site.
P. Diamond supported the idea of a demo with MK5 and the Chinese mini-DBBC in Latvia first and in Evpatoria at a second stage. A formatter may also be borrowed from some network antenna. Provided the availability of the Chinese mini-DBBC system, a complete backend system can be put together.
R. Booth urged the CBD to take a positive and final decision on this issue, which has been on the EVN agenda for a long time now.
J. Gomez–Gonzales asked RB what would be the consequences of a negative attitude from the EVN, and the answer is that those institutes would not support radio astronomy any longer.
The CBD decided that the support to Latvia and Evpatoria is now identified as an EVN activity, led by Onsala on behalf of the EVN.

ACTION ITEM: on *the CBD Board* to form a support team for Latvia and Evpatoria.

ACTION ITEM: on *W. Baan and R. Booth* to notify the Directors of Latvia and Evpatoria of the decision of the EVN Board and of the plans wrt the MK5 demo. A timescale of 1 year should be specified in the letter.

9. EU Contracts

9.1 General FP6 RadioNet issues

P. Diamond said that it looks that the financial part of RadioNet report has been accepted.

9.2 FP6 RadioNet EVN Access TNA

Nothing was added to the report already circulated.

10. Funding and Cooperation Proposals

10.1 Research Infrastructure "EXPReS"

Nothing was added to the information provided by *M. Garrett* under the agenda item 6.7 (see minutes at that section).

11. EVN Annual Report

ACTION ITEM: on *all Directors* to deliver their contributions on time.

12. VLBI Schools and Symposia

12.1 Next Generation Correlator Workshop

M. Garrett informed the Board that the details of the October meeting have not been decided yet. S. Parsley is leaving JIVE, and this is making the organisation difficult.

12.2 Interferometry Schools

P. Diamond reported that there has been very good response to the European Radio Interferometry School (ERIS), which will be held in Manchester/JBO in September 2005. About 70 participants have registered. They mostly come from Europe. Nobody from the USA has registered.

13. EVN Newsletter

The Board recognised that the EVN Newsletter is a success and should be continued. Chairman *W. Baan* and the Board thanked Raffaella Morganti (ASTRON) for the job well done on the Newsletter over the past two years. *F. Mantovani* informed the meeting that Carlo Stanghellini will take over this support activity.

14. Date and Place of the next meeting

F. Mantovani proposed to have the next CBD meeting and the Autumn RadioNet meeting in Bonn. This will be checked with A. Zensus. The proposed dates are 28 – 30 November 2005.

15. Any other business

Chairman *W. Baan* thanked Titziana Venturi for the excellent minutes she has provided during the period of his chairmanship.

On behalf of the CBD the Chairman thanked Justin Jonas Beryl Coetzee for the warm hospitality at Hartebeesthoek and for the wonderful arrangements made for this meeting.

ACTION ITEM: on *N. Csonka* to collect all PowerPoint presentations of this meeting and circulate them to the attendants.

The meeting closed at 18.45 after a few farewell words by *W. Baan.*

16. Review of Action Items

16.1 Action items carried out from previous meetings

ACTION ITEM: The issue of the mobile VLBI backend (Section 8.7 of the May 2004 CBD meeting) remains as action item. It was proposed to focus on one specific station.

ACTION ITEM: on the *CBD Chair* to explore possible ways of funding eastern telescopes has been explored but remains ongoing.

ACTION ITEM: on *A.Zensus* on the Effelsberg connectivity is progressing and remains ongoing.

ACTION ITEM: on *P.Charlot* to circulate the Board the document on the statistics on the proposals.

ACTION ITEM: on *J. Conway* and *M.Garrett* to ensure that the European radio astronomical community is in contact wrt the software correlator development.

ACTION ITEM: on *S. Garrington*, *H. van Langevelde* and *C. Reynolds* to form a small working group to sort out the JBO Lovell slewing time problem and make it transparent in SCHED.

ACTION ITEM: on the *CBD Chair* to keep the issue of calibration and antenna–based problems on any agenda.

ACTION ITEMS related to the sessions which remain ongoing:
(i) on *all Directors* to give the TOG Chair the name of the local person who will provide him the information on the disk situation prior to each session;
(ii) on *the TOG Chair* to prepare a disk purchase plan and circulate it to all Directors;
(iii) on all *VLBI friends* to inform the EVN Scheduler on the resources available at their site prior to each session.

ACTION ITEM: on *A. Gunn* to inspect the calibration files of all antennas, in search for major problems.

16.2 New Action Items

3. Minutes of the last CBD meeting

ACTION ITEM: on all directors to keep paying attention to the Field System issues.

OLD ACTION ITEM: a group formed by *W. Baan, M. Garrett and A. Zensus* are requested to produce and circulate a document concerning EVN 2010 (see also agenda item 6.1). New deadline added: September 1st 2005.

5.1 EVN Scheduler's report

ACTION ITEM: on *P. Charlot* to inform the EVN Scheduler on the problems with Lovell.

5.4 Network Performance and Reliability

ACTION ITEM: on all Directors to make sure that personnel at each telescope remains motivated, so as to ensure and improve the good performance of the EVN over the past few sessions.

6.2 EVN Calibration

ACTION ITEM: on *W. Baan* to ensure that automatic flagging at Wb is being worked on.

6.3 MK5 status (A& B)

ACTION ITEM: on the *CBD Chair* to invite the Haystack Director to the next CBD, in order to facilitate better communication issues of common interest.

6.4 PC EVN developments

ACTION ITEM: on *W. Alef* to ask A.Mujunen about progress with PCEVN related developments , and to submit report on this issue at the next CBD meeting.

6.6 Digital BBC development

ACTION ITEM: on *W. Baan* to commend the DBBC team and report the CBD decisions to Tuccari and the dBBC Team. A revised financial plan and the planning for the project should be communicated to the Board.

ACTION ITEM: on *W. Baan* to get in touch with Haystack on the DBBC issue. F. Mantovani, W. Alef and G.Tuccari should also be Part of this process.

6.7 e–EVN and e–VLBI

ACTION ITEM: on *W.Baan/CBD* to inform J. Conway that the regular e-VLBI test observations should continue. Conway is asked prepare a Call for experimental e-VLBI science proposals to be formally evaluated by the EVN PC that may used as commissioning experiments during the regular test sessions.

ACTION ITEM: on P. Charlot to include the information on the EVN e–VLBI capabilities in the October Call for Proposals.

6.8 ToO and AdHoc e–VLBI observations

ACTION ITEM: on *all Directors* to check the availability and situation at each telescope, such that a decision can be taken very soon.

ACTION ITEM: on *M. Garrett* to produce a document with the proposed guidelines for ERROs, and circulate it among the Board.

6.9 UVLBI – Haystack programme

ACTION ITEM: on *W. Baan* to write Haystack on the UVLBI issues, in order to improve the communication between Haystack and the EVN. The letter should be cc–ied to J. Ulvestad.

6.10 New generation correlator development SW & HW

ACTION ITEM: on the *CBD Chair* to keep the correlator development on the agenda for future meetings.

ACTION ITEM: on *F. Mantovani* to provide M. Garrett names and addresses of the Italian group involved in the correlator development issues.

8.2 NRAO report and VLBA operations

ACTION ITEM: *W. Baan* to write a letter to Fred Lo. Content to be decided at the Executive Meeting on May 25th 2005.

8.4 Aspiring Network Telescopes

ACTION ITEM: on *the CBD Board* to form a support team for Latvia and Evpatoria.

ACTION ITEM: on *W. Baan and R. Booth* to notify the Directors of Latvia and Evpatoria of the decision of the EVN Board and of the plans wrt the MK5 demo. A timescale of 1 year should be specified in the letter.

11. EVN Annual Report

ACTION ITEM: on *all Directors* to deliver their contributions on time.

15. Any other business

ACTION ITEM: on *N. Csonka* to collect all PowerPoint presentations of this meeting and circulate them to the attendants.