# Minutes of Meeting LOFAR Software

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| **Date:** | 2008-11-19 |
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| **Next meeting:** | 2008-11-26 9:15-10:15 |
| | Multimedia room |
| **Present:** | |
| Andre Gunst | Yes |
| Ronald Nijboer | Yes |
| Ruud Overeem | Yes |
| John Romein | Yes |
| Michael Wise | Yes |

cc: Arnold Meijster, Rob van Nieuwpoort, Arthur Coolen, Jurjen Sluman, Pieter Donker, Chris Broekema, Martin Gels, Joris v. Zwieten, Marcel Loose, Adriaan Renting, Ger van Diepen, Max Avruch, Michiel v. Haarlem, Jan Reitsma, Ger de Bruyn, Arno Schoenmaker, Hanno Holties, Corina Vogt, Jan Noordam, Joe Masters, Lars Bähren, Dion Kant, Johan Hamaker, Maaijke Mevius, Sven Duscha, Jan-David Mol.

## *Remarks previous minutes*

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## *Announcements*

- The LOFAR data processing school is at 10-12 February 2008.
- WAN equipment of Effelsberg has arrived and will be installed at the start of December.
- The LOFAR data processing school is at 10-12 February 2008.
- LOFAR18 machine is ready to use.

## *Action item overview*

| ID | Date submitted | Description | Owner | Planned date | Status |
|---|---|---|---|---|---|
| 69 | 20080813 | Draft set of regression tests for CIMAGER (with input from Casey). | Michael | 20081210 | Open |
| 70 | 20080820 | Contact Tim Cornell about CIMAGER testdata. They use simulated datasets and compact array data. | Ronald | 20081020 | Open |
| 74 | 20081029 | Issue track tool is required. Put on the agenda in a next meeting. | Andre | 20081120 | Open |
| 75 | 20081119 | Meeting about firmware reset and switch off RCUs and antennas when not used. | Andre | 20081201 | Open |

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## *Progress*

### Stations (André):

Achieved since last meeting:

- One of the tiles was having the wrong coordinates (tiles were reconnected but the position file was not updated).
- Work on accommodating more memory in the TBB will be scheduled for Step 2.

Problems / current activities:

- Dips: Michiel Brentjens can currently predict the dips and the cause appears to be in the BeamServer software. The problem has not been solved yet.
- Reading back the status of the HBA tiles fails often.

Next actions:

- Continue with LOFAR20

## OLAP (John):

Achieved since last meeting:

- Chris did a few performance measurements of the MS writer. We need at least a factor of ~10 more performance.
- Currently we are fault tolerance against failing disks, storage nodes and too slow storage nodes. Observations keep on running except that the subbands on those specific nodes are lost.

Problems / current activities:

- Datawriter: currently the datawriter written by Joe does not read the socket. Preferably also the reordering done by BG/P should be added to the datawriter, because then this piece of software can be used stand alone for the E-LOFAR stations local mode. On the other hand it is not handy to support two pieces of reordering software (one for the BG/P and the other for the storage node). John will look into the code and check how much effort it takes to put the reordering stuff in a separate library. Then we have to support only one version.
- Chris is busy with the interrupts. Currently this is on a hold. We are waiting for a new release of IBM.
- Translation Look aside Buffer work waits for actions in Argonne.

Next actions:

- Continue with LOFAR20

## Offline pipeline (Ronald):

Achieved since last meeting:

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Problems / current activities:

- Unstable offline system hampers Marcel. He is still busy finetuning the integration of DP^3 and the imager.
- Suggestion of Ruud is to take a look at Postgis for the GSM, which is a database with sources. Michael will communicate this to John Swinbank.
- A meeting will be set up about the GSM and about source finding.
- Since, Stefan Wijnholds has a station calibration running at the stations we need an interface from the offline processing to these results. The infrastructure is there already. A meeting will be held how to use this.
- Online bandpass correction verification by Pandey waits for station data. An observation of 48 hours was defined. The observation failed this weekend. We have to postpone it to the next step together with the global bandpass.

Next actions:

- Continue with LOFAR20

## SAS + MAC + SHM (Ruud):

Achieved since last meeting:

- Pieter finished the temperature control software and is doing hardware tests with it.
- 25 Red Hat licenses are currently bought.
- Ruud and Teun are testing the new LCU machine.

Problems / current activities:

- Metadata flow work is ongoing. Arno is busy with a mechanism to distribute the static meta data from SAS to the stations.

Next actions:

- Continue with LOFAR20

## User Software (Michael):

Achieved since last meeting:

- Lars cleaned up DAL.
- Lars defined unit and regression tests for DAL.
- Joe worked on the data writer to support the pulsar users.
- Joe solved bugs of the TBB data writer, identified by Albert-Jan his student.

Problems / current activities:

- Casey will design a set of scientific validation tests for the CIMAGER. Casey is busy to automate the first five tests.
- Lars is continuing to work on the CR near-field imager.
- Alexander is busy with the mosaicing tool.

Next actions:

- Continue with LOFAR20

## *Software integration*

Achieved since last meeting:

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Problems / current activities:

- Compile a list of anticipated data products and calibration or metadata files associated with each of the pipelines.

Next actions:

- A test program will be initiated to verify the functioning of the LOFAR software in a more structured way. In OLAP it is possible to store the raw station data and feed this into the pipeline later on. This makes it possible to define a standard data set, which can be applied to the pipeline as soon as major software changes have been taken place.
- Merge the repositories of the USG and LOFAR development to one.

## *Decisions*

| ID | Date submitted | Decision |
|---|---|---|
| 02 | 20061220 | Every Step will start with a Kick-off meeting, in which the complete software team participates. |
| ~~03~~ | ~~20061220~~ | ~~The project team starts immediately with the preparations of the next CDR in order to preserve progress of the CS1 realization~~ |
| 04 | 20070116 | This meeting will take place every week on Tuesday 11:00. The existing software team meeting with all developers will stop to exist. |
| 05 | 20070130 | Step 1 will be changed to 16 subbands instead of 32 subbands. |
| 06 | 20070130 | Step 2 will contain a multiple node BBS. 6 µStations/Station will be postponed. Instead of this, 32 subbands measurements will be realized. |
| 07 | 20070206 | Step 1 will support 160 MHz observations. The other steps will support 200 MHz as well. |
| 08 | 20070424 | Step 2 will support 16 subbands @ 200MHz and 24 MHz at 160 MHz |
| 09 | 20070424 | During the rest of step two, OLAP will only support observations during the weekend. |
| 10 | 20070522 | The number of subbands per Measurement Set is set to 6 or 8 default. |
| 11 | 20070522 | Scheduler activities will be preferably activated in Q4 2007. |
| 12 | 20070522 | Procure, three Local Control Units to accommodate 12 microstations in CS010 in a quick way. |
| 13 | 20070529 | Integrate version numbers in all software. |
| 14 | 20070529 | Distinguish the software between a production version and an engineering version (partly now already the case). |
| 15 | 20070605 | All developed software under CVS will be transferred to Subversion. The main reason for this is that Subversion supports the integration of version numbers in the |

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| | | executables. In this way you can always retrieve which software is used for a certain build. First the impact of the transfer will be investigated by Marcel. |
| 16 | 20070619 | Marcel Loose will be the librarian of the LOFAR software. The available time for this will be shared with his BBS work. |
| 17 | 20070710 | The known pulsar survey mode will be the next mode to support (not in its full extent but partly on-line and off-line). |
| 18 | 20070710 | The temporarily off-line part of the known pulsar mode pipeline will not be under control of SAS/MAC. This will be put under control of SAS/MAC as soon as that software is available in the on-line part of the system. |
| 19 | 20070814 | Joe Masters makes the routine to read in the TBB data. |
| 20 | 20071002 | Fault tolerance of the system (mainly OLAP) is put at the top of the priority list after closing the SAS-MAC and CEP integration. |
| 21 | 20071123 | Kubuntu 7.10 desktop 64 bit OS is chosen for all machines except the BG/L and MAC/SAS machines |
| 22 | 20071123 | Station calibration work is smeared out over Step 4 and Step 5. |
| 23 | 20071123 | Global bandpass shape is moved to Step 5 because of its low priority. |
| 24 | 20071211 | Multiple beams per observation will be implemented instead of multiple observations (this is consistent with the plan). |
| 25 | 20071211 | Step 3 will be closed next Thursday. Any open items will be finished in Step 4. |
| 26 | 20080130 | Multiple beams are defined as multiple directions with the same set of antennas. Hence, only the angle, subbands and beamlets can be modified per beam. |
| 27 | 20080206 | Step 4 and Step 5 for MAC/SAS will be changed. The control of the offline pipeline will be postponed because the offline subsystems are not fixed yet. Currently the definition and design of the metadata flows will be set as goal for Step 4 and the implementation of the metadata flow will be the end goal of Step 5. Hence, after Step 5 (part of) the metadata is included in the Measurement Set. |
| 28 | 20080213 | Currently a single subband and single beam is stored in a Measurement Set. As soon as we are ready for mosaicing this probably should be changed in the future. |
| 29 | 20080220 | For storing the raw station beams the sanitizing operations like input buffer will be included in the online part. For this OLAP has to give operational support or instructions to the observers how to start up manually such observations. Since, this is an between solution this will not be automated via SAS/MAC. |
| 30 | 20080227 | Weekly build environment will be updated and automated. |
| 31 | 20080227 | After Step 5 the software documentation will be updated and obsolete packages will be removed. |
| 32 | 20080423 | Basically two Low Band modes will be supported initially: a LBL and LBH mode. The connection between antennas and RCUs have to be chosen such that those to modes make sense. |
| 33 | 20080528 | The position of all individual dipoles will be made available centrally in the database. |
| 34 | 20080603 | The data format of the positions will be delivered in ETRS coordinates by the roll out team. However, the data format of the positions will be stored in ITRF format in the LOFAR databases. Hence, all software and configuration files dealing with coordinates must be made compatible with the ITRF dataformat. Hans van de Marel is responsible to convert the ETRS coordinates to ITRF coordinates for the LOFAR system. |
| 35 | 20080903 | Kubuntu will be installed on LOFAR18, which will serve as a software development machine. |
| 36 | 20081022 | Station cabinet will be heated (if necessary) to 10 degrees Celsius (for the LCU). |
| 37 | 20081029 | We will transfer the build environment to cmake. |
| 38 | 20081029 | Step 1 will be closed at 11 November. |
| 39 | 20081112 | Bugs found in the field have the highest priority to solve. Bugs which take more than a week to solve will be added to the task list and prioritized in the software meeting. During bug solving tests should be written up, which proves the correct behavior. These tests will result in a procedure to check the functionality when new soft/firm |

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| | | ware is loaded. |

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## *Table round*

- Michael: Where can we install the GSM database prototype? The SAS server is not suitable for this. We have to define a central database machine in the offline cluster for this.