

## Minutes of Meeting LOFAR Software

<b>Date:</b>	2008-11-12
<b>Next meeting:</b>	2008-11-19 9:15-10:15
	Multimedia room
<b>Present:</b>	
Andre Gunst	Yes
Ronald Nijboer	No
Ruud Overeem	Yes
John Romein	Yes
Michael Wise	Yes
Marcel Loose	As special guest for the build part.

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.

### **Remarks previous minutes**

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### **Announcements**

- Step 1 is finished. We are heading now for Step 2.
- The first LCU has arrived and is currently under test.
- Next week there is a pulsar busy week.
- Probably the second week of February will be selected for the LOFAR data processing school.

### **Action item overview**

ID	Date submitted	Description	Owner	Planned date	Status
68	20080723	Test whether TBB dumps are actually possible from the station hardware (not just the test hardware). A student of Albert-Jan has done this.	Michael	20081020	Closed
69	20080813	Draft set of regression tests for CIMAGER (with input from Casey).	Michael	20081031	Open
70	20080820	Contact Tim Cornell about CIMAGER testdata.	Ronald	20081020	Open
73	20081029	Michael will ask Jason to perform tests with the TAB implemented by Rob. The implemented TAB supports one beam which is correlated with the rest of the stations. In fact this is the super station mode, because the data is after the TAB correlated with the other stations. That means Jason is not to person to ask this. We will make a task to define the tests.	Michael	20081112	Closed
74	20081029	Issue track tool is required. Put on the	Andre	20081120	Open

		agenda in a next meeting.			
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## ***Progress***

### **Stations (André):**

Achieved since last meeting:

- During this step we have to focus on solving bugs (see decision list).

Problems / current activities:

- Bug: RSP default data off does not work properly. The firmware is in reset also if the LCUs are communicating. The result is that a new firmware version is loaded, while the LCU still assumes that the old one is present. First action: go back to an older version.
- Cross correlation matrix is not ok. This is already the case for months according Max. Eric will look into this. This is only the case for 200 MHz (again).
- 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 is probably overloaded in this step and cannot finish all his tasks.
- Martin finished the integration with MAC
- Martin finished the integration of the exception stuff. This is to backtrace exceptions from where it came from. This helps the debugging significantly.
- The connection between the IO nodes and storage nodes is changed, which will help to implement the enhancement of the fault tolerance of the storage.

Problems / current activities:

- Chris is busy with the interrupts. Currently this is on a hold. We are waiting for a new release of IBM.
- Chris is currently working on the MS writer.
- 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:

- Marcel is not sure if the integration of DP<sup>3</sup> in the pipeline can be ready this week. We really aiming for finishing it before Step 1 is closed.
- Ger build on top of the parameter database a local sky model and this connects to the BBS predict.
- Joris is busy to adapt BBS for the new parameter database.
- Ger is busy with implementing the parameter database.
- Joris is looking at the solution based flagging. This will be finished in Step 2 (low priority).
- 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.
- Pandey will commission the Global Solver in the next phase.

Next actions:

- Continue with LOFAR20

## **SAS + MAC + SHM (Ruud):**

Achieved since last meeting:

- Arthur finished the issues in Navigator 2.0.
- Stefan tested the Matlab C++ compiler. The performance of the produced Matlab library is the same as Matlab itself.

Problems / current activities:

- Red Hat licenses are not bought yet (waiting for Hanno).
- 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 finished bug fixes in DAL.
- Lars defined unit and regression tests for DAL.
- Joe solved bugs in the data writer. Now it can handle more than 48 subbands.
- A comparison document about different visualization tools is written by Sven.

- Interface to FITS in DAL library are made by Sven.

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.

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***

<b>ID</b>	<b>Date submitted</b>	<b>Decision</b>
02	20061220	Every Step will start with a Kick-off meeting, in which the complete software team participates.
<del>03</del>	<del>20061220</del>	<del>The project team starts immediately with the preparations of the next CDR in order to preserve progress of the CS1 realization</del>
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 $\mu$ Stations/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 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 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.