Minutes of Meeting LOFAR Software

Date:	2010-04-28
Next meeting:	2010-05-12 9:30-10:30
	Multimedia room
Present:	
Andre Gunst	Yes
Ronald Nijboer	Yes
Ruud Overeem	Yes
John Romein	Yes
Michael Wise	No
Harm Munk	Yes
Hanno Holties	Yes

cc: Arnold Meijster, Rob van Nieuwpoort, Arthur Coolen, Jurjen Sluman, Pieter Donker, Chris Broekema, Joris v. Zwieten, Marcel Loose, Adriaan Renting, Ger van Diepen, Michiel v. Haarlem, Jan Reitsma, Ger de Bruyn, Arno Schoenmaker, Hanno Holties, Corina Vogt, Jan Noordam, Joe Masters, Lars Bähren, Johan Hamaker, Sven Duscha, Jan-David Mol, Teun Grit, Alwin de Jong, Frank Breitling, Anastasia Alexov, Jason Hessels, Joeri van Leeuwen, John McKean, George Heald.

Remarks previous minutes

- Bullet 56 of decisions should be one pointing per station beam!

Announcements

- Single clock on the superterp will be installed at the 10th of May.
- Driver BG/P will not be updated at 17 May because of the LOFAR opening.
- The system must be frozen at some date (to be determined) in May.
- MT decided: all work concerning the LOFAR opening has top priority from now on.
- Currently there is an imaging busy week.

Action item overview

ID	Date submitted	Description	Owner	Planned date	Status
105	20100303	Change definition HBA_ONE and HBA_TWO to HBA_ZERO and HBA_ONE. And HBA_BOTH becomes HBA_DUAL. Furthermore a definition HBA_JOINED is added. Done. Rolled out yesterday.	Hanno, Ruud, Michael	20100420	Closed
107	20100303	Issue tracker decision. Bugzilla (developers), Craft (system and hardware issues), science support wants to make use of the LOFAR observation tracker. For the user software the favor is for Bugzilla as well. Michael will talk to Antonis to see if this is really what we want. Michael talked to Antonis and Michael got permission to setup Redmine. John S. will give a demo to Antonis, Hanno, Harm and Michael.	Hanno/Michael	20100315	Open

113	20100414	Define end to end quantative tests for the imager pipeline.	Ronald	20100430	Open

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Progress

System Integration

Achieved since last meeting:

- Chris fixed a bug in the storage application (in case of disk failures).
- Chris is busy with the new IO node kernel.
- John's code is merged with the trunk. Storage application started from the IO node and not from Python to support multiple observations works good. All code which has to deal with threads is committed to LCS now.
- Furthermore the software (IO node and compute node) is made suitable to work on a PC as well. This is done for Thomas (a student of Rob) who is busy with online RFI flagging.
- Partitioning of BG/P is now done by hand. This could be done by the scheduler and executed by MAC. Booting of BG/P will be decoupled from the observation.
- ITRF beamserver is made ready for controlling it via SAS. That gives 1.0 of the BeamServer. As soon as that works and is verified in the field, then the calibration table can be red in. For each station we need a separate calibration table. The first priority is the LBA outer array.
- The HBA calibration will be proven first with station 302 and 503.
- Cable delay compensation works and is rolled out now.
- Ronald: estimated processing and storage capacity necessary for six scenarios. Based on these numbers an estimation will be done for the phase 2 procurement of CEP hardware. This afternoon a meeting will be held to discuss this.

Problems / current activities:

- Arthur works on a multi user server for the SAS server. Tests are ongoing and first results are ok.
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Next actions:

- Solutions for the high station temperature in the summer are under investigation.
- A temperature sensor will be installed in the concentrator node as well.

Imaging Pipeline (Ronald):

Achieved since last meeting:

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- Adriaan and Roberto made the DP^3 part of the pipeline running. This is done not completely via MAC/SAS. The data is automatically flagged and compressed. Last Monday and Tuesday the results were already available of the weekend before.
- Next week the integration with SAS will take place.
- In DP^3 a couple of small bugs are fixed.
- DP^3 is enhanced with baseline dependent window sizes.
- A version of BBS is made which supports less than 4 dipoles for test reasons by using other telescopes.
- Coordinate system definition error was discovered and is fixed.
- Request of Joris: format description for new ITRF coordinates.
- Sven looks to calibration solutions and works with Lars to get the RM synthesis module in the repository.
- Tim Cornwell made an image with the LOFAR 3C61 field.
- Ger van Diepen is busy to implement the direction dependent correction in the imager.
- Bas is making progress with the BBS ionosphere and has movies where you see the phase screen pointing at Cas. A. Direction dependent calibration is used. Now two sources are used which needs different corrections.
- With more stations, BBS gives better solutions. BBS is more insensitive for worse start models.
- In present busy week: direction dependent calibration is the focus. Furthermore intrinsic polarization is a topic.
- Last week there was an issue with the build. Boost was upgraded.

Problems / current activities:

- Control BBS should be revisited by Marcel. How to deal with failing processing nodes and the use of the global solver. Needs to be prioritized. Becomes an issues when we process with lots of nodes.
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Next actions:

- Focus on the minimal required tasks for MSSS.

Pulsar Pipeline (Michael):

Achieved since last meeting:

- Alwin will deliver a first version of the data writer. Finishing this first version gets a higher priority than the scheduler. However there is no follow up developer defined for the datawriter yet.

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Problems / current activities:

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Next actions:

- Implement second transpose operation.
- Update BF datawriter.
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VHECR Pipeline (Michael):

Achieved since last meeting:

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Problems / current activities:

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Next actions:

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Infrastructure (Harm)

Achieved since last meeting:

- Yesterday again a meeting was held with RO ICT. There are now 15 different subjects defined which needs an inventory. Half of the inventory is done.
- We have to work with releases. All of us agree. What is the goal of each release. What is the procedure to get the software in the release. Are bug fixes modified on the trunk or on the branch or both. As soon as the procedure is clear than this should be followed. The advantage is more robust software with clear functionality add ons. However the functionality will be available later.
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Problems / current activities:

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Next actions:

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User Data and Archive (Hanno)

Achieved since last meeting:

- For the lexars network speeds better than 7 Gb/s have been gained. Disk speeds of 250 MByhtes (read) and 400 MByte/s write have been achieved. Read and write delivers 0-90 MByte/s.
- Joeri van Leeuwen has a Surfnet project with dynamic light paths. Some data locations will be connected to Huygens and CEP.

Problems / current activities:

- A quick look at Juelich: data transport protocol is now working yet. Although there are still some communication problems. Possible a software version conflict. A test plan for data challenges exists which will be followed.
- Identity management: half May we should be able to transfer user accounts and project information through the archive.
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Next actions:

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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 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.
40	20081126	The 4 bit mode will be supported after MS^3.
41	20081203	We will modify the build environment to cmake from now on.
42	20090129	Transient source modeling tool under Python will be used for source modeling.
43	20090129	Delay deadline of Step 2 to 26 February 2009.
44	20090209	Remote Stations including the ring splitter near the core will be renamed to CS

		stations.
45	20090813	No connection from the Dwingeloo test environment to Groningen is necessary anymore.
46	20090825	Create a Bugzilla environment for the USG software.
47	20090825	Use one subcluster per group, contactpersons and guidelines defined (see section Software integration).
48	20090909	Use the filter range names of MAC/SAS for the ICDs and the archive model.
49	20100116	HBA beam pointing: we decided that one observation is prime and determines the HBA beam. The other observations will be ranked. An additional field for the HBA beam pointing can be set. If this field is not set, then an average of all digital beams will be made within the prime observation.
50	20100303	Changes in definitions which are used in various places in the system will be decided in this meeting.
51	20100303	HBA_ONE and HBA_TWO will be renamed to HBA_ZERO and HBA_ONE for consistency reasons.
52	20100317	Change HBA_BOTH into HBA_DUAL (using two HBA ears independently) and add HBA_ALL to indicate both HBA fields will be added at station level (so treated as one field).
53	20100317	The software should be documented more. However we decide not to set this as priority now and accept this as a risk we take.
54	20100317	The CImager will be the imager used in LOFAR. This is the only one which scales up.
55	20100331	The name HBA_ALL will be replaced by HBA_JOINED.
56	20100407	It was decided earlier to have only one pointing per station beam (fixed in time).

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Table round

- Hanno: How to divide the subbands over the nodes. Can we spread this and store this in a cyclic matter. If one node fails than you do not miss a consecutive part of the band. Ronald: For the global solver its indeed good to have everything spread over the whole bandwidth. But on the other hand a consecutive part of 4 MHz would be good as well. Hanno will ask Jan-David to implement the subbands in a cyclic manner on the storage nodes.
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