Minutes of Meeting LOFAR Software

Date:	2010-04-14
Next meeting:	2010-04-21 9:30-10:30
	Multimedia room
Present:	
Andre Gunst	Yes
Ronald Nijboer	Yes
Ruud Overeem	Yes
John Romein	Yes
Michael Wise	Yes
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

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Announcements

- BG/P drivers will be updated 18 and 19 May 2010. John likes to have new kernel versions as well. These kernels have to be patched with our extensions.
- There is a BG/P user meeting planned at 10 June.
- There is an imaging busy week planned at 26-30 April.
- Next week there is a polarization busy week.
- This week a control and meta data busy week is held.

Action item overview

ID	Date submitted	Description	Owner	Planned date	Status
104	20100224	Verification test suite should be defined to test the storage manager. Ger and Chris are asked to do this. Ger added testing for UV W coordinates to the storage manager software. A set of small observations as a sanity check are defined and also used in the control and meta data busy week. This is more a qualative test instead of a quantative test..	Ronald	20100315	Closed
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.	Hanno, Ruud, Michael	20100420	Open
107	20100303	Issue tracker decision. Bugzilla (developers), Craft (system and hardware issues), science support wants to make use of	Hanno/Michael	20100315	Open

		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.			
110	20100317	Currently we have station beams and pencil beams. In the ICDs this will be called primary pointing direction and beam. Is this the right naming convention? The name primary pointing direction is a bit too long. This is still under discussion in the beamformed pipeline meeting. Furthermore also the other levels of beams should be defined. We leave this up to the beamformed pipeline meeting.	All	20100414	Closed
112	20100407	Discuss the status and next steps in the pipeline integration with MAC/SAS. Question is how the pipeline gets its filenames. Ruud will define the keywords for getting the metadata into the pipeline. And where to store this information in the SAS tree.	Hanno	20100414	Open
113	20100414	Define end to end quantive tests for the imager pipeline.	Ronald	20100430	Open
114	20100414	Workout a proper back-up for the front end machines in Groningen.	Hanno	20100420	Open
115	20100414	Do we keep on using the current SAS concept?	Harm, Hanno	20100420	Open
116	20100414	Check out the new modes proposed by James Anderson.	All	20100420	Open

Last: 116

Progress

System Integration

Achieved since last meeting:
- A couple of bugs were solved. One of the issues solved is the data packet loss seen on some stations. Larger kernel buffers masks the things that goes wrong. Last couple of days our home file system was gone. It was two months ago that a backup was made. Hanno talks with Teun how to solve and prevent this in the future.
- Pieter extended the RSPDriver to switch on and off the datastream to CEP (rspctl –datastream=0/1).
- Pieter modified the coordinate database to also contain the rotation matrix and the normal vector of a station (necessary for the CalServer).
- After some issues with the cable length compensation (which is not executed anymore) Pieter and Ruud had discussions with Eric. The order writing commands was different than expected by the RSP board. Now the code is fixed and this is expected to work at the end of the week.

- The CalServer work is almost back at the point to build and link against the modules of Stefan.
- There was a meeting about all the software which is already in SAS but not used. Most of the imaging pipeline is already supported in the SAS screens. You can even show subband statistics within SAS without logging into a station. Now there are several user interfaces which overlap in functionality. Already several interfaces were developed for the scheduler user interface. A decision has to be made which concept to use. Now the original concept is broken by the introduction of the scheduler.

Problems / current activities:
- On several stations the Rubidium is not always in lock. In appears that the number of satellites received at those stations is lower on average than other stations. The exact cause is that the GPS position was wrong for those stations.
- Arthur works on a multi user server for the SAS server. During the last week there were some problems with simultaneous queries on the same server. Needs to be tested.
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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:
- Marcel is still involved getting the pipeline running on the Grid clusters.
- Bas van der Tol made the ionospheric model available into the repository. Currently the clock can be separate from the TEC phase. Next step is to include the interpolation on the sky. After that we can use if with real data.
- The UVW problem is fixed. There was a transpose in the storage writer which was missing.
- Joris and George are testing the Faraday rotation module.
- Adriaan, John and Ruud are looking into the pipeline integration. Now it talks the same protocol, receive signals, but cannot find relevant data in the SAS database. Adriaan looks how to interface this to SAS and via OTB to MOM.
- Adriaan will look if the pipeline can be used for multiple subclusters simultaneously.
- Ger updated the storage manager. DP^3 is fixed to work with wrong timestamps now.
- Ronald has been busy investigating the imager performance.
- Analytical beammodel implementation in progress (facet based correction). This will be implemented in the imager.
- Joris is looking into the use of shapelets.

Problems / current activities:

- The ionospheric models have been tested on Cygnus and 3C96. Clock correction is also in. Next step doing this on multiple directions.
- 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.
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Next actions:

- Focus on the minimal required tasks for MSSS.

Pulsar Pipeline (Michael):

Achieved since last meeting:

- The offline part is going very well. All done and still being tested.
- Ken has a first version of the offline chain working in John's pipeline framework.
- There has not be a lot of progress in the online part. The second transpose work has not moved. Also the offline version of the datawriter has not progressed.
- Prototype of UDP packet conversion program is working almost (Oxford people).
- Lars and A2 have the DAL library to be able to write out the data more or less working.
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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:

- Experiments are ongoing to switch on and off an electric fence to check if this generates "false" triggers.
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Problems / current activities:

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Next actions:
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Infrastructure (Harm)

Achieved since last meeting:
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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:
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Problems / current activities:
- A quick look at Juelich: data transport protocol is now working yet. Although there are still some communication problems.
- The speed at the Lexars is still an issue.
- Identity management: half April we are able to transfer user accounts and project information through the archive.
- 20 April an archive meeting will be held with our international partners.
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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 beam per observation.

Last: 56

Table round

- Michael: There are new modes suggested by James. At the very least we have to give minor comment to it. Read it and talk about it next week.
- Ronald: How to regulate subversion access? We currently stay at the scheme that Michael/Andre gives permission for accessing people to subversion.
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