Minutes of Meeting LOFAR Software

Date:	2007-10-02
Next meeting:	2007-10-09 11:00-12:00
	Paviljoen West Room
Present:	
Andre Gunst	Yes
Ronald Nijboer	Yes
Ruud Overeem	Yes
John Romein	Yes
Michael Wise	Yes

cc: Arthur Coolen, Jurjen Sluman, Pieter Donker, Chris Broekema, Martin Gels, Joris v. Zwieten, Marcel Loose, Adriaan Renting, Ger van Diepen, Max Avruch, Peter Boonstoppel, Michiel v. Haarlem, Jan Reitsma, Ger de Bruyn, Arno Schoenmaker, Hanno Holties, Corina Vogt, Jan Noordam, Joe Masters, Lars Bähren, Dion Kant

Remarks previous minutes

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Announcements

- Mid term review was held and things look positive. The review committee will finish their report in the next few weeks. After that, things go up the chain - via the ministry to the "Commissie van Wijzen" and finally on to the Cabinet. All of this will take some time, probably to June next year.
- The CCAG has advised to free up human power to study key items prior to the procurement.

Action item overview

ID	Date submitted	Description	Owner	Planned date	Status
38	20070704	Investigate if the OS of the input nodes can be lined up with the BG/L front node.	John/Chris	20070917	Closed
40	20070710	Define stappen plan for the pulsar mode.	Michael	20070917	On a hold
41	20070710	Installation of CASA core tools on build environment.	Ruud	20070910	Open
42	20070828	Obtain higher level trigger algorithms from the cosmic ray KSP.	Michael	20070918	Open

Last: 42

Progress

Stations (André):

Since no extra functionality is needed for Step 2, this step mainly comprises enhancing robustness. Current status:

Achieved since last meeting:

- The HBA boards reworked at Neways slowly.

Problems / current activities:
- Step 3: The control of the HBA beamforming and validation is waiting for the reworked HBAs in the field.

Next actions:
- Step 2: Solve problems.

OLAP (John):

Activities for Step 2 comprise integration with MAC (ongoing) and adding the ability to measure with higher bandwidth (done).

Achieved since last meeting:
- Finally during the weekend observations are done. The second observation is failed due to a memory leak probably in the AIPS++ MS writer. This was not seen earlier because the integration time was set to 10s now.
- Peter has made the 2nd core available in the ZOID communication software, so that the input bandwidth can be increased even more. John integrated that with the rest of the software. Current status is that after half an hour a deadlock occurs. Finding this bug has a priority since Peter is leaving us soon.
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Problems / current activities:
- Step 2: Integration MAC / OLAP is continuing (Martin). The remaining task is to solve bugs which pop up during testing.
- John inventoried the impact of going to multiple beams. That will have a severe impact on the current software if multiple beams are included in one and the same UDP packet. Currently four RSP boards send out data (of the current 4 uStations). The workaround is to define each beam in such a way that it comes from one RSP board. In this way maximal 4 beams can be made instead of the required 8.
- John is busy to integrate the input section functionality on BG/L. The remaining tasks is to get the kernel 100% stable and test for scalability. To do so it would help that the 12 microstations of CS010 have the same bandwidth as the current 4 microstations of CS010.
- Chris is clarifying why the storage section is currently working slow. This was done to get the specifications clear for the new storage nodes.
- Currently a lot of things in OLAP needs to be a multiple of other things. This should be made more flexible.
- Step 3: When one station stops sending data, OLAP gets confused (Chris).
- Post CS1: In a plot of RMS against frequency, one of the subbands shows a periodic variation. It is unknown what causes this, and this has to be investigated / solved.
- Post CS1: Stopping an observation sometimes had a corrupt Measurement Set as a result. A workaround has been implemented, but a structural solution has to be

realized. This has to be solved in the architecture of CEP-frame. If the current workaround is stable, this issue can be solved after Step 5 (=CS1).

- Post CS1: The CEPFrame framework is very developer unfriendly, and has some technical limitations. A work item to refactor CEPFrame will be added to the Work Breakdown as a mid term activity.

Next actions:
- Step 2: Solve problems that are related to Step 2.

Offline pipeline (Ronald):

Activities for Step 2 are finished.

Achieved since last meeting:
- Joris and Pandey have made deeper images with the BBS pipeline (36 subbands combined). The same level of quality as MeqTrees was reached.
- Joris made a stitch operation to stitch multiple observations together.
- The analytical beam model of Sarod is implemented in BBS

Problems / current activities:
- Adriaan has written a flagging library. This will probably be tested by Hanno Spreeuw.
- Stefan de Koning has made a flagging Python script based on median clipping which seems to work satisfying. This script will be translated to C++ by Adriaan.
- Ger is trying to run the distributed imager on his own machine and after that on the offline cluster.
- Data reduction tools are needed and gets a higher priority driven by the needs of BBS. Adriaan has finished working on combining multiple Measurement Sets and reducing the data of the Measurement Sets by integration. The MSs seems ok, but the AIPS++ table browser cannot deal with them. Sarod was able to deliver this functionality with Glish. Ger v. D. will be asked to port this to C++.

Next actions:
- Continue with step 3 activities.

SAS + MAC + SHM (Ruud):

Activities for Step 2 are ongoing. Integration with OLAP and adding functionality to SAS + MAC + Navigator to control OLAP, are the main activities.

Achieved since last meeting:
- Three LCUs for the 24 uStations in CS1 are installed by Klaas Stuurwold and will be transported to the field next Thursday.
- A very usefull ETM (vendor of PVSS) workshop was held. Lots of new tricks were learned which are usefull for our system.
- A couple of sessions was held with Arno Schoenmakers to transfer knowledge from SAS/MAC to the Radio Observatory.

- ACC software is rewritten and tested.

Problems / current activities:
- Step 2: Integration with OLAP / ACC is ongoing (Ruud).
- Arthur and Jurjen are busy adopti
- Max looks at all the collected station data and tries to find characteristics of the data for SHM analysis. All information from all stations is received.
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Next actions:
- Solve the problems related with Step 3.

User Software (Michael):

Achieved since last meeting:
- The data access layer, CASA core tools and a couple of Python scripts are merged in one package. This is hold up due to bugs in the dynamic link library.
- Las has made an build of the LOPES tools with the CASA core library from scratch without dependencies of the AIPS++ libraries.
- A first specification of the tied array beamformer output format is made

Problems / current activities:
- Joe will take care of the software to read the TBB data (necessary for Step 3)
- Post CS1: Joe Masters is busy with handling the streaming data coming out of the correlator and writing this into HDF5 format or Measurement Sets. The first library is done and needs to be tested (cannot read from the socket yet).

Next actions:
- Solve the problems that are related with the Step 3 activities.

Software integration

Achieved since last meeting:
- Marcel is done with the transfer to Subversion and asked different people to test this. After that an introduction to work with Subversion is send to the users and an announcement when we will actually transfer from CVS to Subversion.

Problems / current activities:
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Next actions:
- Step 2+: 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.

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.

Last: 20

Table round

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