Minutes of Meeting LOFAR Software

Date:	2007-10-09
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

- Thursday an Astrostream meeting will be held
- A LOFAR calibration workshop will be held next week and the week thereafter
- Transfer date to operations is currently 29 October 2007

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

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Progress

Stations (André):

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

Achieved since last meeting:
- 25 HBA boards are reworked by Neways
- The three LCUs are installed on the CS010 field

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:
- This weekend two succesfull observations were done
- Peter fixed a few bugs in the ZOID communication software (occasionally interrupts were lost).
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Problems / current activities:
- Step 2: Integration MAC / OLAP is continuing (Martin). The changes made in MAC/SAS are now implemented in the input section.
- Making OLAP more robust is ongoing. Currently a John is busy saving the MS each 1 hour, so that the data lost during an observation is limited.
- 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.
- 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.

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:
- Multiple BSS kernels can now be used on one single node with multiple computing nodes. This is useful for the profiling activity which is about to start. In Groningen two machines will be available temporarily for tests: a Barcelone machine with AMD cores and a machine with Intel cores.

Problems / current activities:
- Joris is specifying the Global Solver (Step 4)
- Adriaan has written a flagging library. This will probably be tested by Hanno Spreeuw.
- Pre-processing pipeline (flagging, bandpass, flagging, compression, combining MS) will be available at the end of next week.
- 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:
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Problems / current activities:
- Ruud worked on the runtime metadata. Some existing software needs to be revitalized.
- Made a nano kernel for Fedora 6.0. The reason for this is that the new hardware we currently get in does not support the chipsets.
- Step 2: Integration with OLAP / ACC is ongoing (Ruud).
- Arthur and Jurjen are busy adopting the Navigator screens
- ETM will be asked to make an alerting system for us. They can do that because we have a maintenance contract with them.
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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. Build it from source causes still problems. First release is compatible with Linux and MAC.
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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 currently OLAP needs to do tests with it before going "live".

Problems / current activities:
- Marcel is working on a Wiki page for instructions how to use Subversion as a the repository.

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.

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Table round

- Ronald heard that removing the input cluster reduces the flexibility in CEP.
John: it is less flexible in terms of the size of the partitions used in the BG/L. So, redundancy can be an issue. However, from a functional point of view it can also add flexibility since you can store station data then directly to storage (if desired).