Express Production Real-time e-VLBI Service

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Monthly Report- May 2009

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Author:	T. Charles Yun, Project Manager, JIVE
Co-Authors:	EXPReS Management Team
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Project Information

Project Acronym	EXPReS
Project Full Title	Express Production Real-Time e-VLBI Service
Proposal/Contract number	DG-INFSO #026642

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Section 1- Introduction

The project is entering into a busy phase with preparations for the e-VLBI workshop/end of project meeting at their peak. In addition to the workshop, we are still seeing a rush of text and results from FABRIC as the face-to-face intensive development period in Dwingeloo completes. After this rush of activity, the summer holidays will probably bring a short quiet period until work on the final project report begins.

Section 2.1 – NA1 Management

Kristine Yun, leader for NA4/Outreach, will be take leave until mid-September. During this time, Dave Lommen will take care of Kristine's responsibilities. The two have spent several meetings discussing upcoming work and both sides of the transfer. The group at JIVE have met Dave and an email introducing him to a subset of the project will be sent when he begins day to day work.

The Project Manager has begun processing the financial data that has been submitted. An initial overview of the information is being generated and is hoped to be ready for general discussion by the mid-June.

The Project Manager is also involved in the planning of the Madrid meeting, but has reduced the amount of time he spend directly working on elements as he will not travel for the meeting. The investigation into remote video continues.

Section 2.2 – NA2 EVN-NREN

Currently preparing for the Madrid meeting. No further updates provided.

Section 2.3 – NA3 eVSAG

Most of the work of the past month at the project office has been focused on preparations for the e-VLBI Workshop/End of Project Science meeting. Preparations for the venue are done and testing of the "experimental" videoconferencing system are underway. We are exploring the possibility of using the Evo vidconf system to support remote viewers. Due to bandwidth limitations at the meeting facility, the service may not be possible, so we are waiting for some last minute modifications of the remote network infrastructure before announcing availability.

Section 2.4 – Public Outreach

The EXPReS Project was contact by Belief and asked to cooperate on an article for their "Zero-In" online magazine. We have been told that the text is published and available via <http://www.beliefproject.org/zero-in/zero-in-second-edition-emagazine/zero-in-issue-2>. A screen capture of the website is shown below.

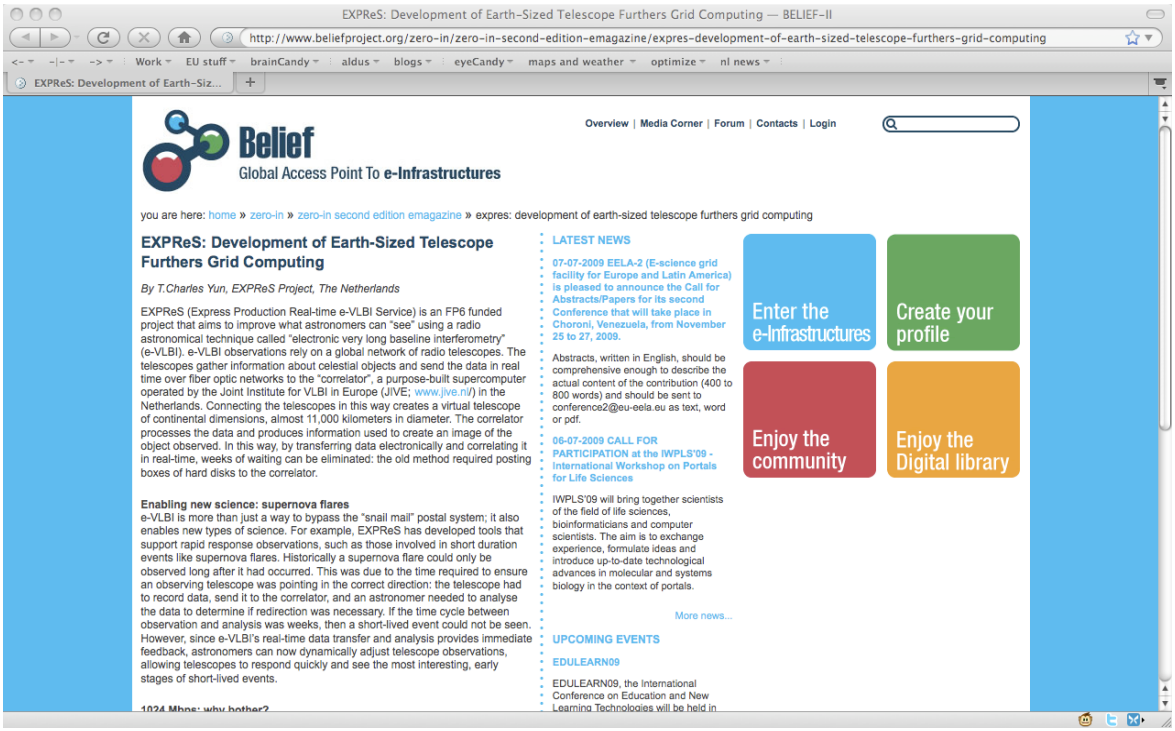


Figure: Article published on Belief website

As mentioned earlier, Dave Lommen has joined the project with JIVE to assist with NA4/Outreach activities. His first set of activities will be to assist in the creation of the e-VLBI Workshop proceedings that will be published after the meeting has ended. He is currently in contact with Proceedings of Science/PoS who will be the organization publishing the papers.

Section 3.1 – Production e-VLBI

No update provided this month.

Section 3.2 – Telescope Network Connections

Preparing for e-VLBI workshop next month. No substantive updates. (Note that Paco Colomer, leader of SA2, is the point of contact for the end of project meeting in Madrid.)

Section 4.1 – FABRIC

Dominik Stokłosa has been working closely with the FABRIC development group in JIVE for the past month. His in-person presence has caused a sudden increase in the amount of code that has been finished/documented, as well as causing a bit of back-slip as new problems are discovered. Luckily, the

group has been making good progress overall and documenting everything nicely on the wiki. The wiki probably has the best and most detailed coverage of all the work.

The communication interfaces have been documented and updated to reflect the most recent changes. While Stokłosa was in Dwingeloo, the communication Interface description changed as they programmers identified some small issues.

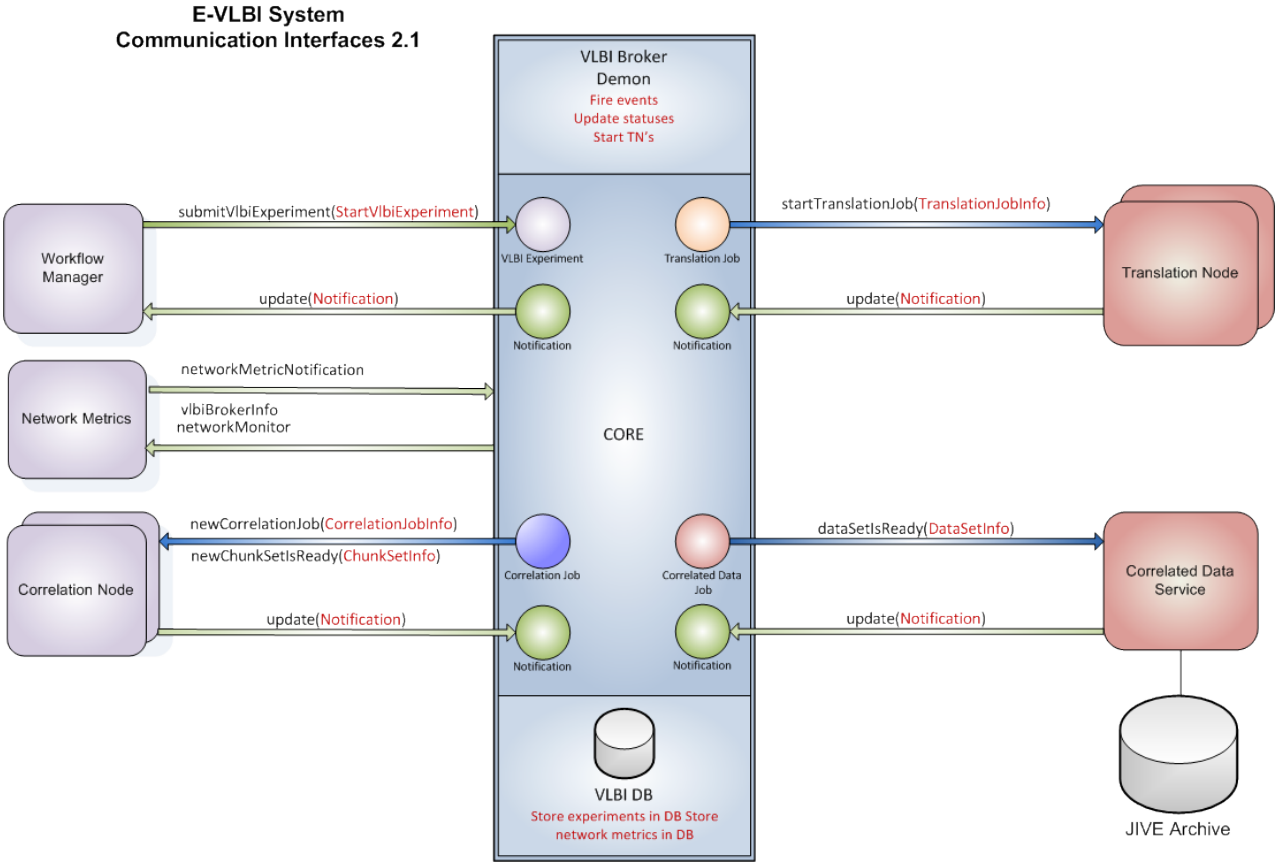
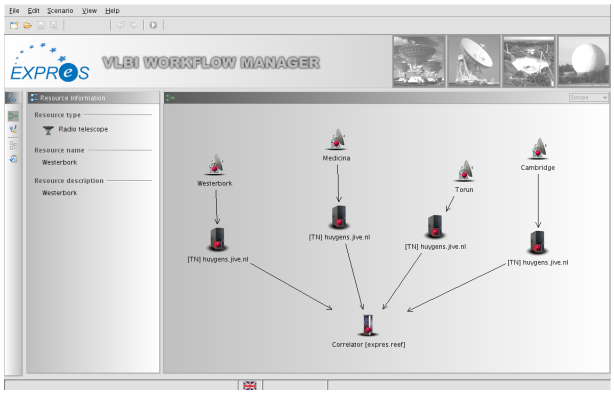


Figure: Updated Communication Interface diagram

After a short period, the international FABRIC team was able to announce the self-correlation could be run and that a correlation node was functioning. On 13 May, a short announcement marking an early "it works" moment for the software correlator group was emailed out. On 20 May, a 4 station correlation was successfully conducted. It means that at the most fundamental level, all of the pieces exist and can be run in a way that produces results that are scientifically consistent with the hardware correlator. A few screen shots and plots are shown below; additional details can be found on the wiki <http://www.jive.nl/dokuwiki/doku.php/expres:fabric:evlbisystem:tests>.



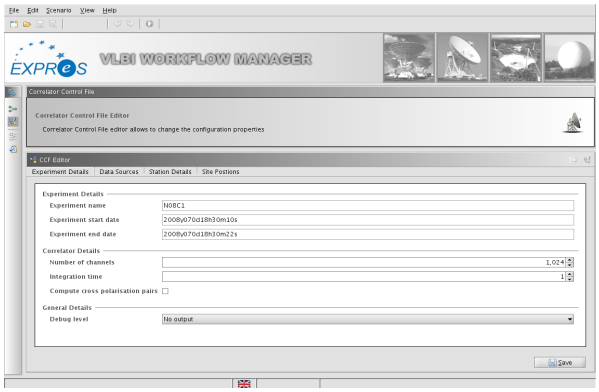


Figure: Screenshots of the VLBI Workflow Manager

Vex file -- Integration time: 1s -- Start of the integration: 2008y070d18h30m10s0ms

N08C1	Auto correlations				Cross correlations					
	Cm	Mc	Tr	Wb	Mc-Cm	Mc-Tr	Tr-Cm	Wb-Cm	Wb-Mc	Wb-Tr
4974.49MHz, USB, Rcp-Rcp	A	A	A	A	4.327 A P offset: 158	244 A P offset: 0	4.467 A P offset: -134	4.672 A P offset: -4	266.8 A P offset: 0	183.3 A P offset: 0
4974.49MHz, USB, Lcp-Lcp	A	A	A	A	4.965 A P offset: 4	272 A P offset: 0	4.132 A P offset: 12	6.912 A P offset: -77	393.5 A P offset: 0	305.3 A P offset: 0
4982.49MHz, USB, Rcp-Rcp	A	A	A	A	139.7 A P offset: 0	239.4 A P offset: 0	106 A P offset: 0	140.1 A P offset: 0	359.6 A P offset: 0	290.5 A P offset: 0
4982.49MHz, USB, Lcp-Lcp	A	A	A	A	188.7 A P offset: 0	251.1 A P offset: 0	147.7 A P offset: 0	191.9 A P offset: 0	370.4 A P offset: 0	288.9 A P offset: 0
4990.49MHz, USB, Rcp-Rcp	A	A	A	A	141.6 A P offset: 0	252.8 A P offset: 0	71.89 A P offset: 0	162 A P offset: 0	363.9 A P offset: 0	295.7 A P offset: 0
4990.49MHz, USB, Lcp-Lcp	A	A	A	A	203.1 A P offset: 0	252.5 A P offset: 0	141.7 A P offset: 0	197.7 A P offset: 0	384.1 A P offset: 0	319.5 A P offset: 0
4998.49MHz, USB, Rcp-Rcp	A	A	A	A	3.281 A P offset: -46	242.2 A P offset: 0	3.582 A P offset: -49	4.176 A P offset: -163	368.3 A P offset: 0	276.2 A P offset: 0
4998.49MHz, USB, Lcp-Lcp	A	A	A	A	5.343 A P offset: 84	257.1 A P offset: 0	4.068 A P offset: -46	4.036 A P offset: 10	322.6 A P offset: 0	190.1 A P offset: 0

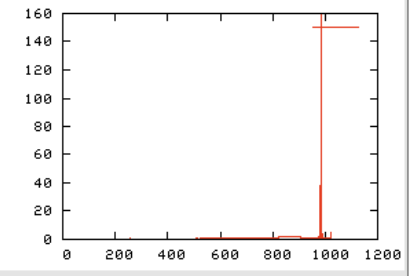


Figure: Cross Correlation from <http://melisa.man.poznan.pl/~osa/expres/tests/4-stations-tr_mc_wb_cm/n08c1-cor-0/index.html>

Vex file -- Integration time: 1s -- Start of the integration: 2008y070d18h30m14s0ms

N08C1	Auto correlations				Cross correlations					
	Cm	Mc	Tr	Wb	Mc-Cm	Mc-Tr	Tr-Cm	Wb-Cm	Wb-Mc	Wb-Tr
4974.49MHz, USB, Rcp-Rcp	A	A	A	A	4.821 A P offset: 4	237 A P offset: 0	5.546 A P offset: -13	5.024 A P offset: -51	227.3 A P offset: 0	185.4 A P offset: 0
4974.49MHz, USB, Lcp-Lcp	A	A	A	A	4.159 A P offset: 208	267.4 A P offset: 0	6.639 A P offset: 68	5.617 A P offset: -53	374.1 A P offset: 0	279.2 A P offset: 0
4982.49MHz, USB, Rcp-Rcp	A	A	A	A	141.9 A P offset: 0	220.6 A P offset: 0	117 A P offset: 0	132.5 A P offset: 0	361.7 A P offset: 0	264.9 A P offset: 0
4982.49MHz, USB, Lcp-Lcp	A	A	A	A	181.2 A P offset: 0	252.1 A P offset: 0	137.3 A P offset: 0	180.6 A P offset: 0	364.8 A P offset: 0	287.3 A P offset: 0
4990.49MHz, USB, Rcp-Rcp	A	A	A	A	147.6 A P offset: 0	255.2 A P offset: 0	100.2 A P offset: 0	144.1 A P offset: 0	380 A P offset: 0	257.7 A P offset: 0
4990.49MHz, USB, Lcp-Lcp	A	A	A	A	188.4 A P offset: 0	255.9 A P offset: 0	143 A P offset: 0	195.9 A P offset: 0	395.1 A P offset: 0	280.7 A P offset: 0
4998.49MHz, USB, Rcp-Rcp	A	A	A	A	4.214 A P offset: -63	244.5 A P offset: 0	4.301 A P offset: 38	4.43 A P offset: -9	359.5 A P offset: 0	250.4 A P offset: 0
4998.49MHz, USB, Lcp-Lcp	A	A	A	A	5.564 A P offset: 162	237.3 A P offset: 0	4.192 A P offset: 76	4.313 A P offset: -61	324.6 A P offset: 0	221 A P offset: 0

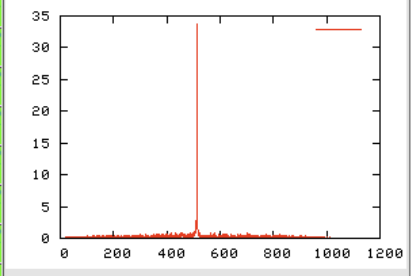


Figure: Cross Correlation from <http://melisa.man.poznan.pl/~osa/expres/tests/4-stations-tr_mc_wb_cm/n08c1-cor-1/index.html>

Guifre Molera of Metsahovi submitted the final version of a report that had been circulated in draft for some months. "Recording capacity research for a reliable Data Acquisition System for VLBI" has been posted to the wiki in the deliverables section. We note that this document describes an interesting point of the development life cycle of VLBI, highlighting the competition between the falling prices of disk media (and their potential flexibility for other users) and the point-to-point delivery of data from the network. Historically, the community has viewed these items somewhat separately, but it may be a good time to look at the way the benefits from both can be combined.

Lastly, Dominik Stokłosa left Dwingeloo to return to PSNC. We believe that his presence at JIVE helped push and speed the development of the grid correlator and the related work in FABRIC. Hopefully you can see from the successful tests reported here that his stay produced good work.