EVN/JIVE Technical developments

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Mark5 status at JIVE

JOINT INSTITUTE FOR VLBI IN EUROPE

- Mark5A
  - Upgrade of hardware (motherboards, memory, power supplies) completed, some 10 G cards
  - Debian Etch on most units
- Mark5A+
  - Upgrade of Mark5A, enables play-back of Mark5B data on Mark5A units
  - Used at JIVE with Yebes, Effelsberg and Westerbork TADUmax data, occasionally QUASAR, Ventspills
  - And on converted Australian LBADR data
- Mark5B
  - On and off several units converted from A to B at JIVE (depending on production correlation needs)
  - Function well, but very little actual data to play back...

Mark5B (e-)issues

- Mark5A+: works fine with MarkB e- and non-e-VLBI data
  - Demonstrated in several demos
  - Wb now only uses Mark5B for e-VLBI, Ef currently not
  - First e-fringes with Ys (on B) recently
- Mark5B, disk-based:
  - Software development done
  - Playback is being verified now
- Mark5B, e-based:
  - Sending side: JIVE-developed code works fine
  - Domino: e-VLBI enabled, no fringes yet, need test time/data, need buffer in A to check A-B fringes

- Not a reason not to go ahead with upgrade to B....

Network status

- Internal network
  - upgrade to 10 Gbps
- Full 1024 Mbps been used operationally
  - Wb: two lightpaths, channel bonding
  - Ef and On: 10 and 4 Gbps connections for e-LOFAR
  - Jb: 2 lightpaths already available
  - Tr: 10-G to Poznan, to
- Merlincast regularly used in science operations
  - Amsterdam via regular switched GEANT network

and beyond Europe

Long distance connections

- Ar, Sh regularly at 512 Mbps
- But time restrictions for high bandwidth transfer
- Hh: repairs/replacement?
- Tc: fringes as well, but limitation of S-American network not likely to improve soon
- Oz: still one lightpath in place
- Kashima, Urumqi in IYA demo, VERA and KASI next?
- ToO requesting ultra-long baselines..

New modes, feedback and streamlining

Currently under development:

- Fast/adaptive (re-)scheduling

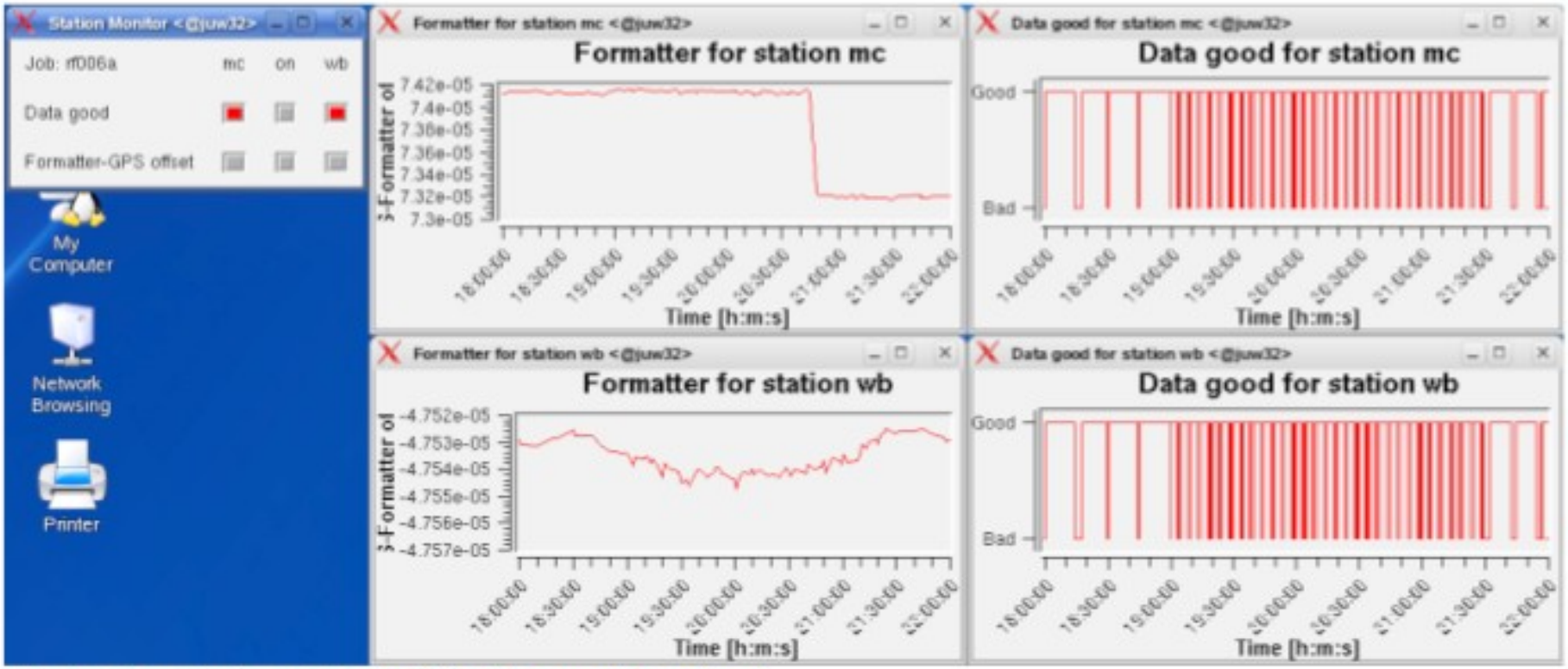

Illustration 1: Screenshot of the log-monitor client

New modes, feedback and streamlining (2)

- Atom/RSS scheduler:
  - Incoming and outgoing schedules hosted on vlbeer, filed by year and month
  - Schedules approved and moved to .latest subdirectory
  - Atom (RSS) publishing protocol used to publish notification of new schedules
  - Stations and other interested parties alerted via RSS subscriptions
  - Atom publishing protocol allows for modification of documents, and notification of this
- What would stay the same:
  - Schedules should still be hosted on vlbeer
  - Full schedules must still be fetched from vlbeer (Atom documents to include only summary and link to vlbeer)
  - Authorisation of schedules still performed by EVN
  - Email notification could still be sent
  - Stations could at their own convenience integrate RSS readers into their schedule maintenance strategy

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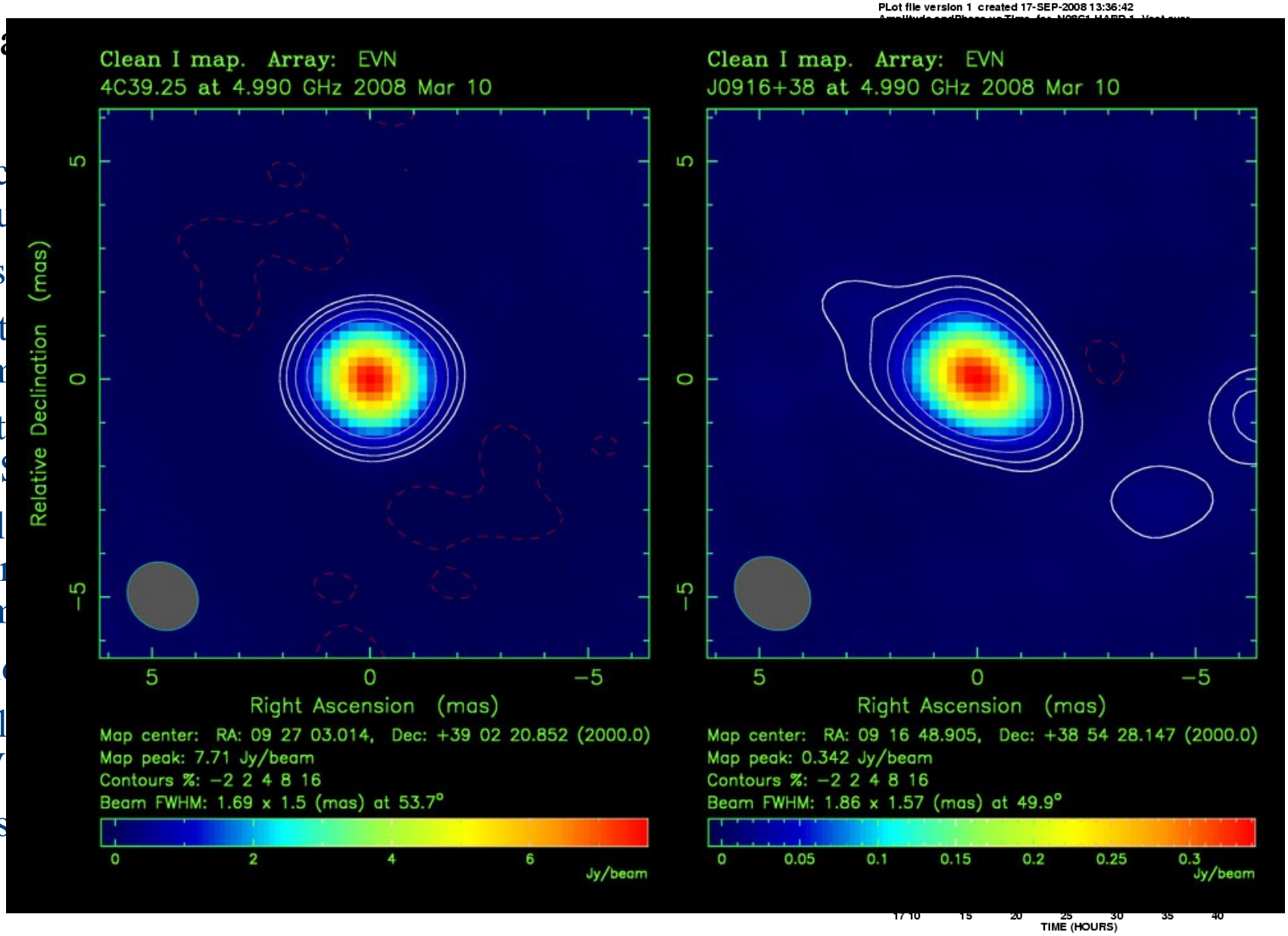
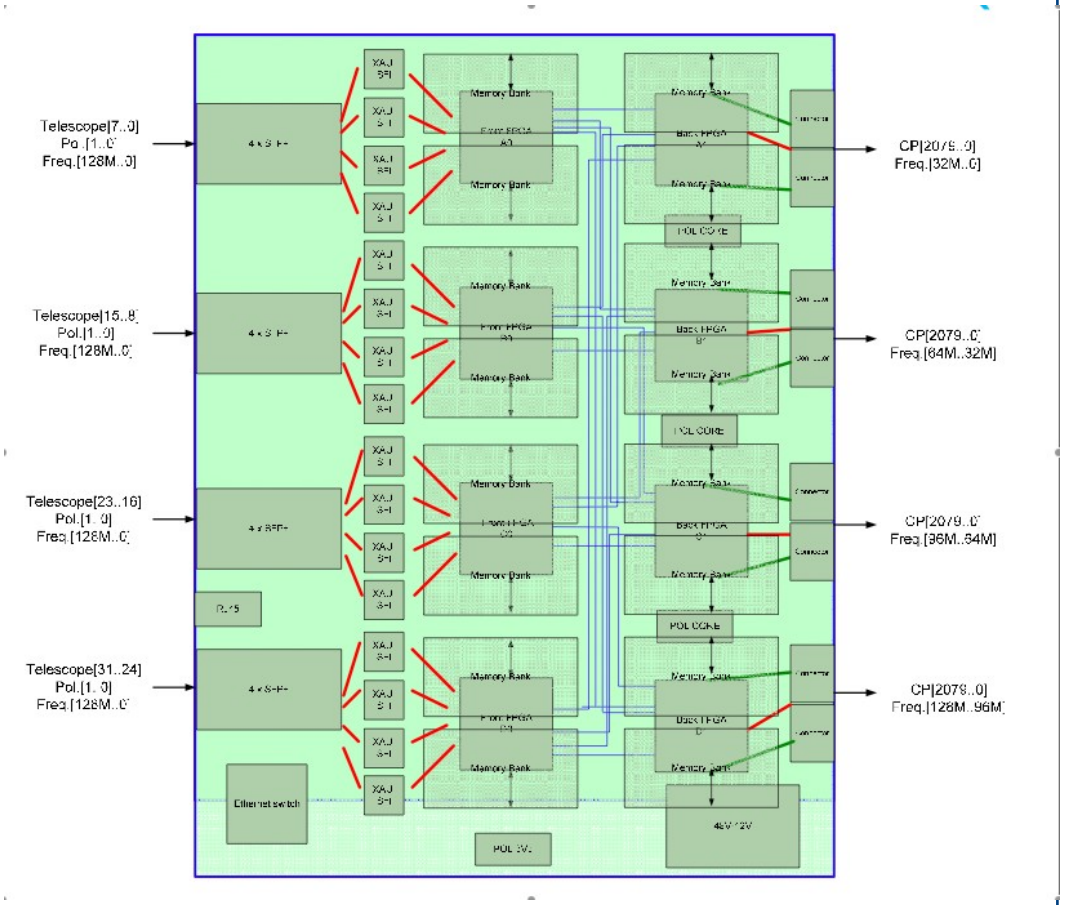


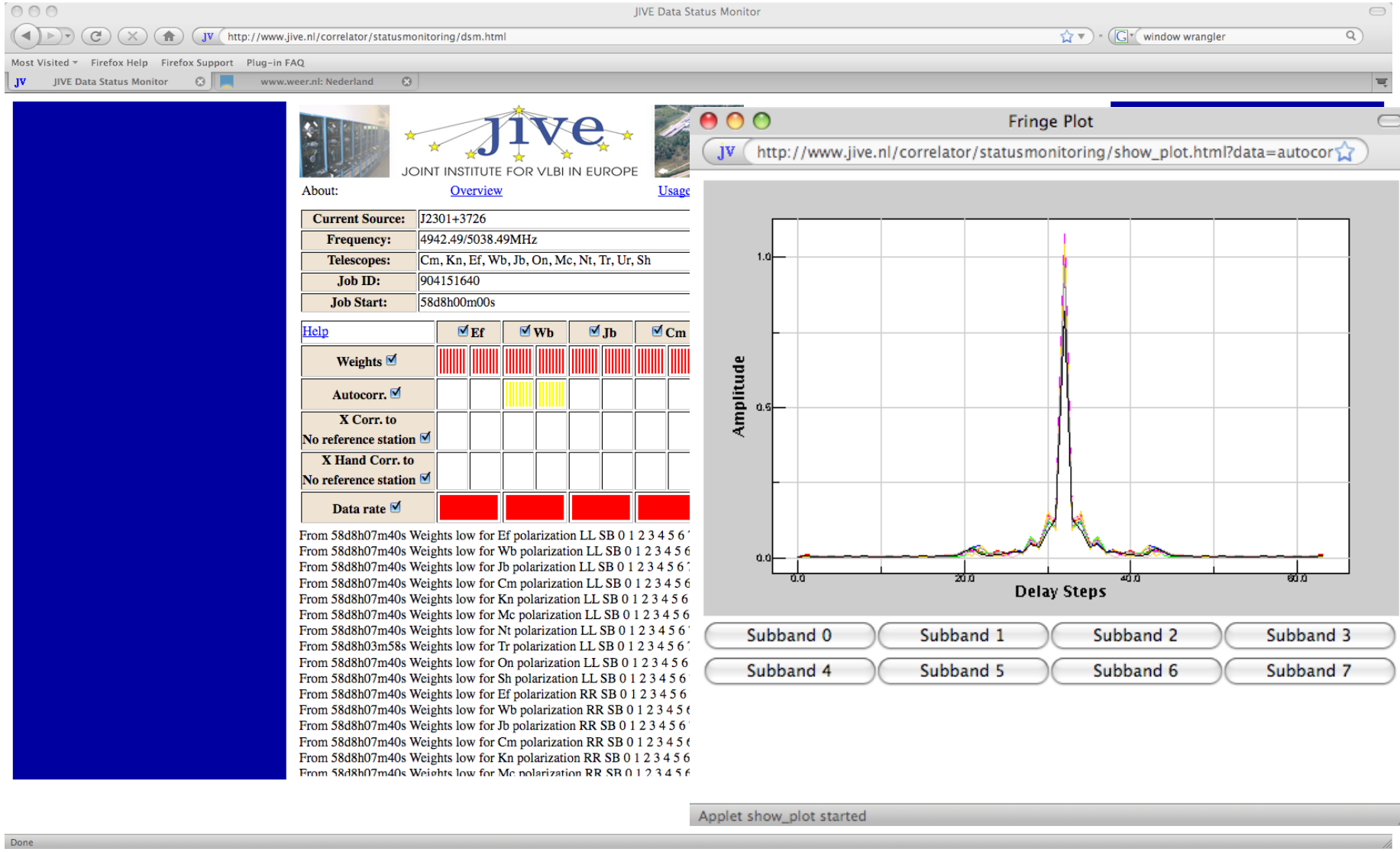
The UniBoard

- JRA in RadioNet FP7, started Jan 2009, first prototype end 2009
- Funded by EC to ~800k€, comparable matching
- Collaboration of 7 international partners
- FPGA-based computing platform, different applications:

  - Next generation EVN correlator
  - APERTIF beamformer
  - APERTIF correlator
  - Digital receiver
  - Pulsar binning machine (EPTA)
  - Validation platform broadband digitization
  - Low frequency resolution correlator
  - Next gen. IRAM demonstrator correlator
  - Solar interferometer
  - Next gen. Korean e-VLBI correlator
  - Next gen. Chinese e-VLBI correlator
  - prepSKA correlator effort



Please use our wonderful tools....



The International Year of Astronomy

- The mother of all demos (MOAD) during opening ceremony of IYA, 15-16 January 2009 in Paris
- Two 8-hour runs during 100 hours of astronomy in April