Correlator and control and implementation meeting, July 19, 2012, Hooghoudt

present: Jonathan, Salvatore, Jintao, Des, Aard, Arpad
via EVO: Harro

action items:

Jonathan: test fix of Erlang performance problems reading UDP packets
not done yet at full blast, but the fix doen not break anything. ***action remains.
Jonathan + Salvatore: figure out how to make packet spacing adjustable
Jonathan had a quick look, found that packet spacing can be adjusted in a limited range in MAC, probably not enough. ***action remains, but not urgent
Des: figure out validity bit handling in SFXC
done, SFXC keeps list of invalid bits, same system could be used for UB
Jonathan: check with Gijs if 8GB DDR3 will be supported
done, Gijs agrees we should buy a few to test, might be problems with power supply
***new action Jonathan, ask Paul to order a few modules

Continuation of a somewhat unfinished discussion about time stamps in the packets with delay coefficients. Jonathan says the BN gets the time at the first sample of an integration period. Aard mentions the finer grained time stamps needed for multiple phase centers, but Jonathan does not see that as a problem. Unfortunately I am still not quite clear about whether time stamps should or should not be included in the packets...

Jonathan gives update on testing of delay module. First started working on the phase input. Sergei test first: one signal with sine waves of 2 frequencies, one signal with the same 2 both shifted by the same amount. Cross correlations with and without correction. Goes from small correlation (no correction) to strong/nothing. Same result in Matlab.

2nd test, 2nd derivative: a single sine wave with constant acceleration. Inspect autocorrelations. Without correction in about 5 bins, with correction, one half one bin, other half more spread.
Next test with real data. All was simulated with modelsim, helps understanding, in Matlab same behavious as in hardware.

Fractional delay: get module of Jintao to put out delay synched with data. Seems to work. Sergei told to apply correction every FFT period, not every sample. Makes life easier and makes much more sense. Going to try in

hardware: use sine wave, one delayed one not. Right now it is done with 1 integration, need to run continuously. Up to 8 seconds should work without too much complications, depends on FIFO size. Coefficients should be sent in real time. Des is working on this, all bits in place, nearly ready to go. But this will be after the vacation. No rush.

Harro and Des: working on system that sends data + coefficients every second.

Jonathan suggests we stay with the 32 bits until it all works, then apply changes (48 and 64 bits) that Des has proposed.

Finally some discussion on what is needed to make an "operational" correlator by the end of the year. Des/Harro to come up with a list of the parts that are done, need work, need creating at all, and some indication of time involved. ***action Des + Harro