



ASTRON is part of the Netherlands Organisation for Scientific Research (NWO)

1. Develop fast transient imaging pipeline towards 1 sec rate and 1 sec latency
 - first for lower time resolution (1 min, 10 sec)
 2. Deployment on different hardware platforms
 - CPU, GPU, Intel MIC, BG/P
 3. Scalable to e.g. AARTFAAC
 - both in data size and in algorithm (like compressive sensing)
 4. Possibility to run pipeline on a MeasurementSet
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- Collaborate with Oxford in using its Pelican distributed processing framework and possibly parts of ARTEMIS
 - Responsive telescope is outside the scope of the Hilado project

Transient Key Science Project

Basic requirements

- Continuous stream of wide-field images at 1 sec rate, 1 sec latency
 - flag RFI, remove strong sources, and compress the data
 - combine subbands for higher S/N
 - take care transients are not flagged
 - calibrate
 - can be done at lower time resolution
 - image while correcting for W-term and direction dependent effects (ionosphere, beam)
 - calculation of correction terms can be done at lower time resolution
- KSP writes software to detect transients from the images
- KSP will investigate if detection from visibility data is possible

Mar-2013	Initial quasi real-time pipeline at 1-min pace Reading data once from disk (MS)
Jul-2013	Design review
Jul-2014	Prototype ready
Jan-2015	Demonstrator ready

Jul-2013	Report about final requirements and design
Jul-2014	Prototype implementations CPU, GPU, MIC Using streaming LOFAR data
Mar-2015	Scientific paper about pipeline results

- Discussions with Transients KSP for more detailed requirements
- Online flagging on BG/P (Rob van Nieuwpoort)
 - Will also be part of Cobalt (GPU successor of BG/P)
- Working on changes in MSWriter to connect to NDPPP
- Optimizing BBS solver (Souley Madougou, eScience)
 - Looking at StefCal

Thank you