MIDLIVE Upgrade of KNMI Radars

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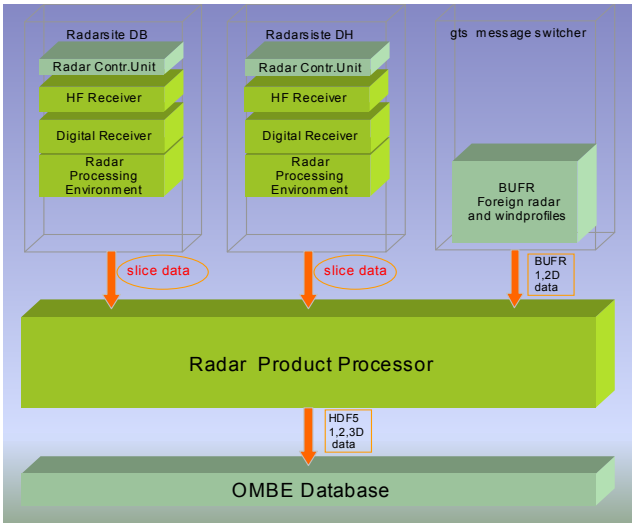
1. KNMI is operating two METEOR 360AC Radars

Radars installed in 1996, Mechanics and electronics can live for 20+ years. But ever spotted an computer that has been in operation for 20 years?.

2. Goals of the Upgrade

+ Enhanced reliability of the RADAR installations.
+ Improved quality of the RADAR products.
+ Streamlining the RADAR Production chain.
+ Centralizing the product generation.
+ Redesign of the clutter processing.
+ Rainbow will replace the current radar postprocessor.
+ Enhanced remote control and status monitoring.



3. Layout of the new KNMI radardata Processing

Using the existing interface to the Radar Control Unit (PLC) makes interfacing easy.

The state of the art Digital receiver (GDRX) has a built in signal generator and noise source enhancing quality control. The Receiver features 100 dB dynamical range, and 2 dB noise figure.

Linux based radar control processor runs on standard industrial hardware, It interfaces legacy "synchro" position sensors as well as modern serial SPI position encoders. KNMI kept the current antenna drive system in operation.

The product generation is relocated from the radar sites to the central facilities of KNMI. A hot-cold pair of rainbow servers is processing sliced data from our sensors as well as BUFR based data from the GTS. Output in HDF5 format is fed to the central KNMI database.

6. Status of the Project.

Two years ago on the Gotland ERAD we started orientating on what we wanted from our upgraded system.
We used 2005 for marketing research, writing the specifications.
In December 2005 KNMI and SELEX signed an agreement.
In September 2006 acceptation testing for De Bilt has started.
In October 2006 the Den Helder site will be upgraded.
The project will be finished in December 2006.

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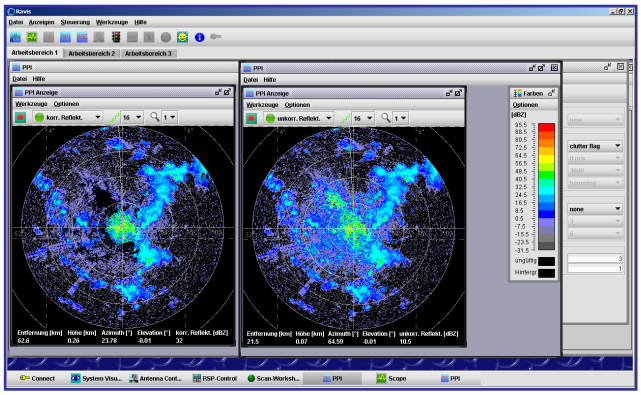
4. Enhanced Clutter Processing

Since 1992 KNMI uses a statistical filter algorithm that flags clutter suspected bins. In online post processing these flags are processed into a clutter map, which is applied on the data it originates from.

This process is very efficient in reducing anaprop clutter. and is effective on long ranges.

The algorithms are reworked and rationalized by Holleman and implemented in the upgrade. As a result the volume sets generated will be virtually clutter free and so al products created will benefit from this processing.



5. Faster production using optimized Volume scan

Multi parameter scan allows for change of parameters every elevation. (Range, Rotational speed, PRF, Filters, etc. Moments are simultaneously available.)

Data Transfer is slice based.
As soon as an elevation is finished data is transferred to the central product generator.
Products are generated as soon as the slices on which the product is based are available.

Faster distribution to (end)user.
Scanning Top Down delivers the most "visual" radar-slice just some seconds before products are generated and distributed.