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# Future developments of VieVS

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# Data format

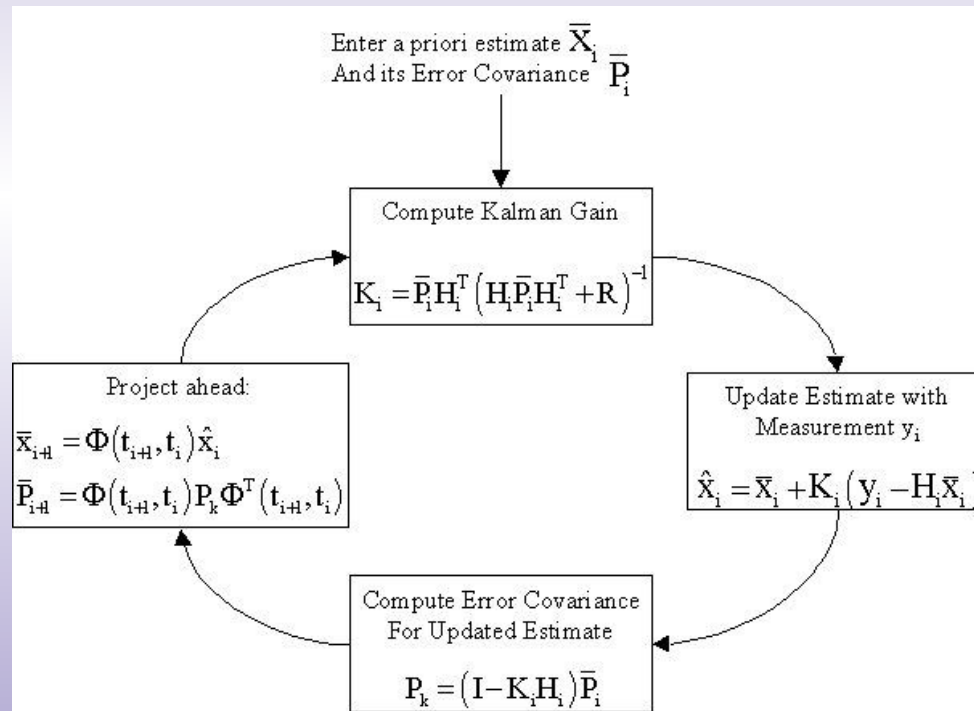
- New data format specified by IVS WG 4
- netCDF format
- Some functions for reading the netCDF files already exist, but need to be implemented

# Cover earlier steps in the analysis chain

- ▣ Group delay ambiguity resolution
- ▣ Ionospheric correction
- ▣ Phase delay ambiguity resolution for VLBI2010

# Kalman filter


 An alternative to least-squares adjustment



- Advantages of Kalman filter:
  - Some processes (e.g. troposphere, clocks) better described by e.g. random walk processes than as piece-wise linear offsets
  - Good for real-time operation
  - Smaller matrices, requires less memory
- Disadvantages:
  - Observation noise needs to be uncorrelated in time
  - Issues with obtaining normal equation matrices to be used in e.g. combinations
  - Stochastic processes of the different unknown parameters (clocks, troposphere, EOP) need to be known

 Status of the VieVS Kalman filter

  project P24187-N21


 First step: change VIE\_LSM to calculate the normal equations using a scan-wise update:

$$N_{tot} = N_{scan1} + N_{scan2} + \dots + N_{scanN}$$
$$b_{tot} = b_{scan1} + b_{scan2} + \dots + b_{scanN}$$






 Almost finished

 Next step: implement a simple Kalman filter



 First all parameters estimated as piece-wise linear offsets

 Later also other possible stochastic models (e.g. random walk) will be implemented

# Other improvements

-  Update and improve the documentation
-  Fully implement the superstations file (e.g. tidal atmospheric and ocean loading taken from there)
-  Supersources file
-  Elevation angle and station dependent weighting of observations
-  Twin telescopes etc. (VLBI2010)

# Some thing that would be nice

-  Automatic detection of clock breaks and other problems
-  Source structure corrections



# Goal of the VLBI group at IGG

- ❑ Become an operational IVS analysis centre:
- ❑ Regularly submit results from our VieVS analysis for the IVS combination
- ❑ Some issues still needs to be resolved

Any other suggestion or wishes?