

# Software correlator in OAC

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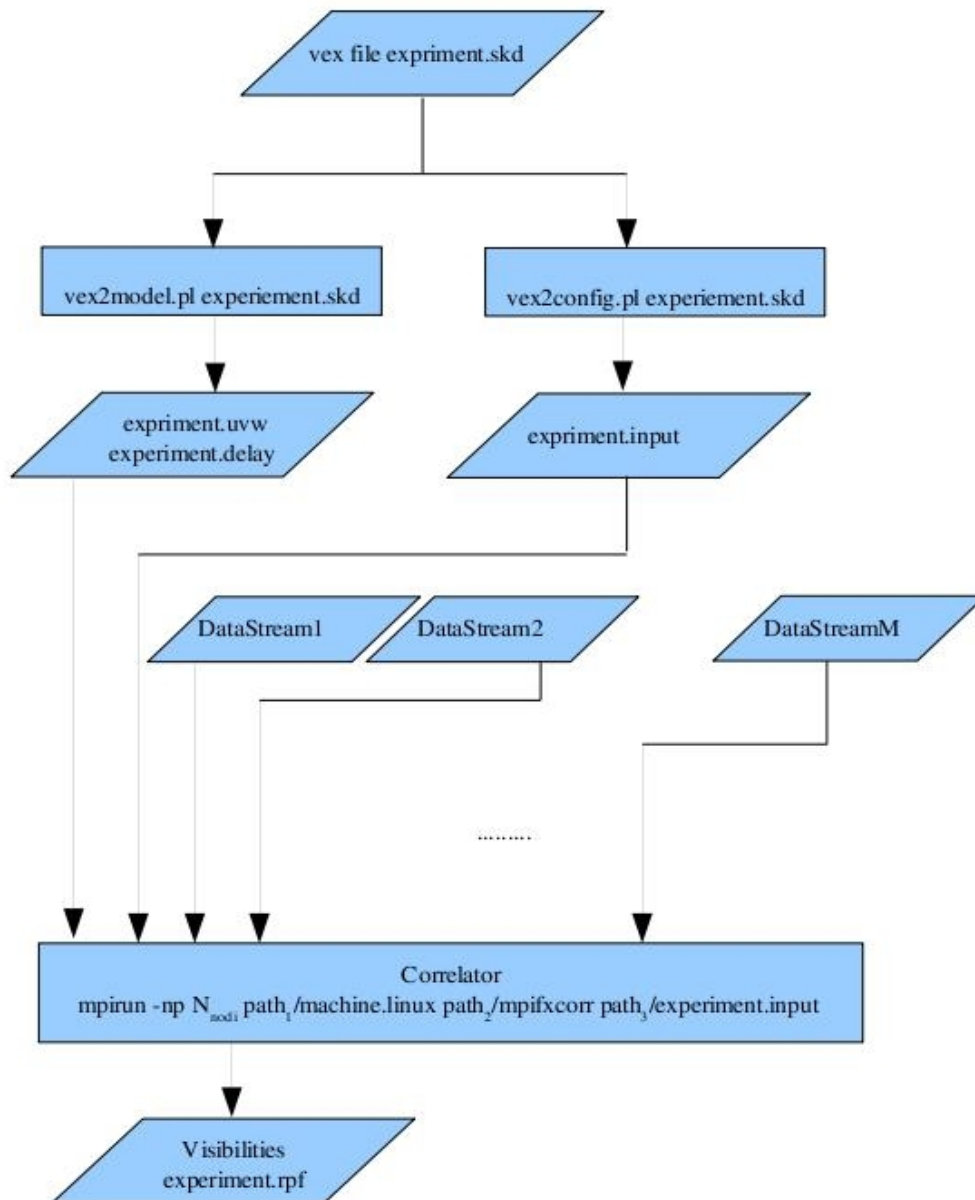
# Italian VLBI

The construction of SRT (64 m diameter) will enable, together with the Medicina and Noto antennas (both of 32 m diameter) the usage of an Italian VLBI. The location of the three radiotelescopes gives a "triangle" with baselines ranging from 500 km to 900 km.



The SRT will be completed in December 2009

# Steps to obtain .rpf visibility



From .skd file using packages of Chris Phillips:

1) vex2model.pl to obtain .uvw and .delay file

2) vex2config.pl to obtain .input file

Using software correlator distributed by Adam Deller et al. we obtain .rpf visibilities

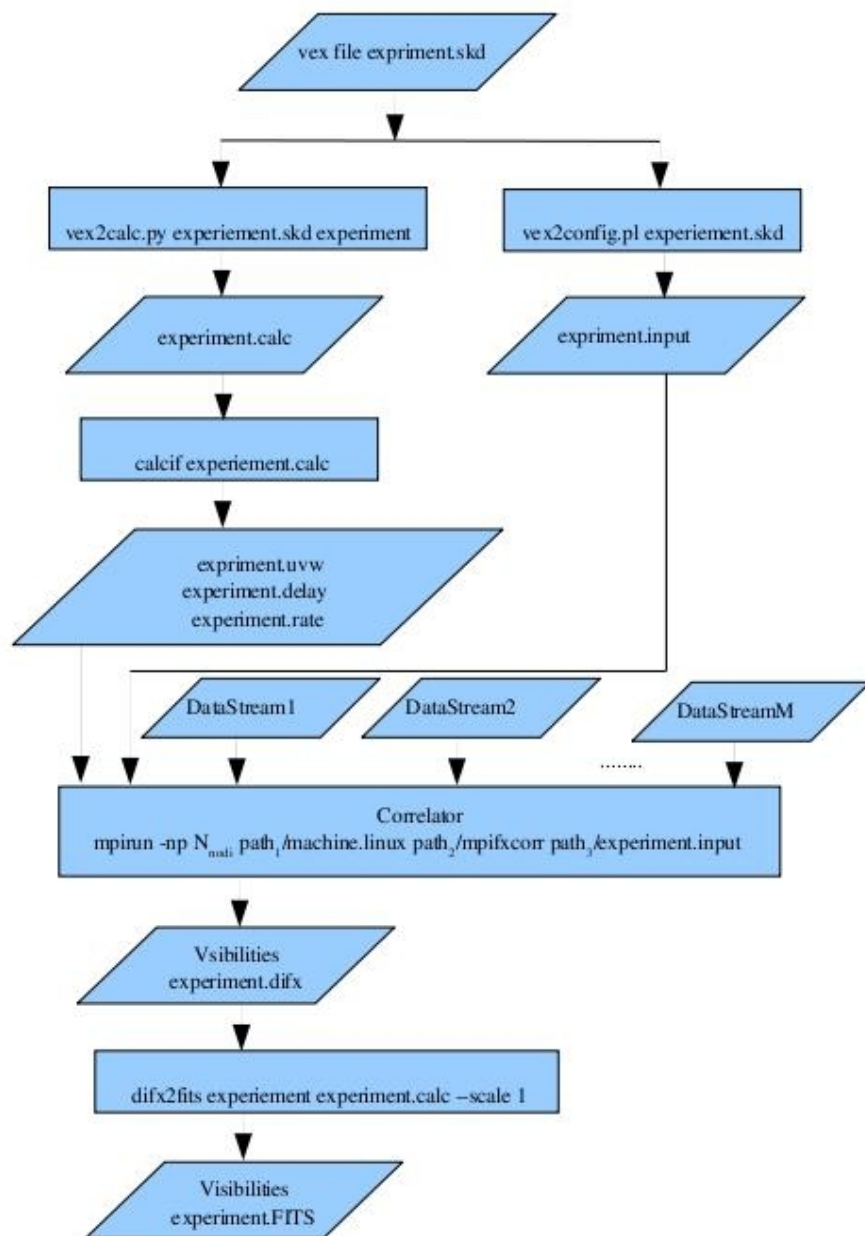
Format rpf is not good for our version of AIPS then we need FITS format outgoing

# Correlation time

Time needed in order to correlate data from four stations which observe for 360 s with 512 channels, 1s integration time : 3 minutes and 40 seconds with 11 nodes 64 bits dual proc dual core

The same raw data, correlation time of 1 hour and 40 minutes with 5 nodes dual proc 32 bits

# Steps to obtain .FITS visibility



From .skd file using:

1) vex2calc.py of John Morgan to generate calc file

2) vex2config.pl of Chris Phillips to generate .input file

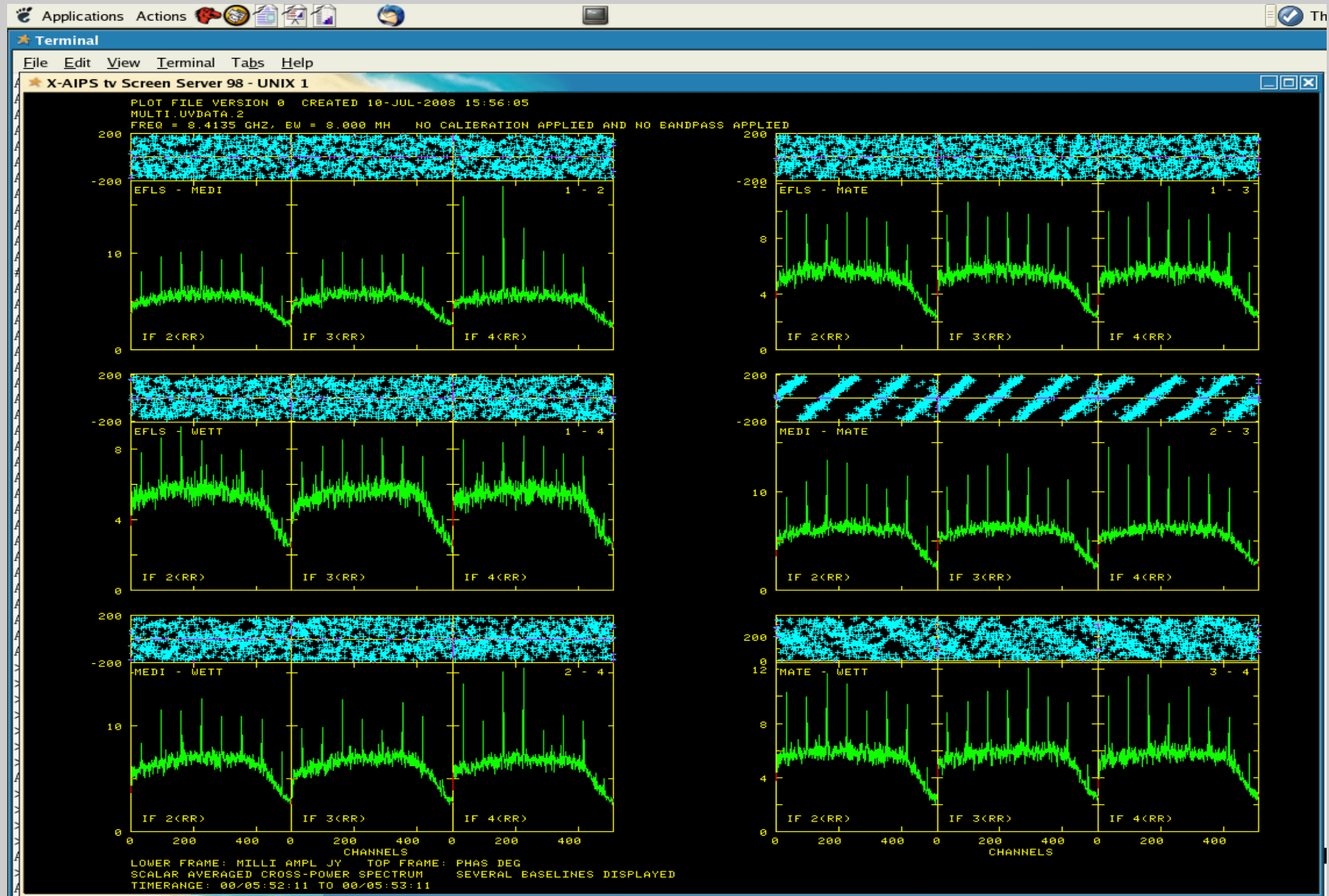
Using software correlator distributed by Adam Deller et al. We obtain difx visibilities

Some packages of Walter Brisken NRAO-DiFX:

1) From .calc file using calcif to generate .uvw .delay and .rate file

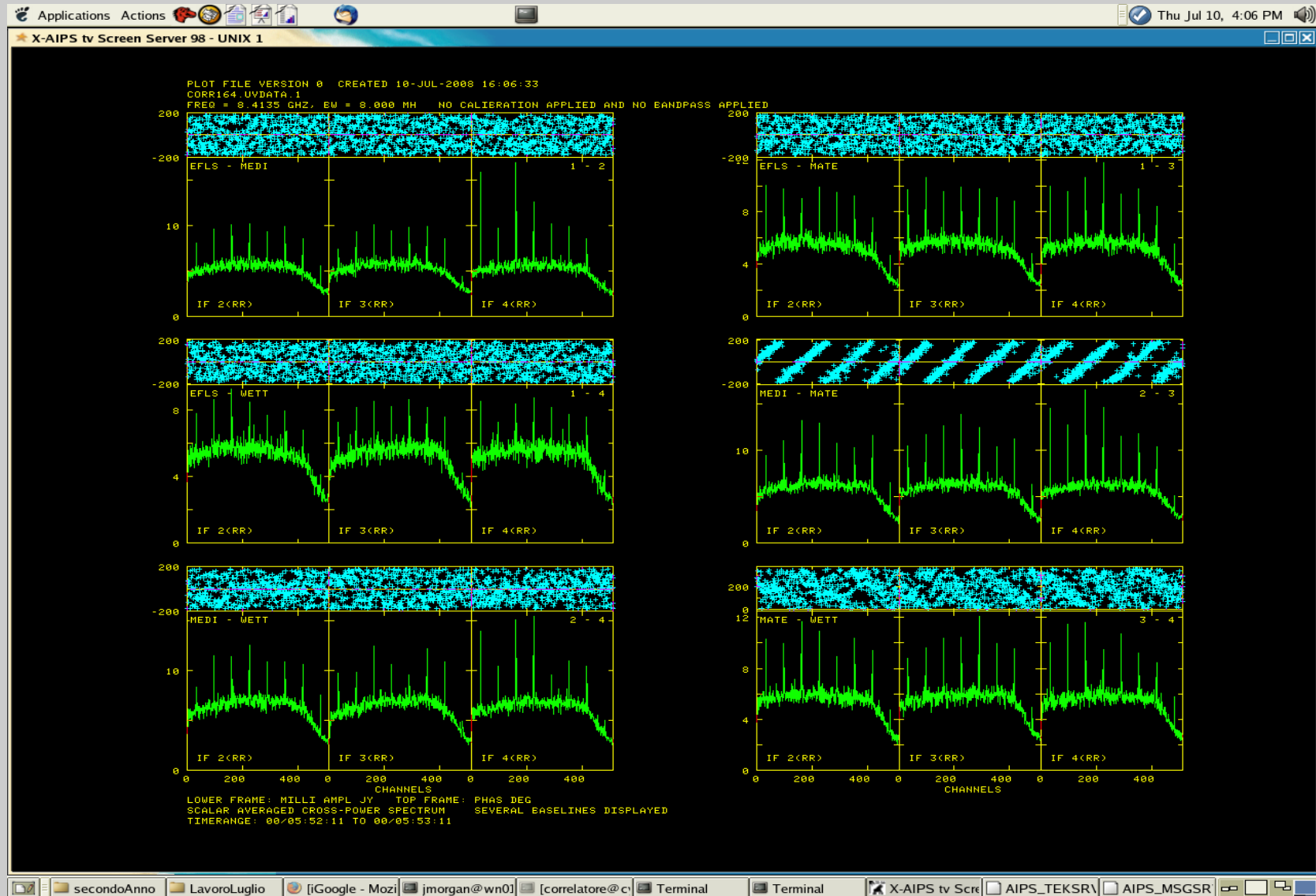
2) difx2fits to convert from .difx to FITS visibility

# .FITS visibilities



Obtained with a cluster of 5 nodes 32 bits

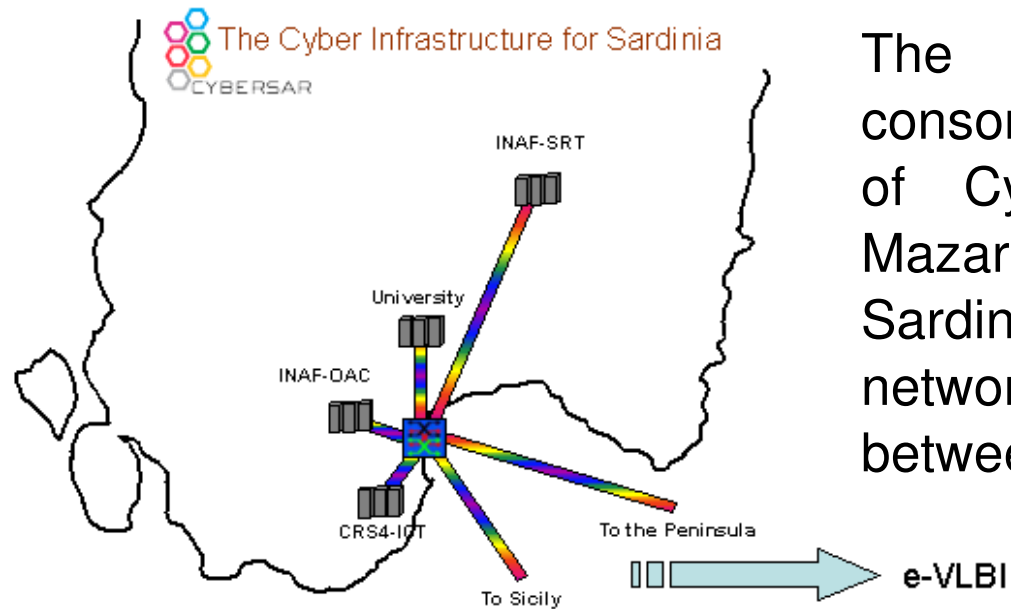
# .FITS visibilities



Obtained with a cluster of 11 nodes 64 bits

Now the problem is the slow OAC network to download data, but in the near future...

The goal is the realization of a hardware/software platform including seven HPC clusters, integrated and geographically distributed in the South of Sardinia, interconnected with a dark fiber and ring topology link, allowing a 2.5 Gb/s bandwidth between each site



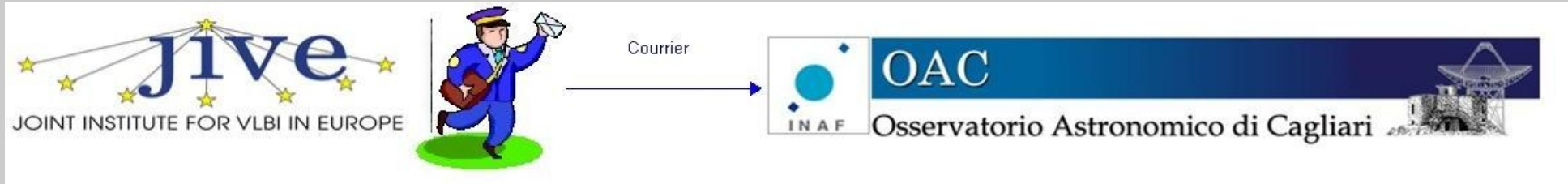
The connection made by JANNA consortium between the Sa Illetta center of CyberSar network topology and Mazara Del Vallo (Sicily) will connect Sardinia to the european high speed network, allowing the high speed link between SRT and the e-VLBI net

The aim is to work to better software correlator before that this network will be completed



Data we experimented are downloaded from difx website and data calibrator kindly granted by John Morgan

Only a few days ago we received raw data via courier from jive of a complete experiment



# OAC vex2config

Only since a few weeks I am writing my C++ version of vex2config

To pass correspondence between abbreviate telescope names and extended telescope names is not necessary

Pa => 'PKS'

Mp => 'MOPRA'

It calculates the EXECUTE TIME(SEC) for each scan