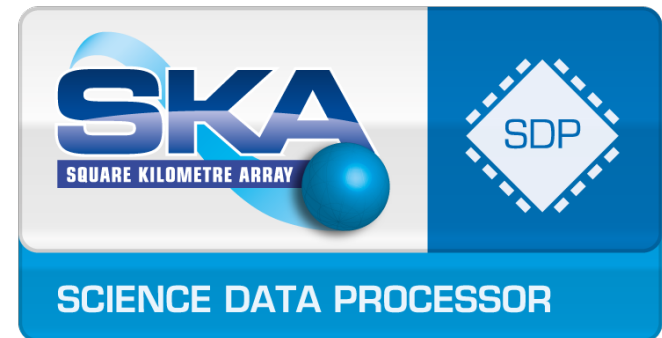


# Square Kilometer Array (SKA)

# Science Data Processor (SDP)

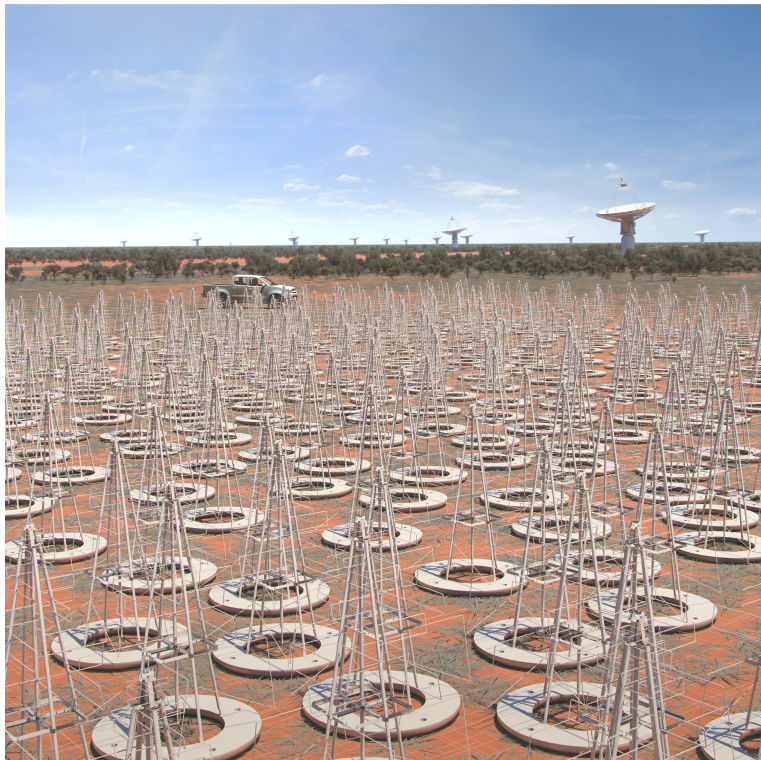
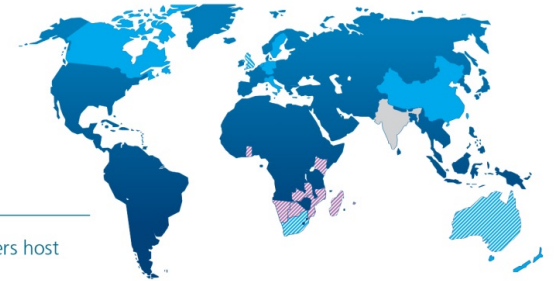
Science Data Processor Consortium



[www.skatelescope.org](http://www.skatelescope.org)

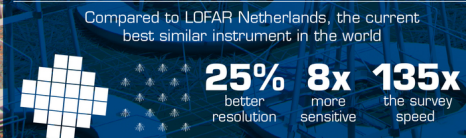
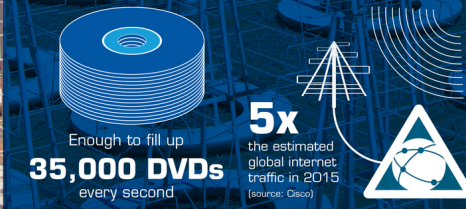
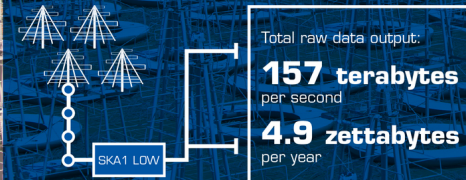
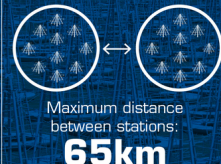
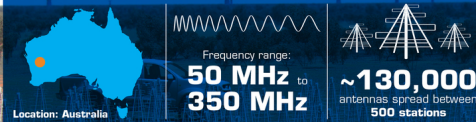
Exploring the Universe with the world's largest radio telescope

● Full members ● Associate members ● SKA Observatory hosts (members) ● SKA Observatory hosts (non-members) ● SKA Headquarters host



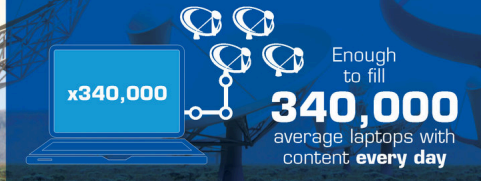
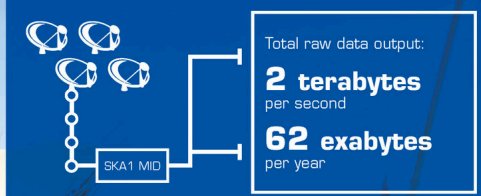
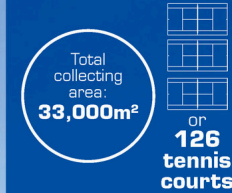
## SKA1 LOW - the SKA's low-frequency instrument

The Square Kilometre Array (SKA) will be the world's largest radio telescope, revolutionising our understanding of the Universe. The SKA will be built in two phases - SKA1 and SKA2 - starting in 2018, with SKA1 representing a fraction of the full SKA. SKA1 will include two instruments - SKA1 MID and SKA1 LOW - observing the Universe at different frequencies.

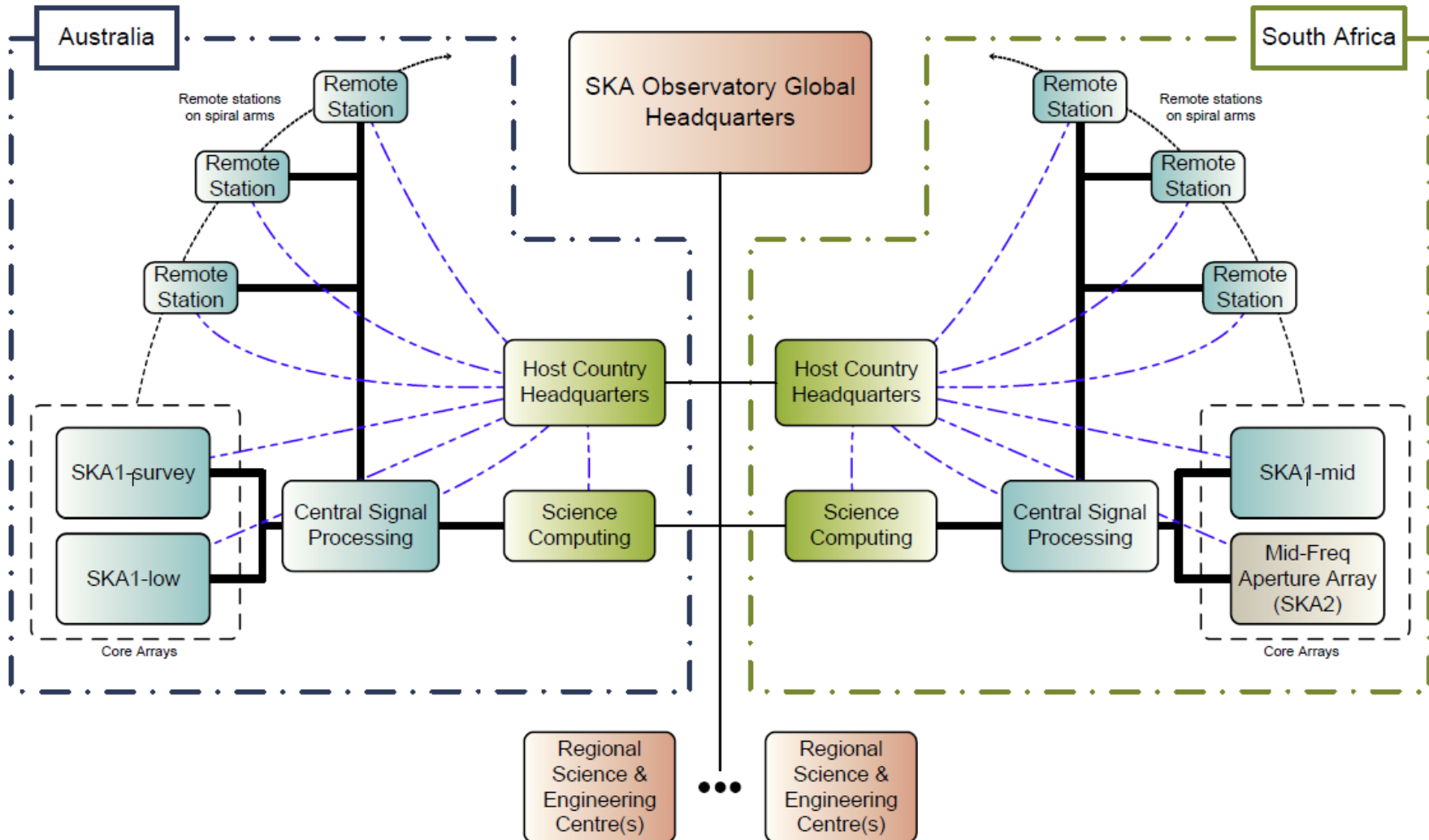


## SKA1 MID - the SKA's mid-frequency instrument

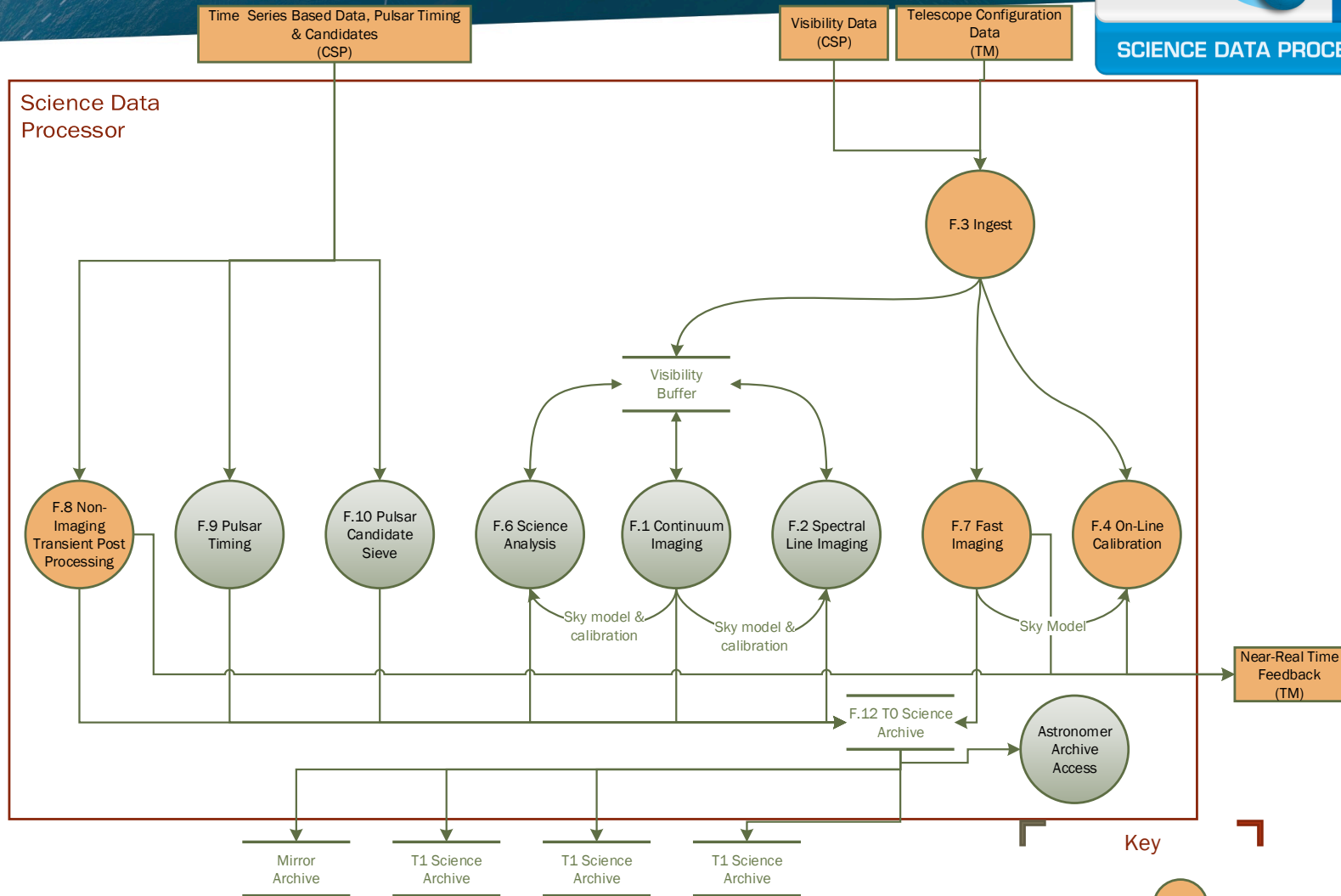
The Square Kilometre Array (SKA) will be the world's largest radio telescope, revolutionising our understanding of the Universe. The SKA will be built in two phases - SKA1 and SKA2 - starting in 2018, with SKA1 representing a fraction of the full SKA. SKA1 will include two instruments - SKA1 MID and SKA1 LOW - observing the Universe at different frequencies.



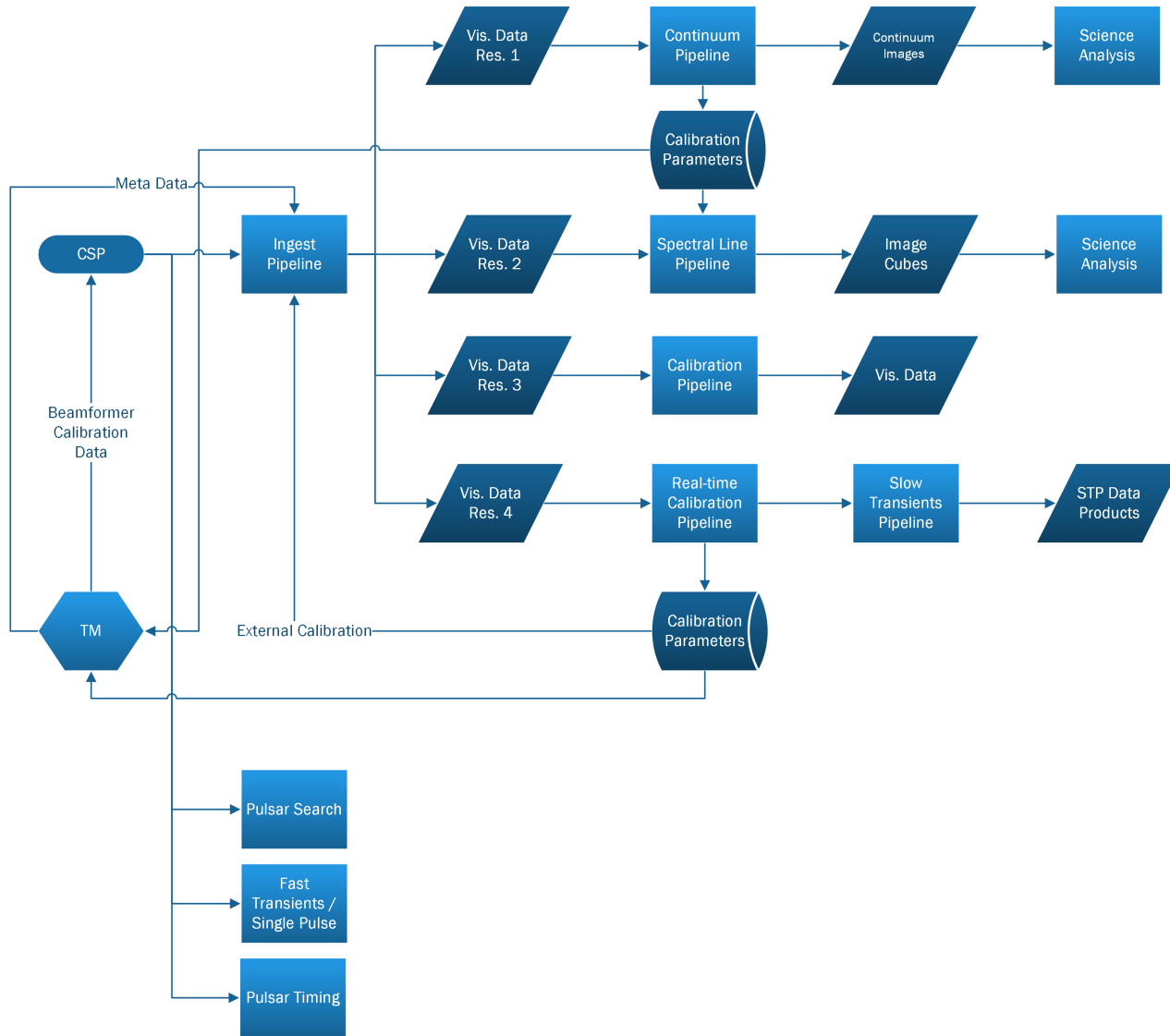
# SKA Observatory



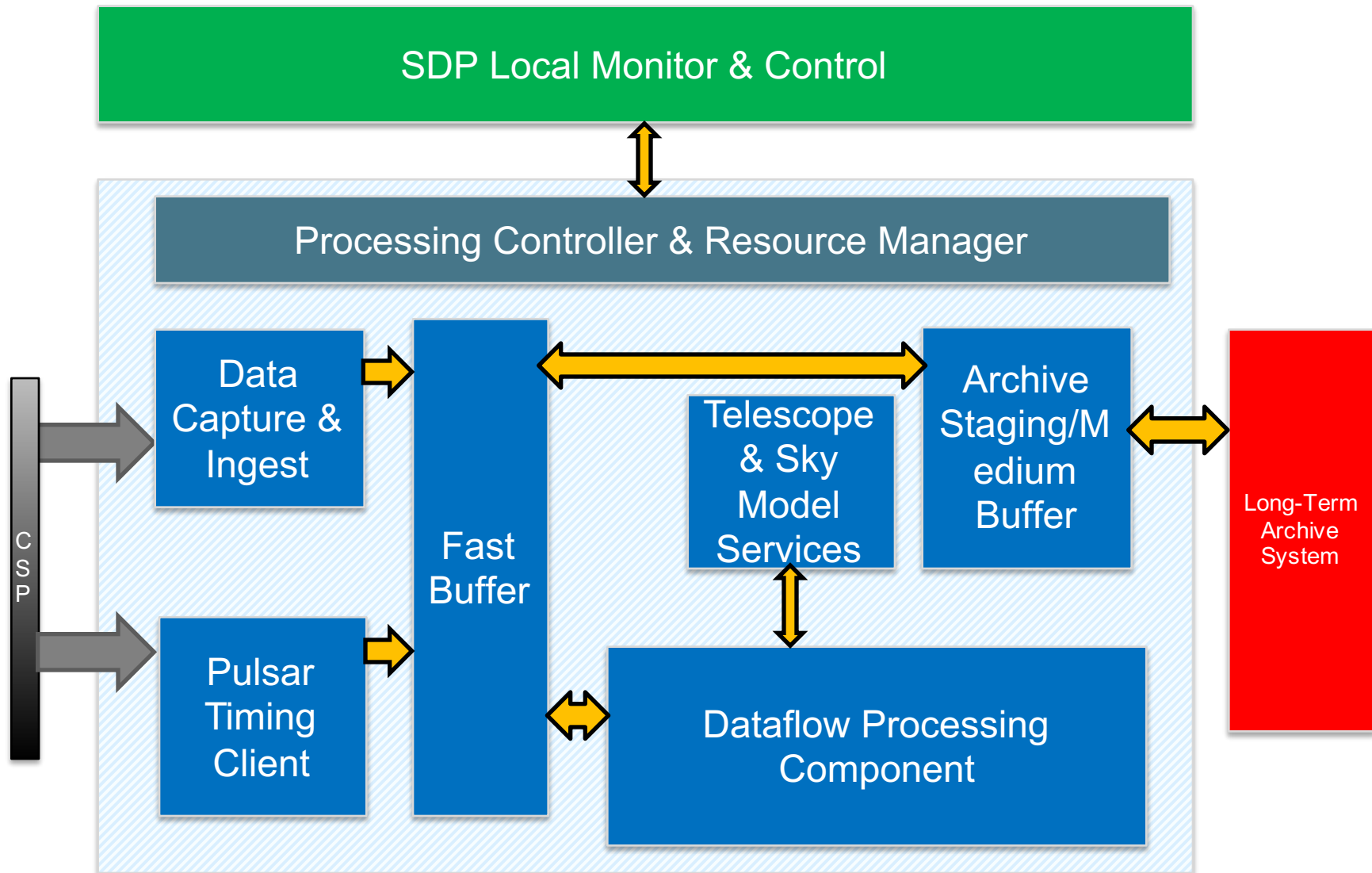
# The SDP Functions



# Data Processing Pipelines



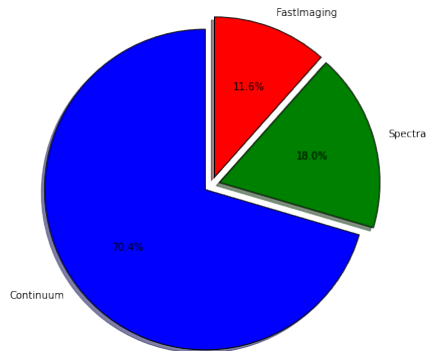
# Processing System: Components dataflow view



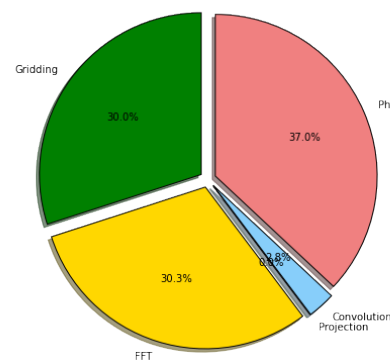
# Modeling of SDP Processing Costs



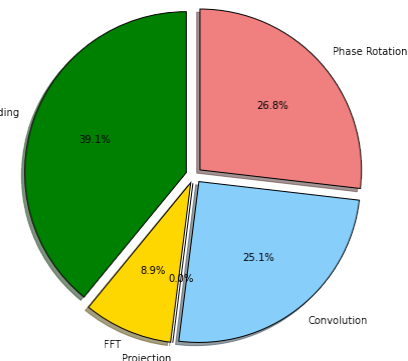
SKA1 Low: FLOP breakdown  
Total = 7.42 PetaFLOPS



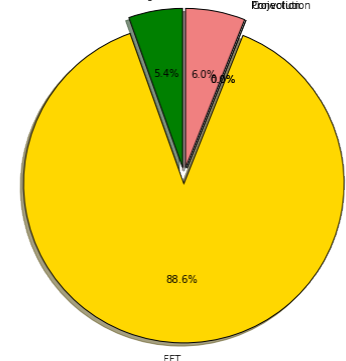
SKA1 Low: FLOP breakdown for Continuum mode  
Total = 5.23 PetaFLOPS



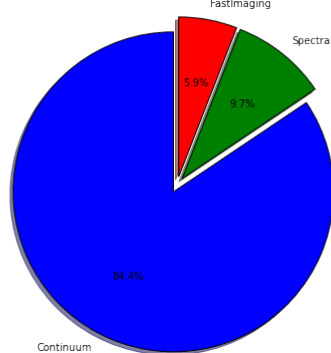
SKA1 Low: FLOP breakdown for Spectral mode  
Total = 1.34 PetaFLOPS



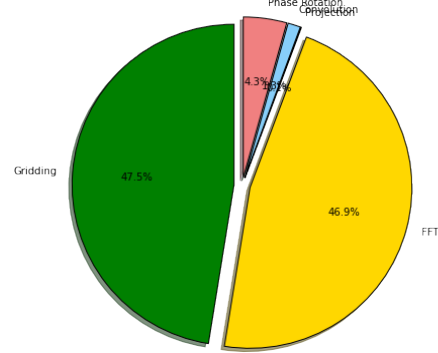
SKA1 Low: FLOP breakdown for Fast Imaging mode  
Total = 0.86 PetaFLOPS



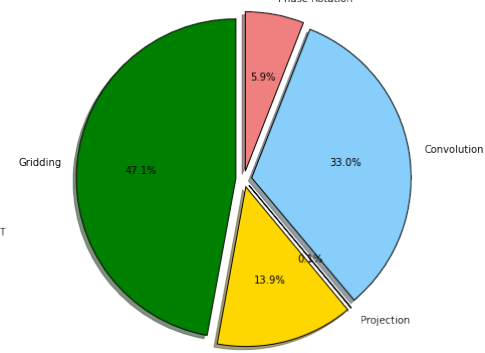
SKA1 Mid (Band 1): FLOP breakdown  
Total = 82.73 PetaFLOPS



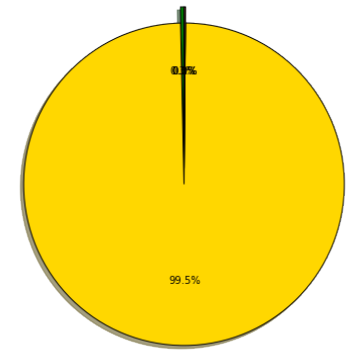
SKA1 Mid: FLOP breakdown for Continuum mode  
Total = 69.85 PetaFLOPS



SKA1 Mid: FLOP breakdown for Spectral mode  
Total = 8.01 PetaFLOPS



SKA1 Mid: FLOP breakdown for Fast Imaging mode  
Total = 4.88 PetaFLOPS



- Input data rate: ~5 Terabit / sec per instrument
- Current estimates: ~ 10 – 100 Pflops (real); i.e. ~ 50 – 500 Pflops peak
- However, processing is likely to be I/O limited, hence ‘flops are for free’
- And in the end, processing is likely to be limited by cost cap



