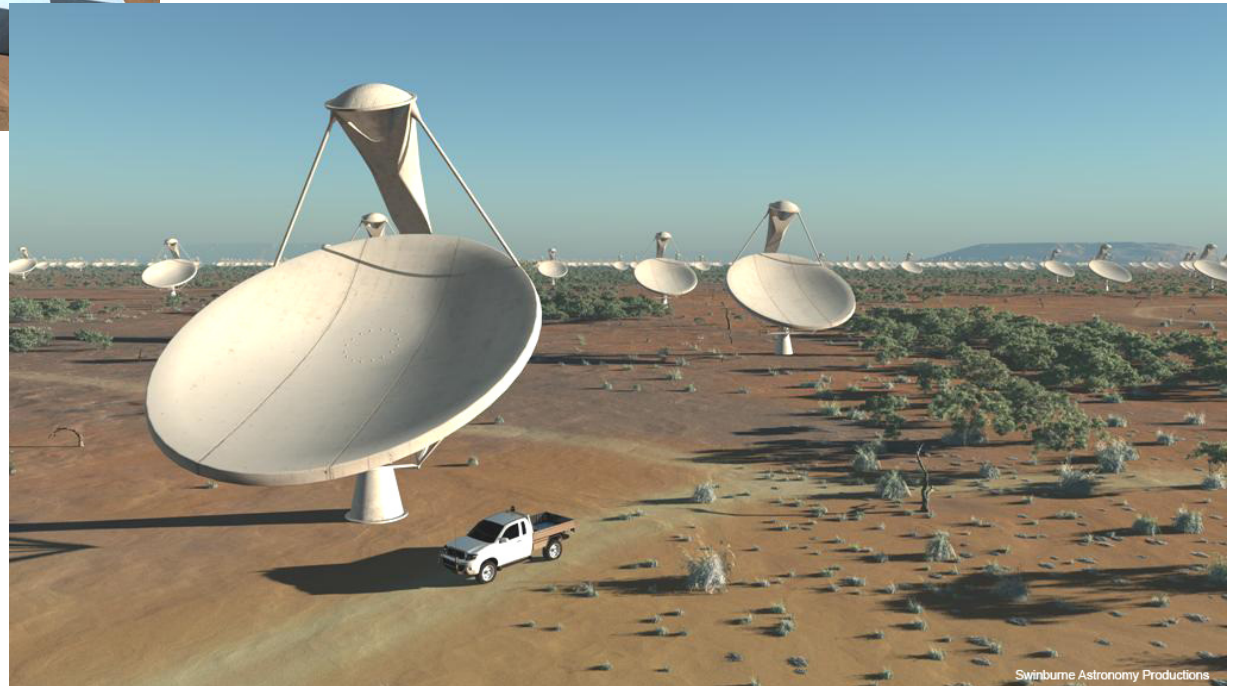
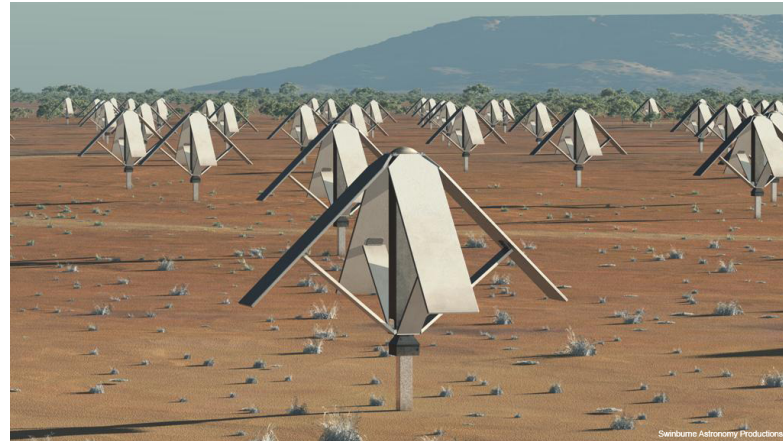
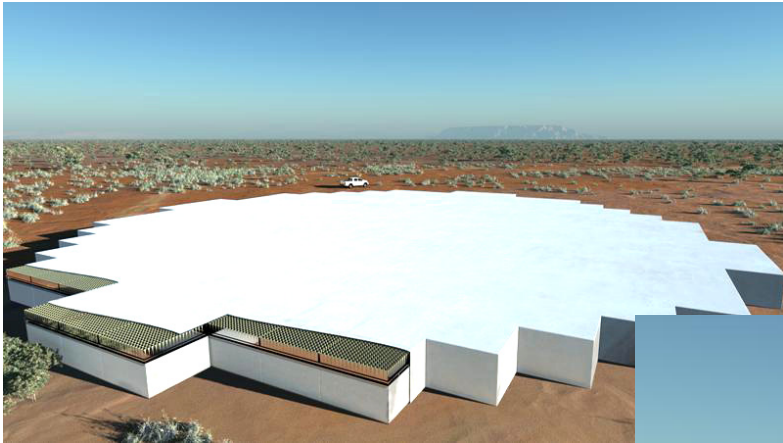


SKA technological challenges and cutting edge business opportunities

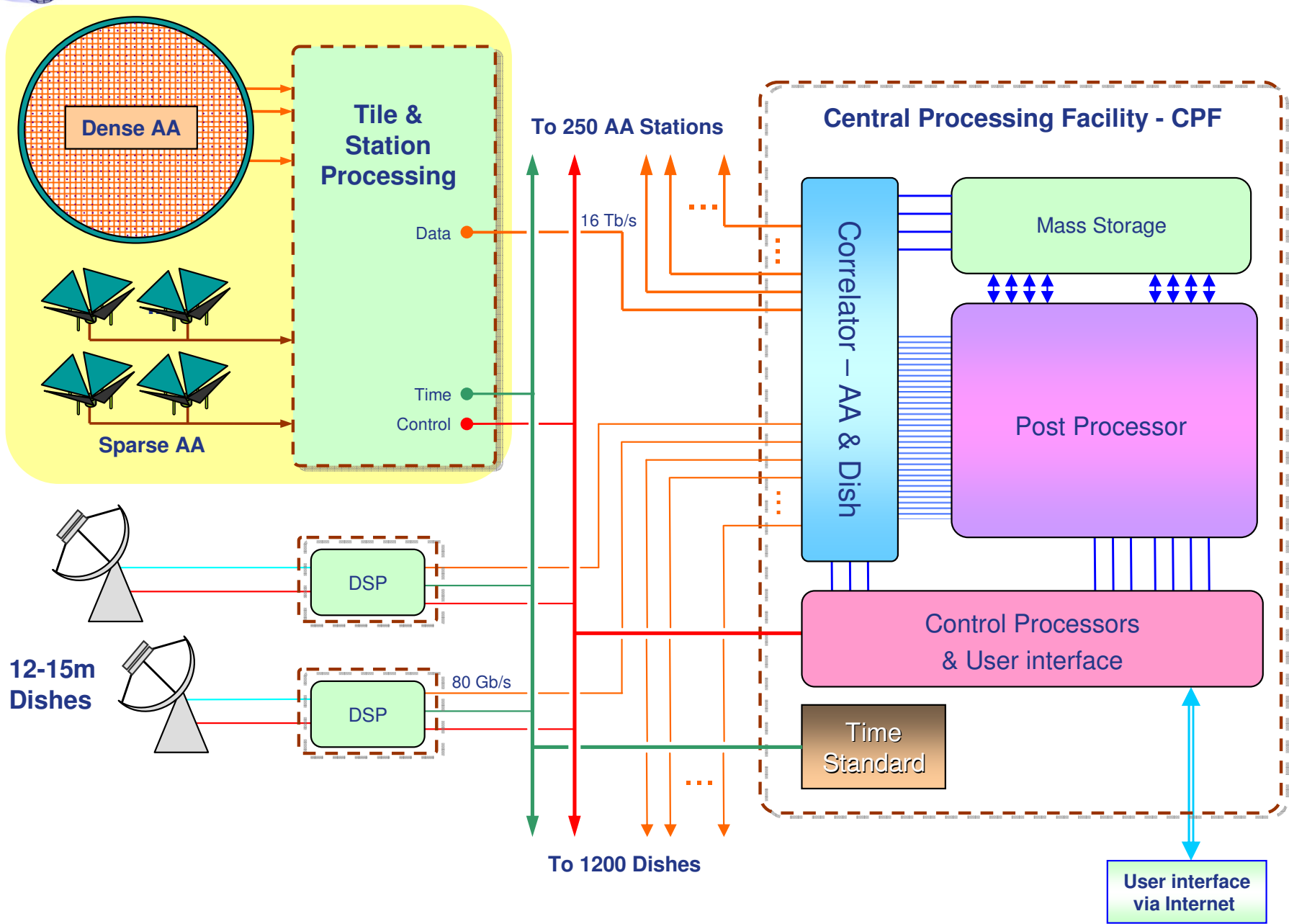
Professor Tony Brown
University of Manchester, UK



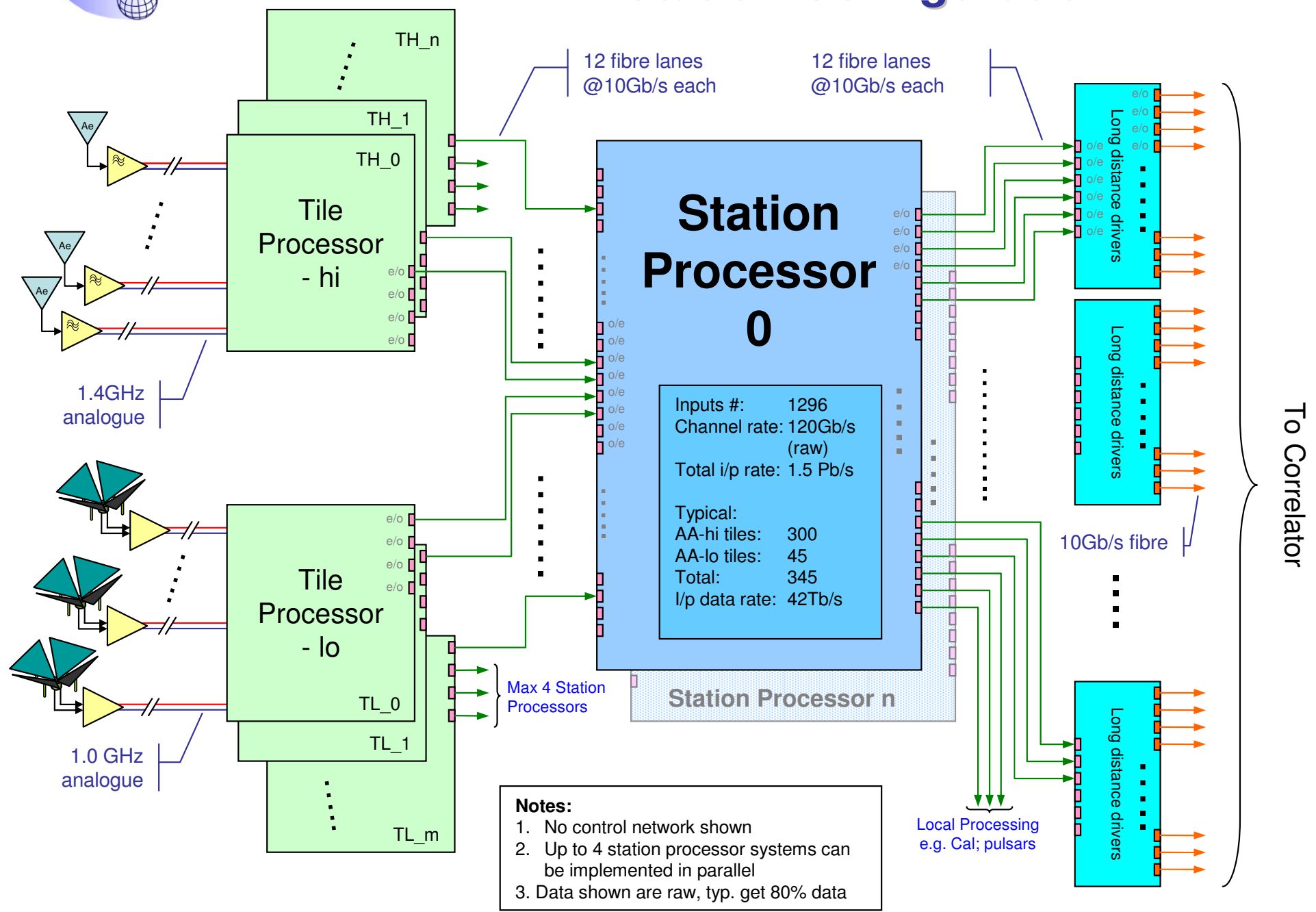
0.4-1.4 GHz
Wide FoV

70-450 MHz
Wide FoV

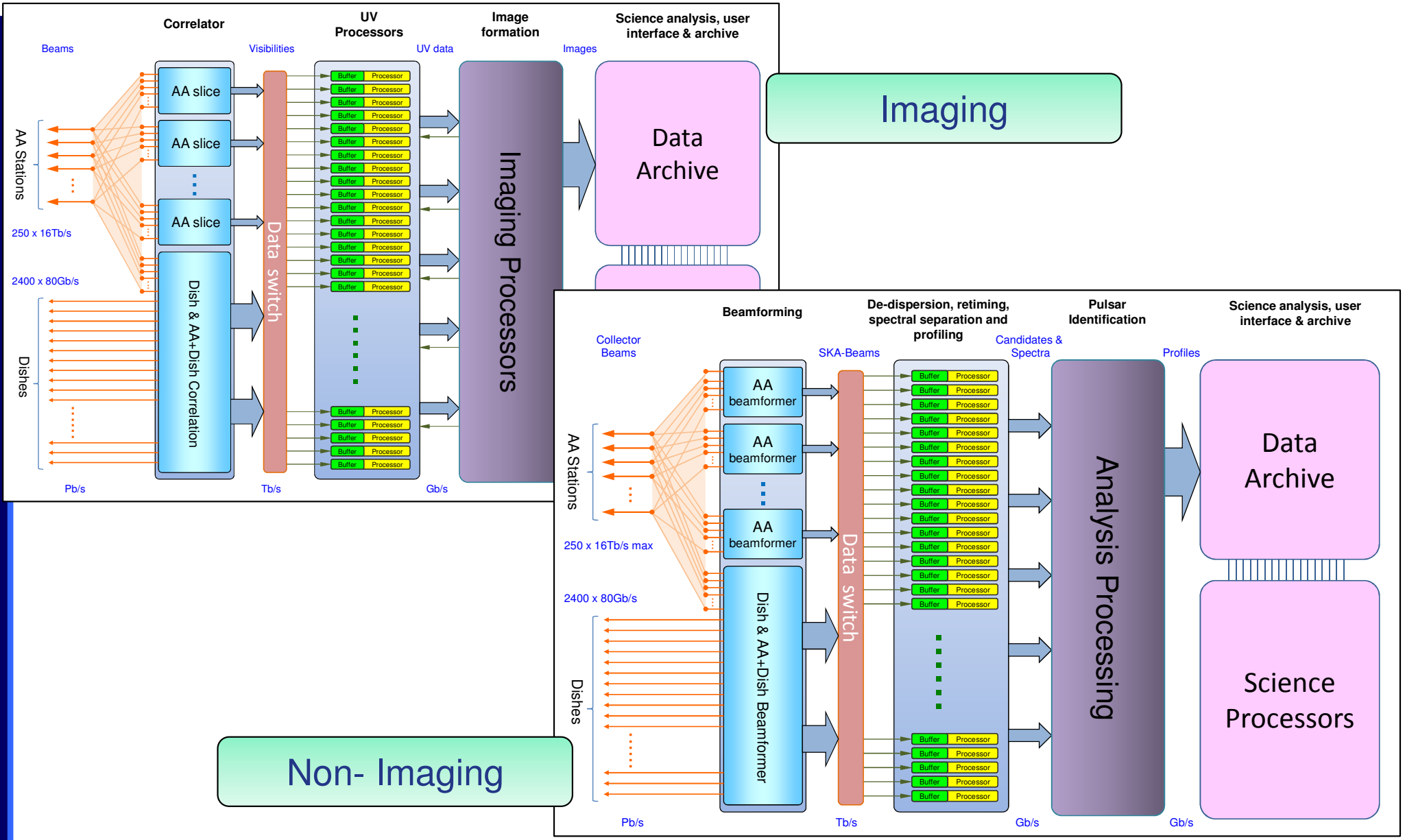
12-15m
Dishes



AA Station Configuration



- Flexibility
- Accuracy (Ability to calibrate)
- Multiple simultaneous missions
- Software reconfigurable



SKA drivers

- Wide Band
- Dual Polarisation
- High sensitivity
- High survey speed (multiple simultaneous beamforming)
- Low cost (per sq m of area)
- Power efficient , including at component level
- Green energy

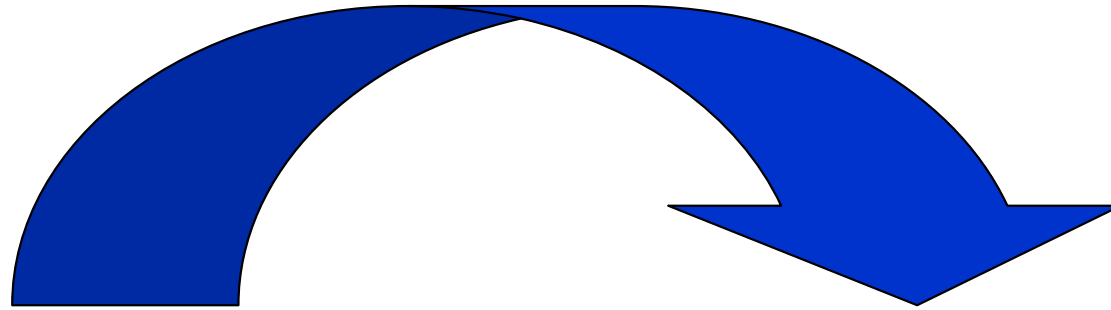
Wireless communications drivers

- Bandwidth – adaptive communications
- Polarisation MIMO (multiple input multiple output)
- Multiple beam technology
- Power optimisation – mobile environment
- Low cost

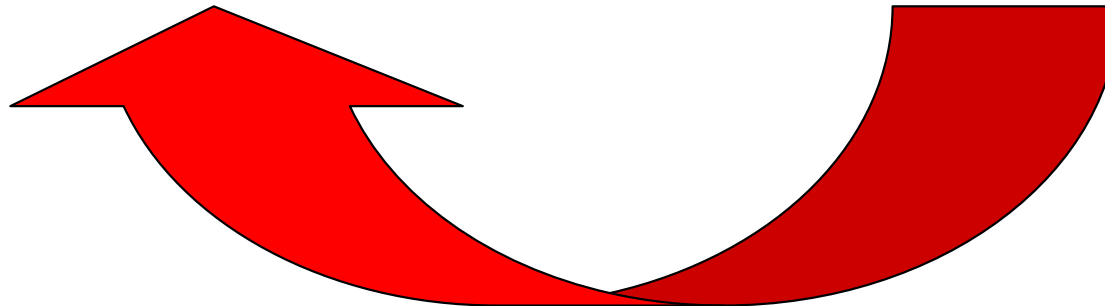
Imaging

- Medical, security, remote sensing etc
 - High resolution- bandwidth
 - Can need low noise front ends
 - Calibration techniques
 - Real time processing
 - Cost

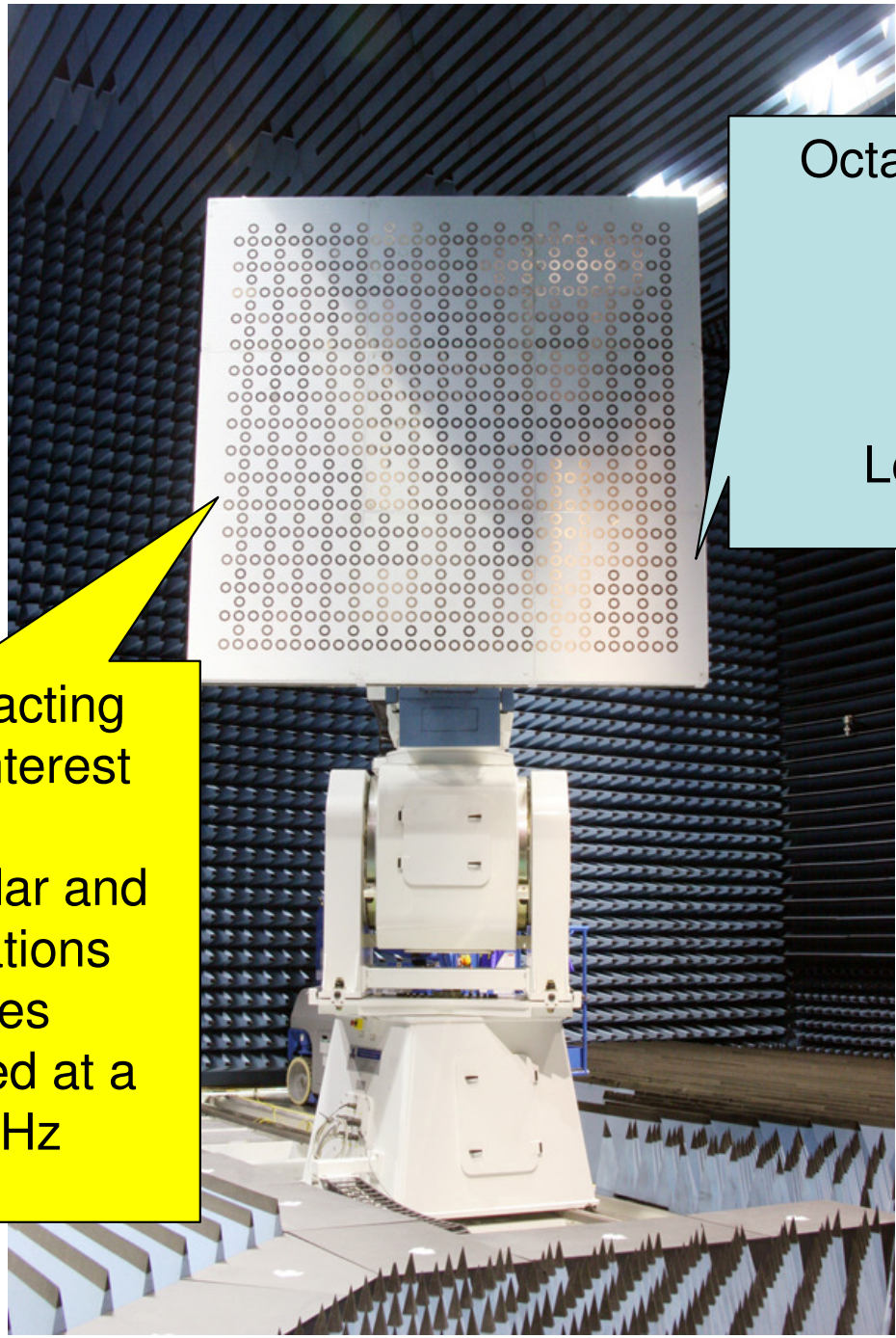
E.g. Sensor technologies



Other applications;
communications,
imaging , radar etc



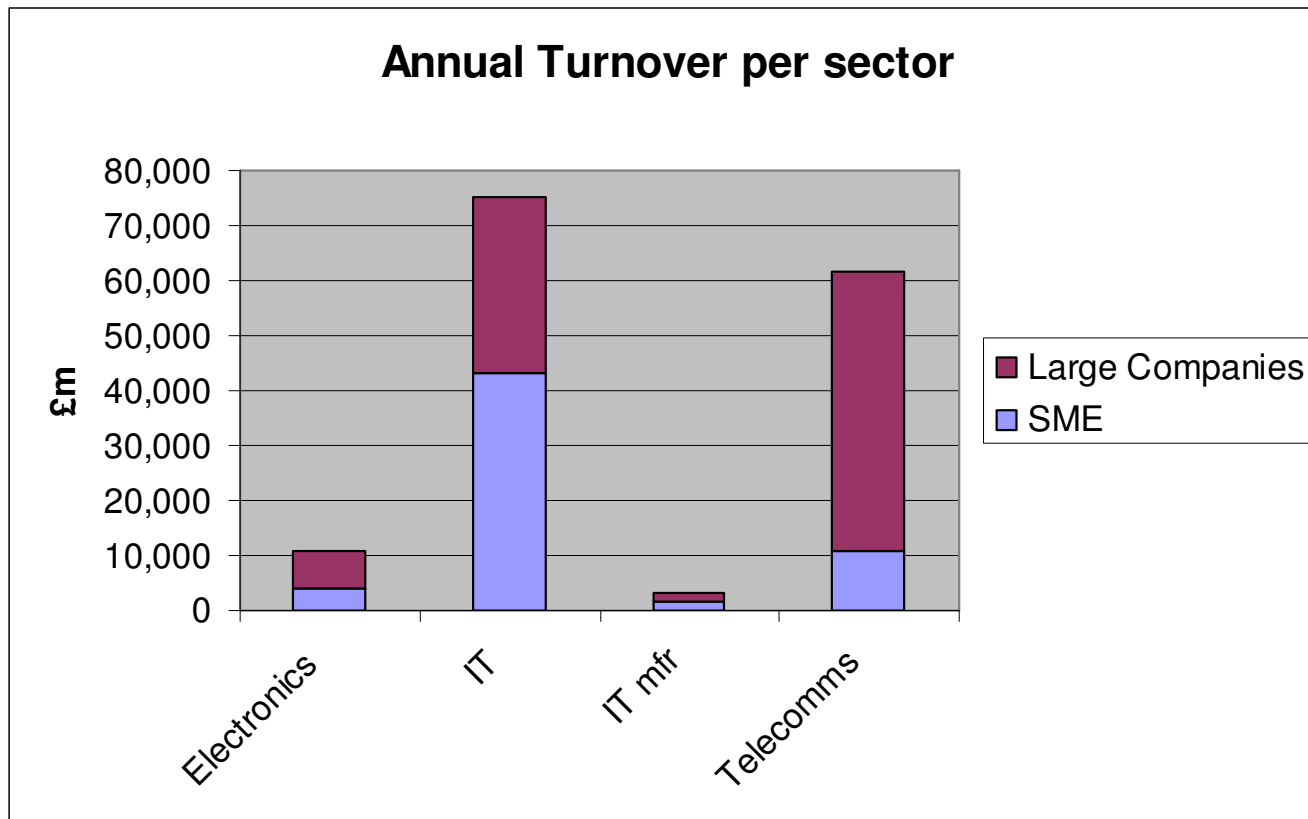
Digital processing,
Green energy etc



Octagonal Rings Antenna
(ORA)
Flat-plate
3;1 bandwidth
Dual polarisation
Low cost production

Already attracting
significant interest
from:
Imaging , radar and
communications
companies
Demonstrated at a
tens of GHz

SME and Large Companies



Source: UK semstats 2008

Engagement

- Profile raising
- Strategic partnerships
- Use of “seedcorn” projects- enables SME involvement
- Two way dialogue

Summary

- Development and build of SKA requires strong engagement with industry
- Two way relationship-
 - technology forecasting
 - Spin out opportunities
- Procurement : SKA will be a major consumer in key technologies such as IT, communications and green energy production
- Impact on high growth related industry

- The flexibility and capability of the SKA will generate whole new ways of doing radio astronomy science
 - To maximise this will draw on major developments elsewhere
 - Text mining?
 - Multi-media developments?
 - Developments in visualisation?
 - etc