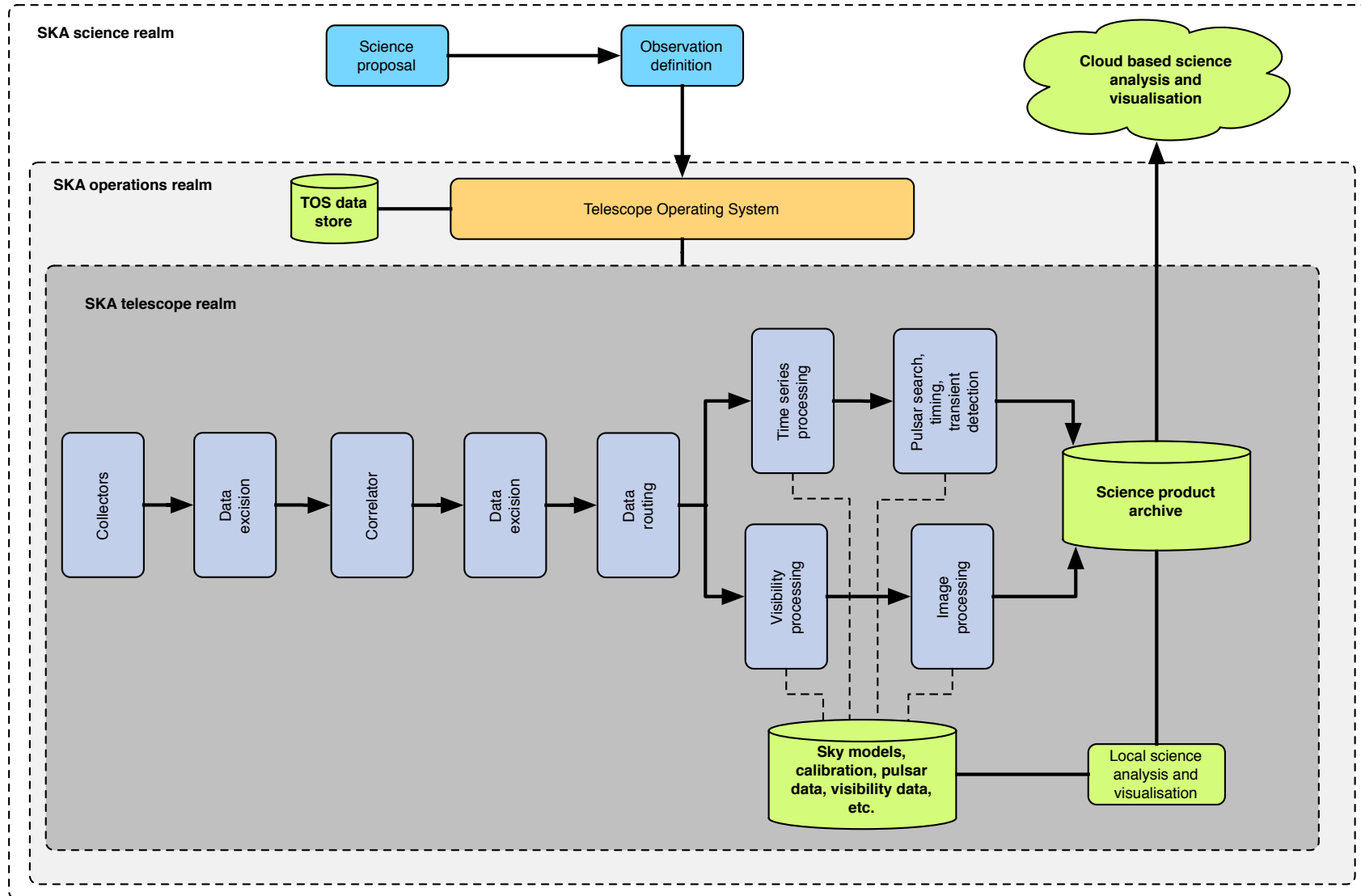# Data products for SKA and SKA-Low
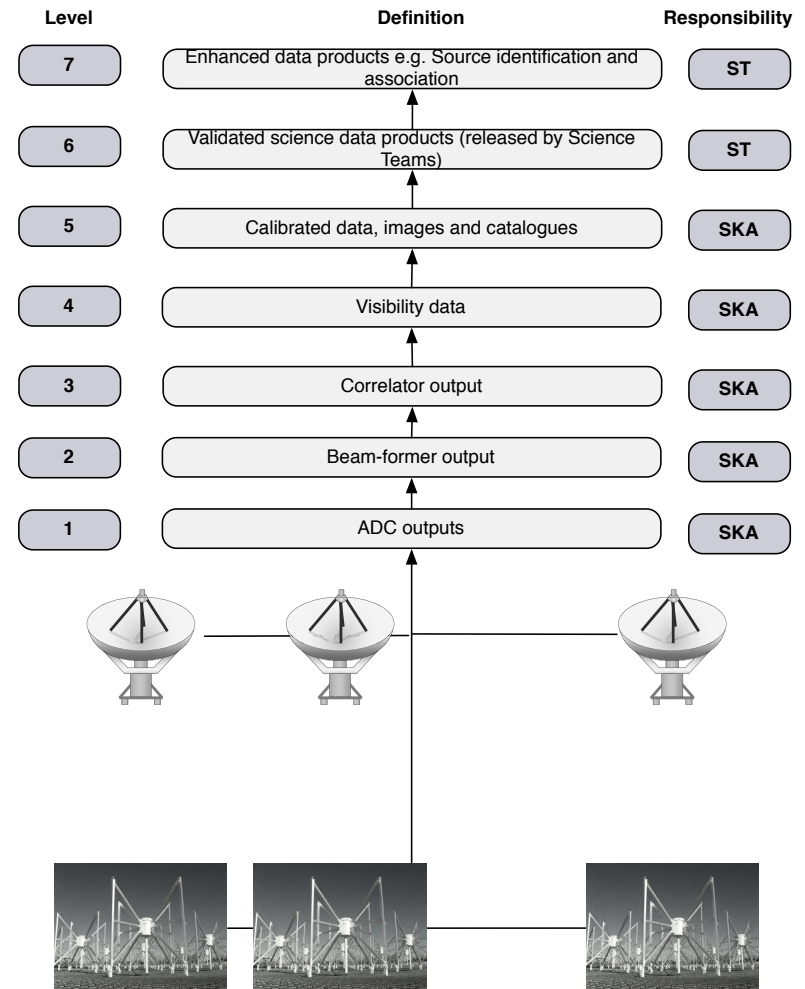
Tim Cornwell, Square Kilometre Array

Overview of science flow

Observatory boundary

- SKA observatory responsible for all data products up to and including level 6
  - Assume in baseline
- Regional Science Centres responsible for level 7
  - Assume not in baseline
- SKA Observatory responsible for data distribution system

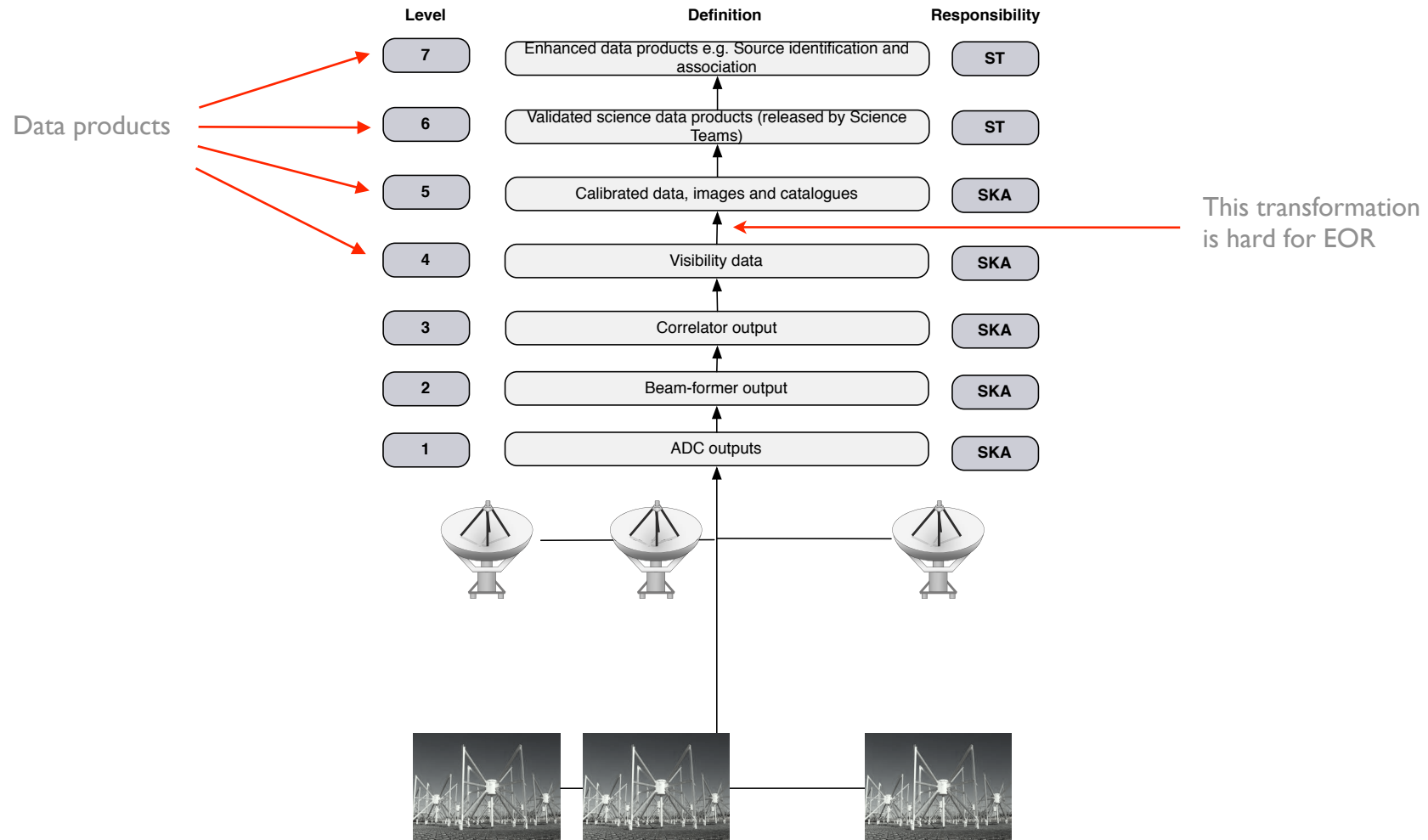| Level	Definition	Responsibility
7	Enhanced data products e.g. Source identification and association	ST
6	Validated science data products (released by Science Teams)	ST
5	Calibrated data, images and catalogues	SKA
4	Visibility data	SKA
3	Correlator output	SKA
2	Beam-former output	SKA
1	ADC outputs	SKA

Who does what and where?

- Evolving model
  - Common and large processing centralised on SKA computers
  - Specific and small processing centralised on RSEC computers
- Note that this model does not cut costs, it just redistributes them.
- Same software (or more) has to be written
- Does this work for EOR?

EOR

- EOR is an experiment

  – We don't know how to do it (at SKA1 sensitivity)

- No point in freezing processing prematurely

  – Find out how to do it and then make it efficient

  – Likely to take years

- Direction dependent calibration and imaging vital

Data products and transformations

Level	Definition	Responsibility
7	Enhanced data products e.g. Source identification and association	ST
6	Validated science data products (released by Science Teams)	ST
5	Calibrated data, images and catalogues	SKA
4	Visibility data	SKA
3	Correlator output	SKA
2	Beam-former output	SKA
1	ADC outputs	SKA

Data products

This transformation is hard for EOR

Exploring the Universe with the world's largest radio telescope

What should SKA provide?

- Standard framework for ingesting, editing data
- Tools for EOR processing
  - Flexible DDE framework, including imager and solver
    - AW Snapshots or better
  - Capable of handling SKA data volumes
- Embed EOR scientists in SKA computing
  - Contra ASKAP "tell us the algorithm"
  - Contra LOFAR "send us the calibrated data"