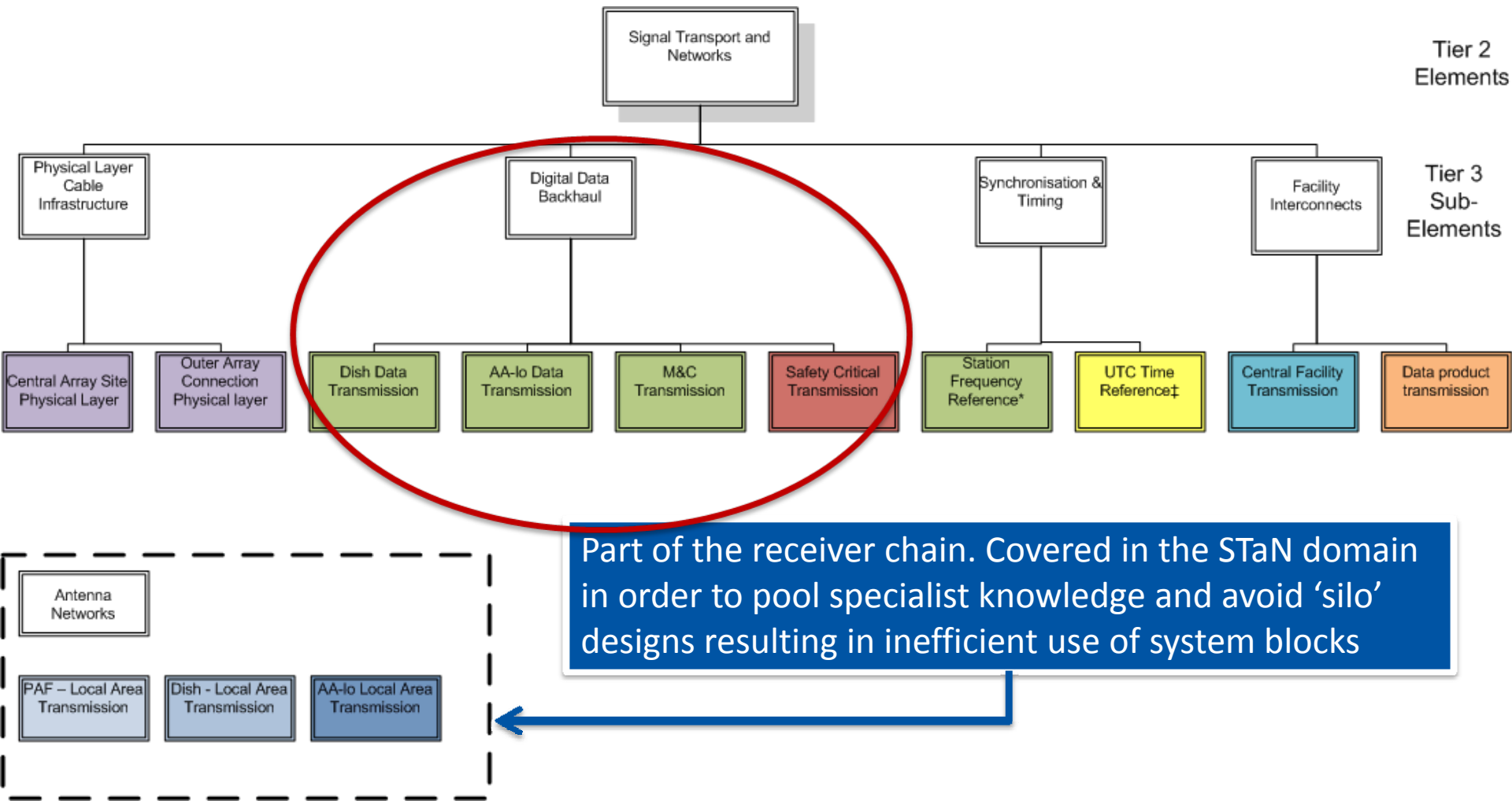




# Digital Data Back Haul System Context

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# Signal Transport & Networks Product Tree



Part of the receiver chain. Covered in the STaN domain in order to pool specialist knowledge and avoid 'silo' designs resulting in inefficient use of system blocks

# The nature of the SKA Data Transport networks



- A radio telescope can accept a lower availability than a commercial network.
- The data is not, in its own right, valuable.
- The network is deterministic.
  - That is to say the data always flows from one known location to another. The data rate and the routing remain constant.
- The data traffic is unidirectional
  - (this excludes, of course, the clock and M&C functions)

# The nature of the SKA data transport requirements



- The data rates are large
- The network does not produce revenue.
- Timing is critical
- The removal of a dish, or station from a radio telescope array will not prevent observations from taking place.
- Observatory, station and dish system environment has particular and peculiar requirements



## Data Network

- Digitised signals from telescope elements and the output of beamformed stages
- Digital optical transmission
- Point to point links
- Unidirectional transmission
- Bit rate proportional to:
  - Bandwidth, # of bits per sample and # of beams

# Requirements and Functionality



## Data Network

- Working Assumptions
  - 24 Gbps per dish = **6 Tbps total**
  - 1216 Gbps per AA station = **60.8 Tbps**
  - 929\* Gbps per PAF = **204 Tbps**
- Resource
  - COTS implementation, IT
  - Custom design, UMAN
  - Interfaces & M&C review, CSIRO

# Questions

