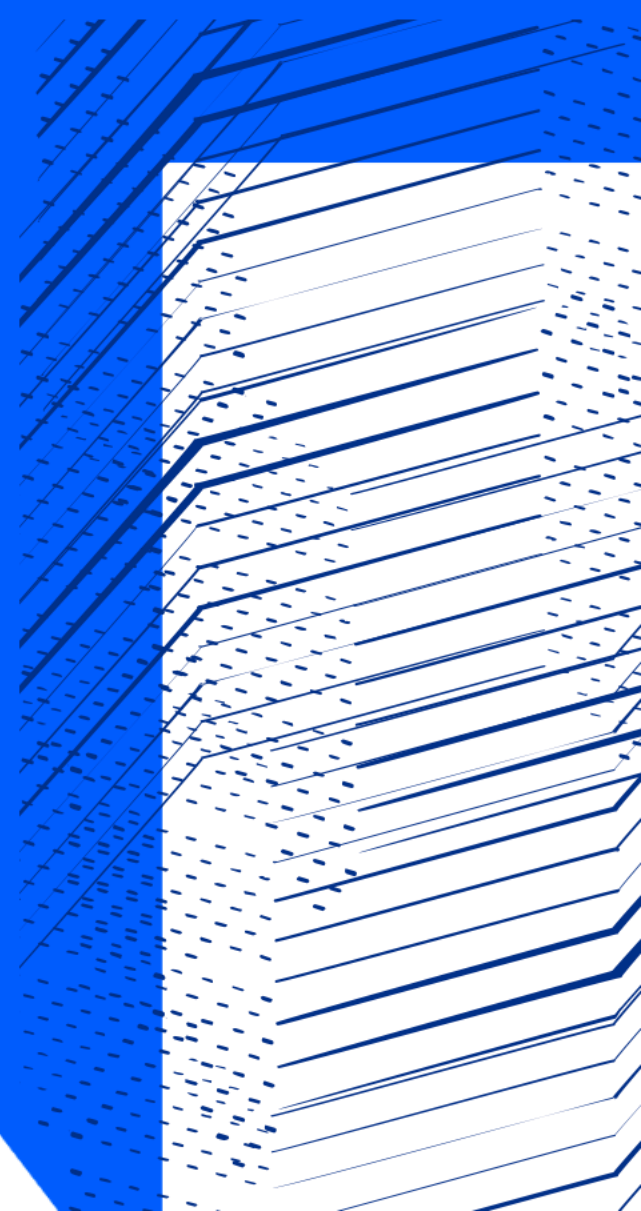




Science and
Technology
Facilities Council

Antares: an overview

Systems Division AHM May 2024



Antares: The Big Picture

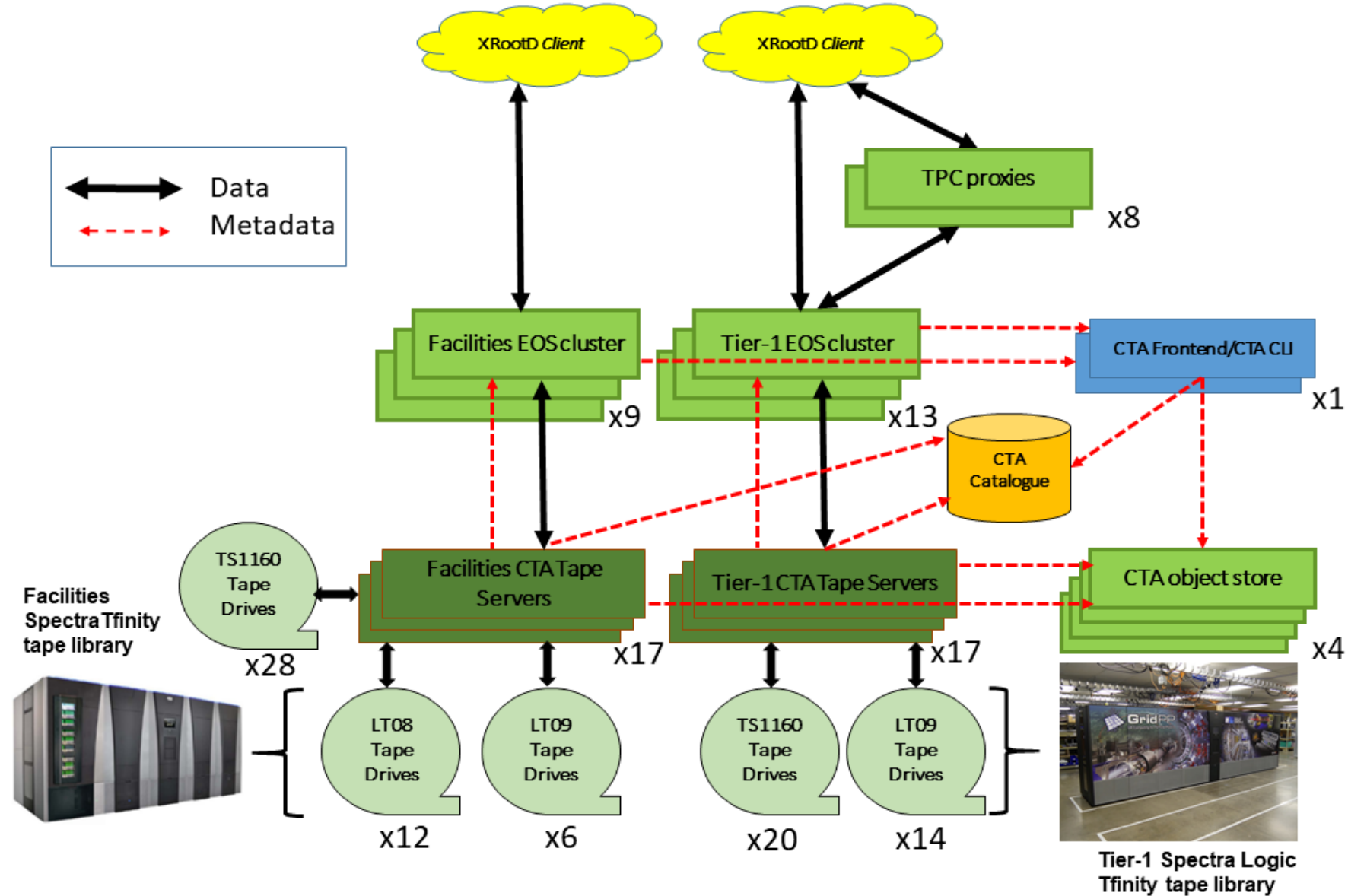
- **Tape Archive service managing Tier-1 and STFC Facilities data (~230PB)**
- **Antares: EOS + CTA**
- **EOS: Multi-protocol disk storage system**
- **CTA: The tape back-end evolved from CASTOR**
- **Replaced CASTOR WLCGTape (March 2022) and CASTOR Facilities (June 2023)**
- **Antares team: George Patargias, Tom Byrne, Maha Agilandamurthy, Atefeh Sharif, Alison Packer, Tim Folkes**

Antares components



- ***EOS***: Receives user requests, manages the namespace and an SSD buffer.
 - Tier-1 cluster: 13 x SSD nodes
 - Facilities cluster: 9 x SSD nodes
- ***CTA Frontend***: Central CTA XRootD server that accepts all archival/retrieval requests (from *EOS*) and stores them in the CTA Object Store
- ***CTA Object Store***: Backend scheduler holding archival/retrieval queues implemented as a Ceph object store
- ***CTA Catalogue***: Backend CTA DB holding the tape file catalogue
- ***CTA Tape Servers***: hosts controlling tape library drives via FC

Antares: Current setup



Antares access

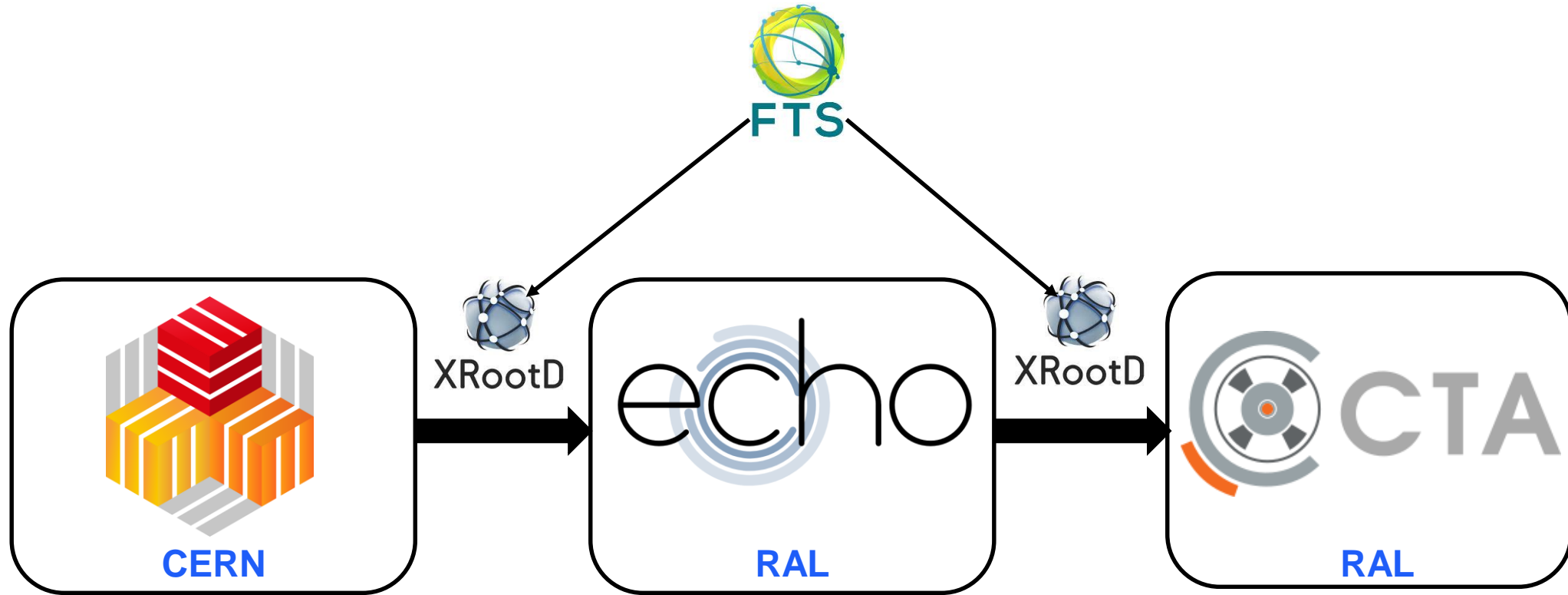
➤ Tier-1 user requests are authenticated via GSI/VOMS

- An attempt to find the user's DN in the grid-mapfile is made
- If DN is not found, VOMS attributes are extracted from the client's x509 proxy and mapped to an EOS user

➤ Facilities user requests are authenticated via SSS

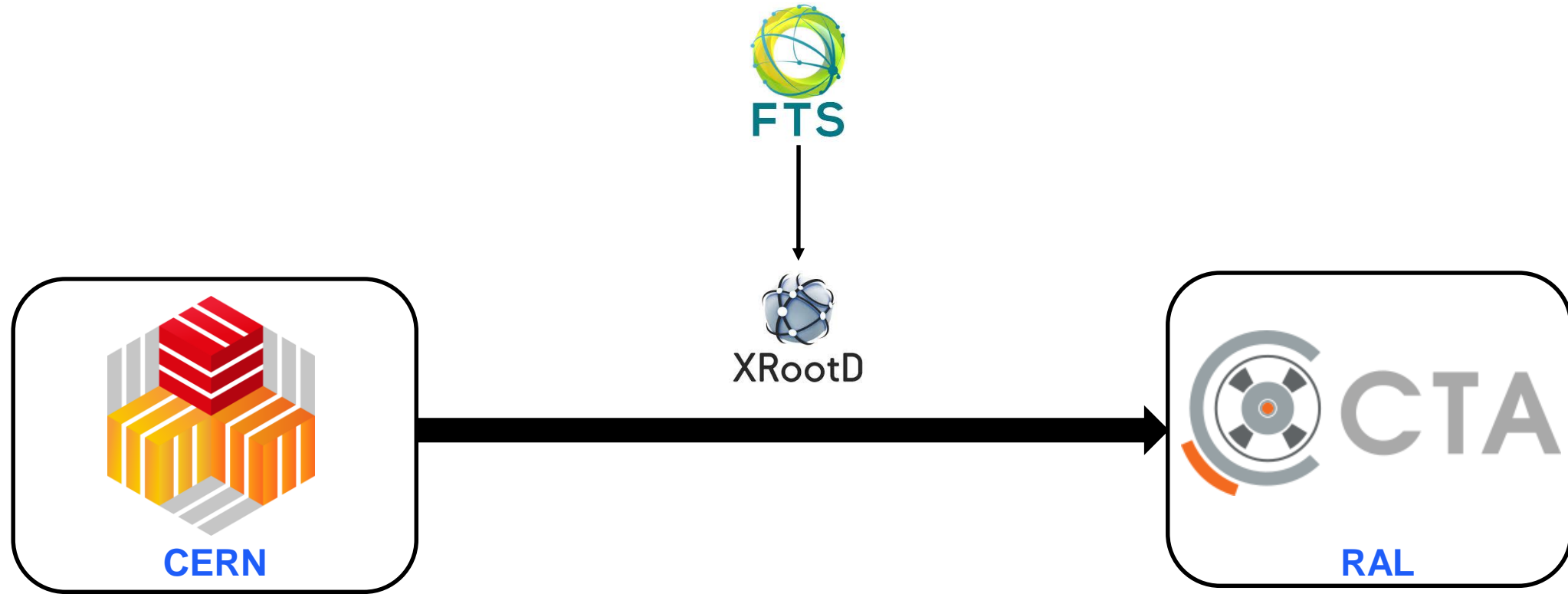
- Facilities team hosts (StorageD, ET), DAaaS hosts etc need to present to Antares a valid SSS key mapped to an EOS user

Antares Data transfer routes 1



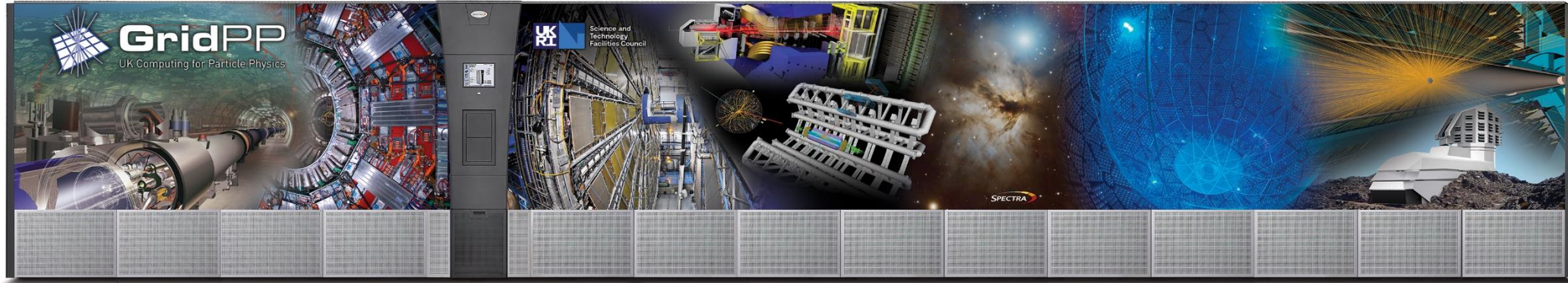
By far the most widely route used by ATLAS/CMS/LHCb

Antares Data transfer routes 2



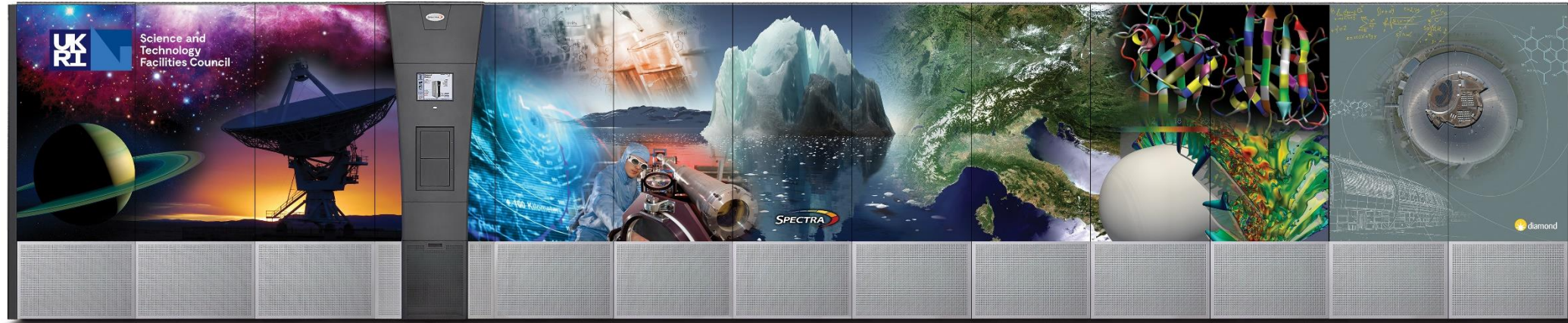
Alternative route for LHCb and smaller VOs

Tier-1 tape library (Asterix)



- **Total of 15 frames - longest in Europe!**
- **20 x TS1160, 16 x LTO9 drives**
- **Capacity: 250PB**

Facilities tape library (Obelix)



- **13 frames**
- **28 x TS1160, 17 x LTO8, 6 x LTO9 drives**
- **Capacity: 212 PB**

Antares usage (Tier-1)

VO	Data volume
ATLAS	62 PB
CMS	17.8 PB
LHCb	19.2 PB
ALICE	1.7 TB
Other	20.6 PB

Antares usage (Facilities)

VO	Data volume
CEDA	28 PB
DLS	65.5 PB
JASMIN	14.3 PB
CLF	36.2 TB
RFI	10.6 TB