



Integrating High Resolution Solar Physics

Big Data Storage

The KIS Science Data Centre (SDC) case

2nd SOLARNET Forum Meeting for Telescopes and Databases
26 Nov 2020

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824135.



- Deliverable D2.22: Report on Big Data storage possibilities
- In 1st SOLARNET Forum Meeting: Report on our plans for development of a Science Data Centre at KIS -> **We got approved 5 years+ funds (starting 2021)**
- Today, SDC colleagues (Cale and Petri) will report on our concept to deal with storage and management of large data volumes from ground-based solar observatories

SDC Context



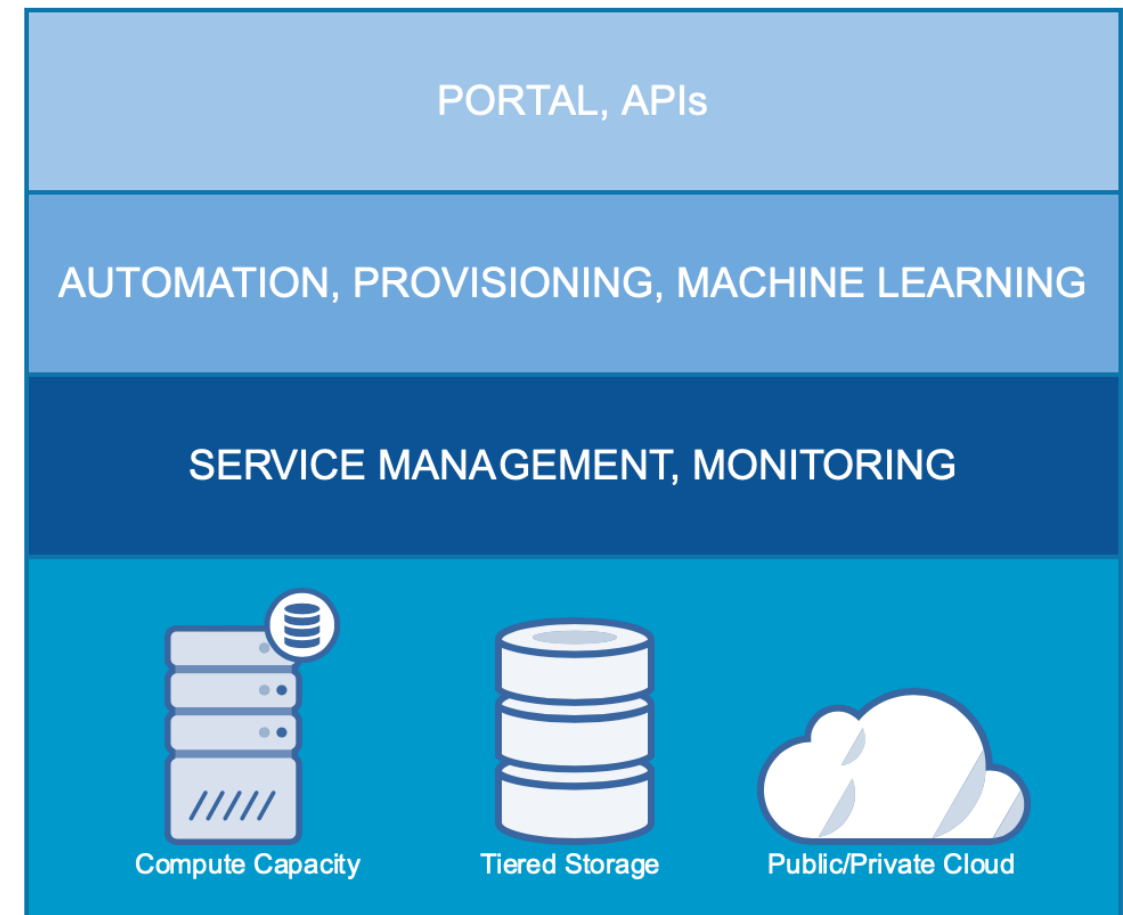
SDC @ KIS/KIT

- Tiered storage
 - Will start with disks only
 - Use cloud for scaling
- Main compute resources @ KIS/KIT

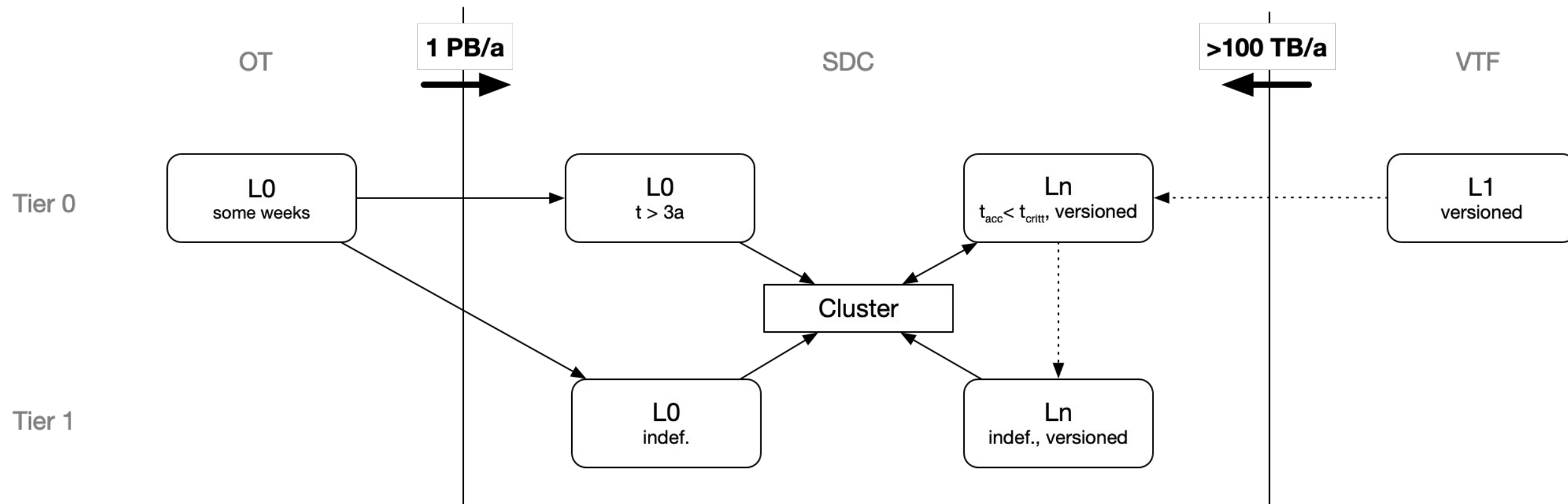
SDC IT-Framework



- Data governance (policies, standards etc.)
- Data lake (usage and cost optimization)
- Containerized applications
- User support (portal, FAQ, Docs)
- Public cloud for scalability (Amazon, Microsoft, Google)



Storage Structure @ SDC & Dataflow



Rucio

rule based data-distribution for SDC



- Currently:
 - mainly OT-data (GRIS, Chrotel, LARS, BBI) using an object-store in Mongo-DB
 - <https://www.sdc.leibniz-kis.de>
 - single-site, no tiers, proprietary, gateways almost all archives need to be developed
- Switch to Rucio (suggested by KIT)
 - + easily replicate between different sites with varying retention times
 - + keep track of data-usage (couple DOIs to collections, guarantee storage times > 10a)
 - + synergy effects within astronomy (SKA, ESCAPE, ...), easy to integrate with VTF
 - + abstracts storage layer, open source
 - no native embargoes
 - steep learning curve, no *HowTOs* & documentation not suitable for beginners (but very helpful developers)