Archivi IA2: il nuovo approccio ai dati

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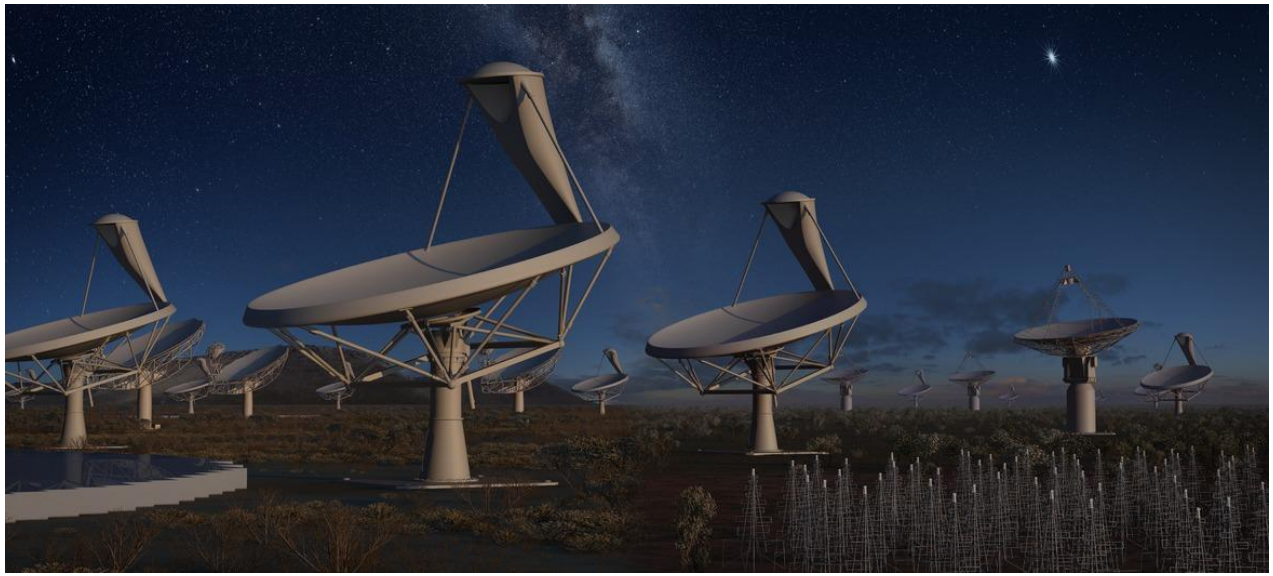
In behalf of the IA2 team

The Italian Astronomical Archives (IA2)

Aims to:

- Support the Italian (and International) community in the data storage, curation and preservation;
- Support the astronomical user community in the data retrieval (Web Interfaces and VO services);
- Support the astronomical user community in the data reduction and sharing (User Space)
- Support the user community in the collaboration tool usage.



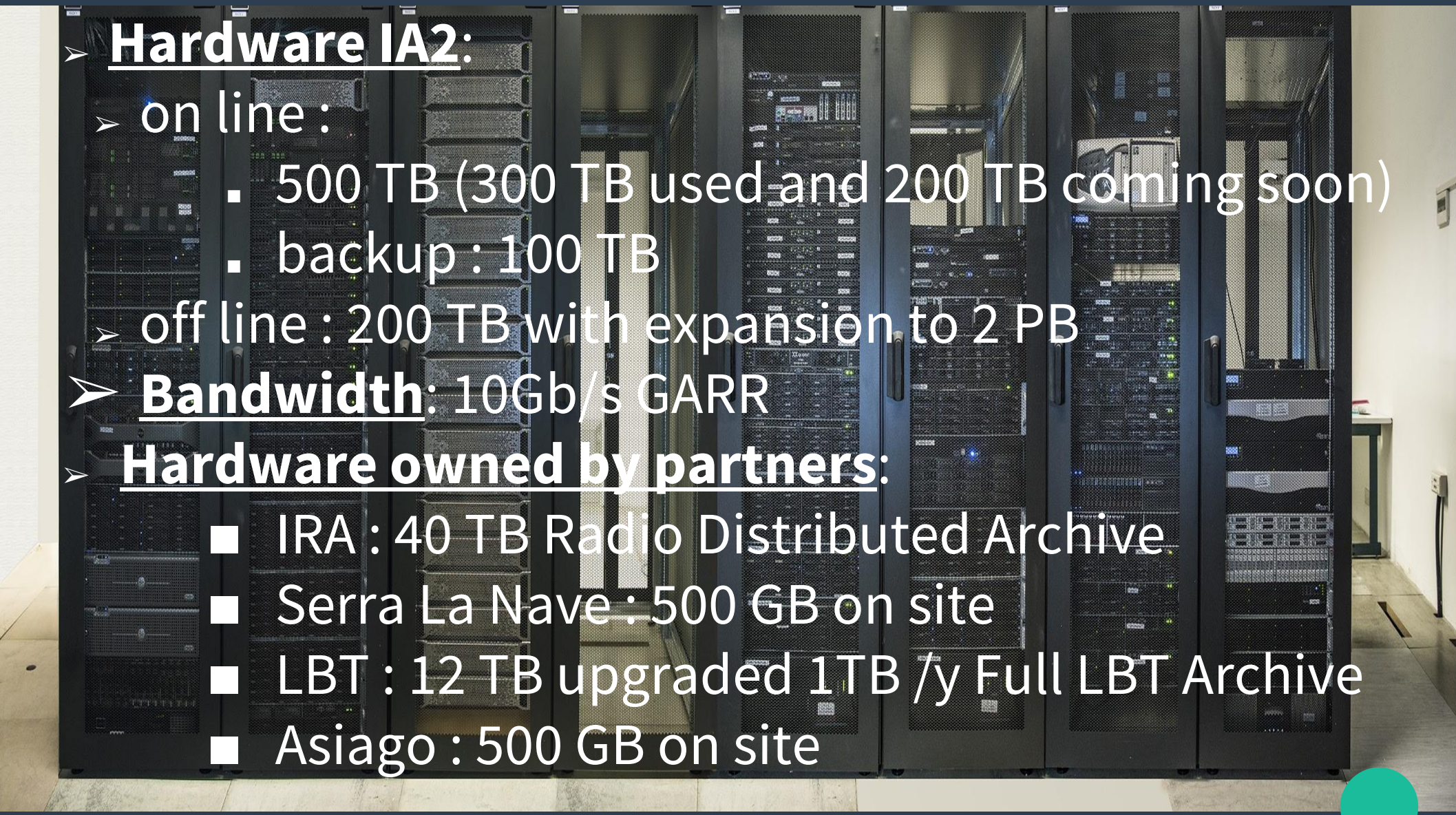
"IA2 currently is the only e-infrastructure in INAF (from PT 2017-2019)"

The data
storage, curation and preservation

Telescope's data handled/hosted:

- TNG : all instruments
- LBT : all instruments except LBTI
- Asiago Observatory : all instruments
- Serra La Nave
- ExoClimates (simulations)
- Prisma
- Radio (Medicina, Noto, SRT)
- BaSTI
- MWA mirror (150 TB)

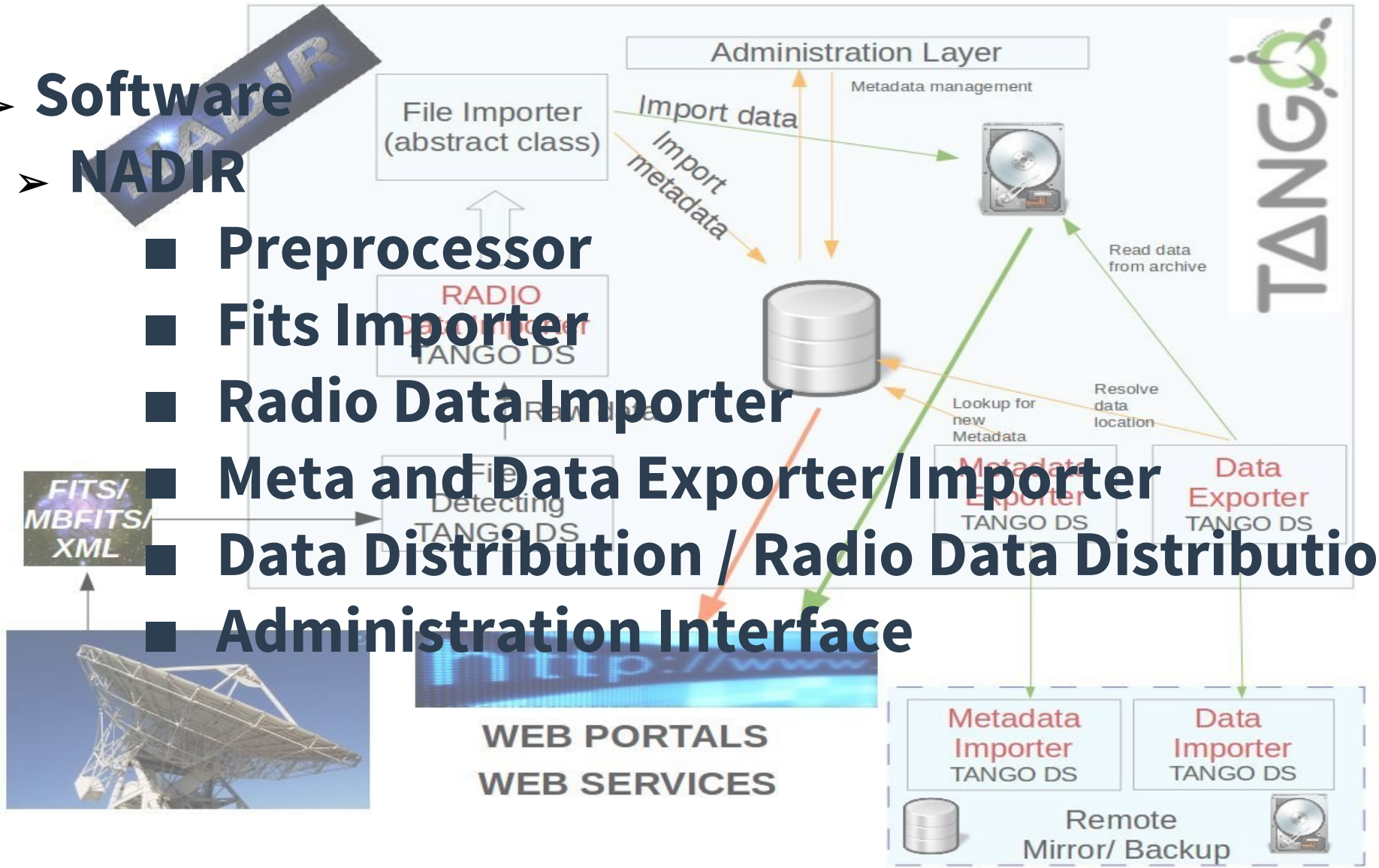
The data
storage, curation and preservation



- **Hardware IA2**:
  - on line :
    - 500 TB (300 TB used and 200 TB coming soon)
    - backup : 100 TB
  - off line : 200 TB with expansion to 2 PB
- **Bandwidth**: 10Gb/s GARR
- **Hardware owned by partners**:
  - IRA : 40 TB Radio Distributed Archive
  - Serra La Nave : 500 GB on site
  - LBT : 12 TB upgraded 1TB /y Full LBT Archive
  - Asiago : 500 GB on site

The data storage, curation and preservation

- **Software**
  - **NADIR**
    - **Preprocessor**
    - **Fits Importer**
    - **Radio Data Importer**
    - **Meta and Data Exporter/Importer**
    - **Data Distribution / Radio Data Distribution**
    - **Administration Interface**



The data
storage, curation and preservation

- **Software**
  - **External tools (online):**
    - **NGAS for MWA**
    - **KAFE**
    - **OwnCloud**
- **Archive Manager (TAPE)**

Data Retrieval

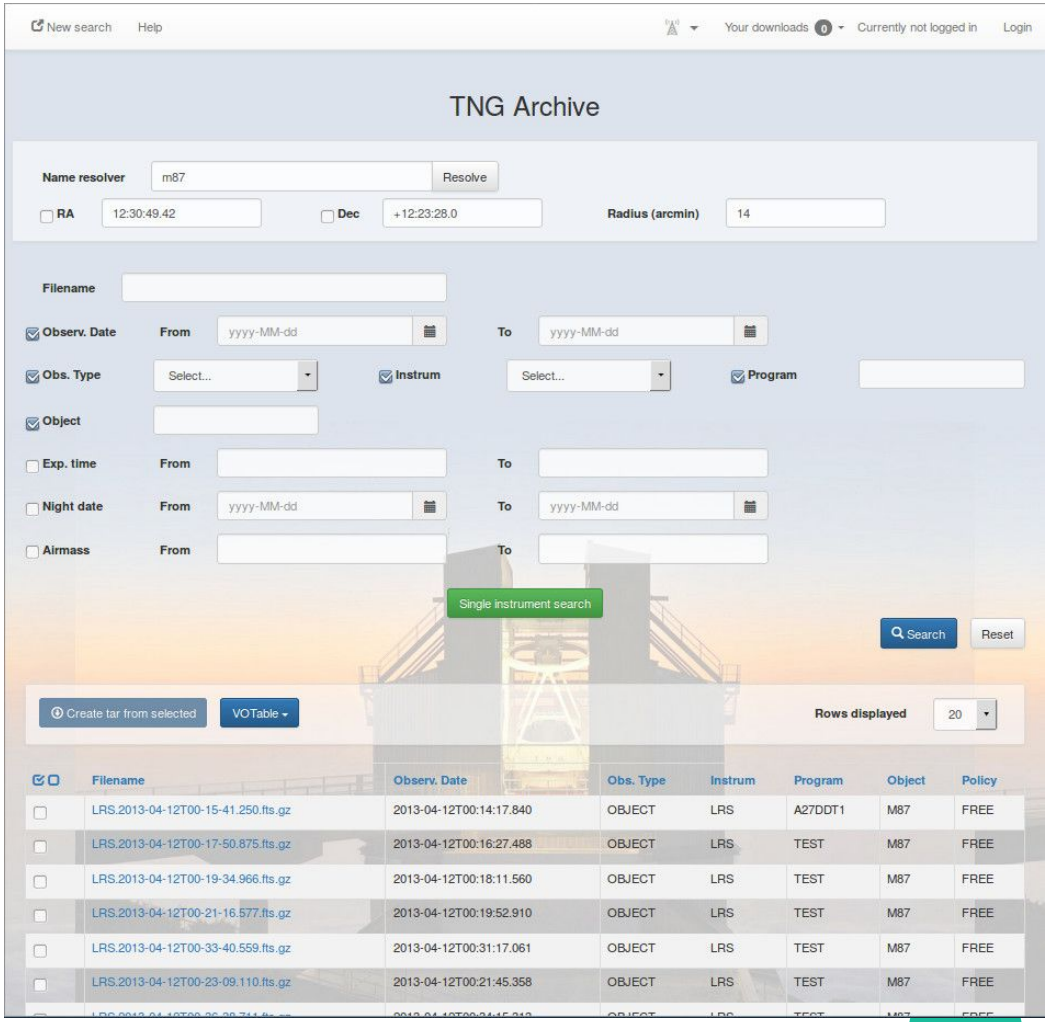
IA2 offer several services for the data retrieval:

- Web portals
- Virtual Observatory services
  - TAP
  - SSAP
  - SIAP
  - ConeSearch
- Help Desk
  - users help desk (~ 10 e/m)
  - provider help desk (~ 2 e/m)

IA2 is planning to offer the USER SPACE

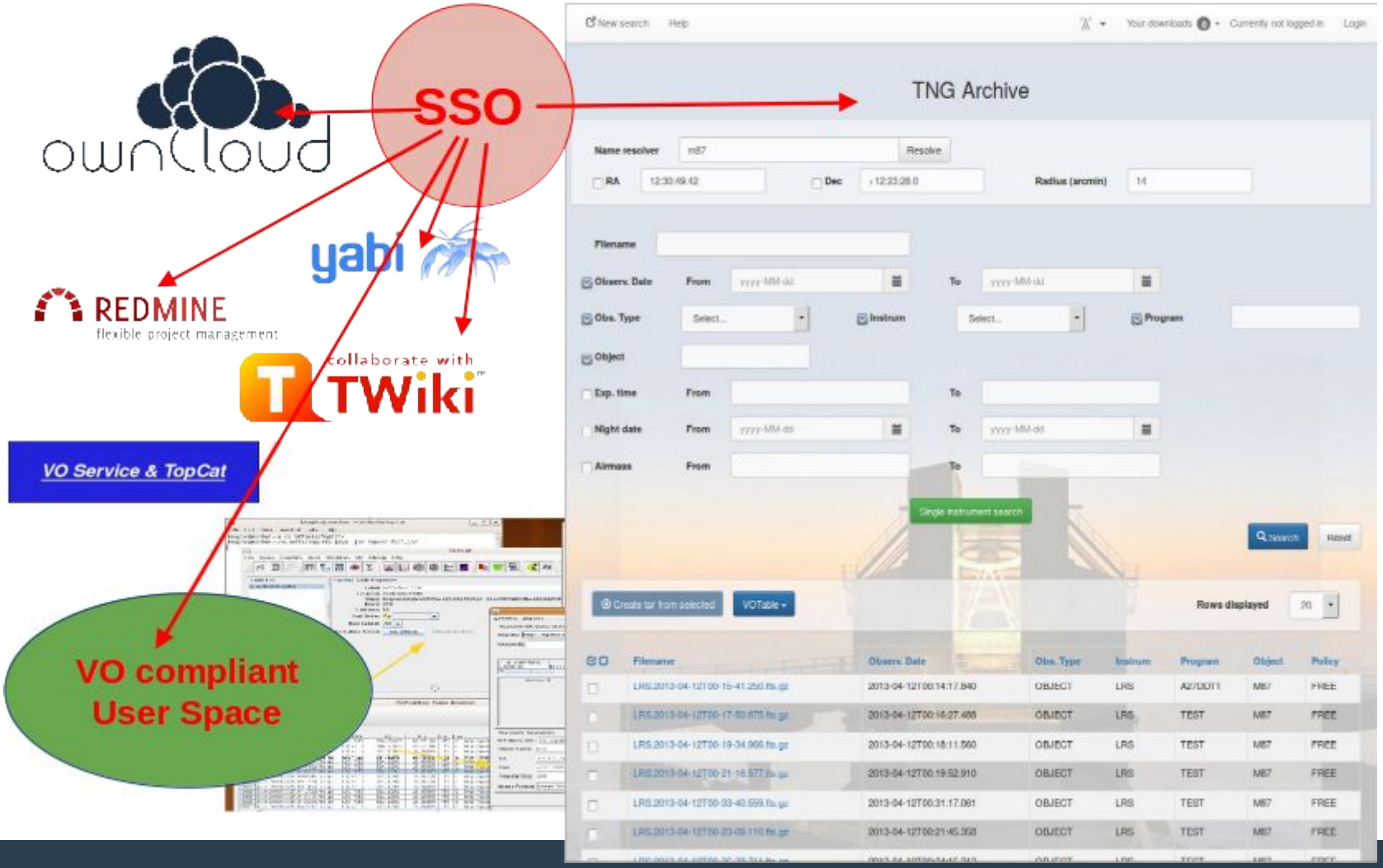
the

VO SPACE

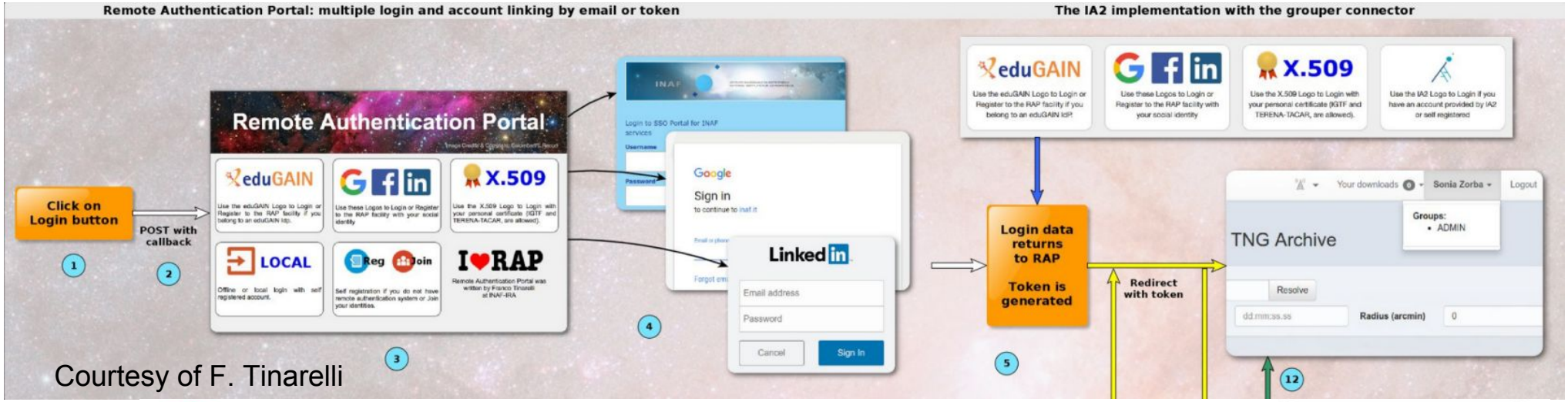


Data Retrieval : the user space

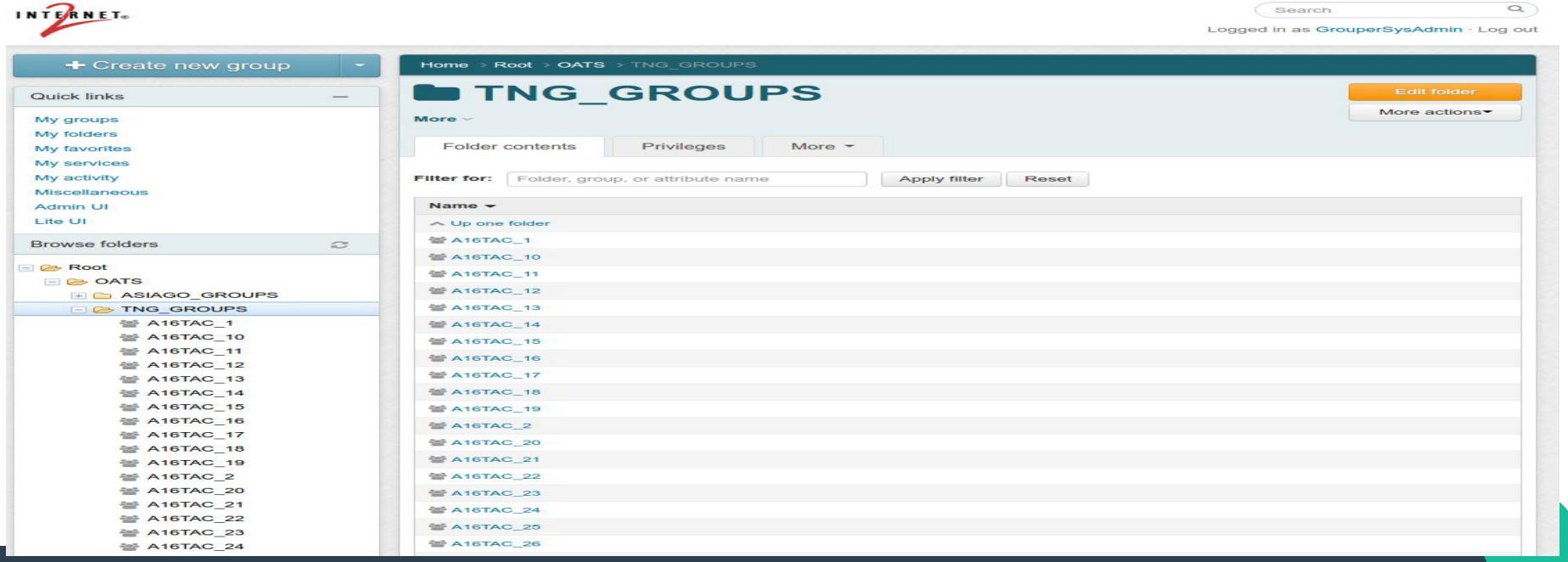
Prepare your user space



Data Retrieval : SSO



Courtesy of F. Tinarelli

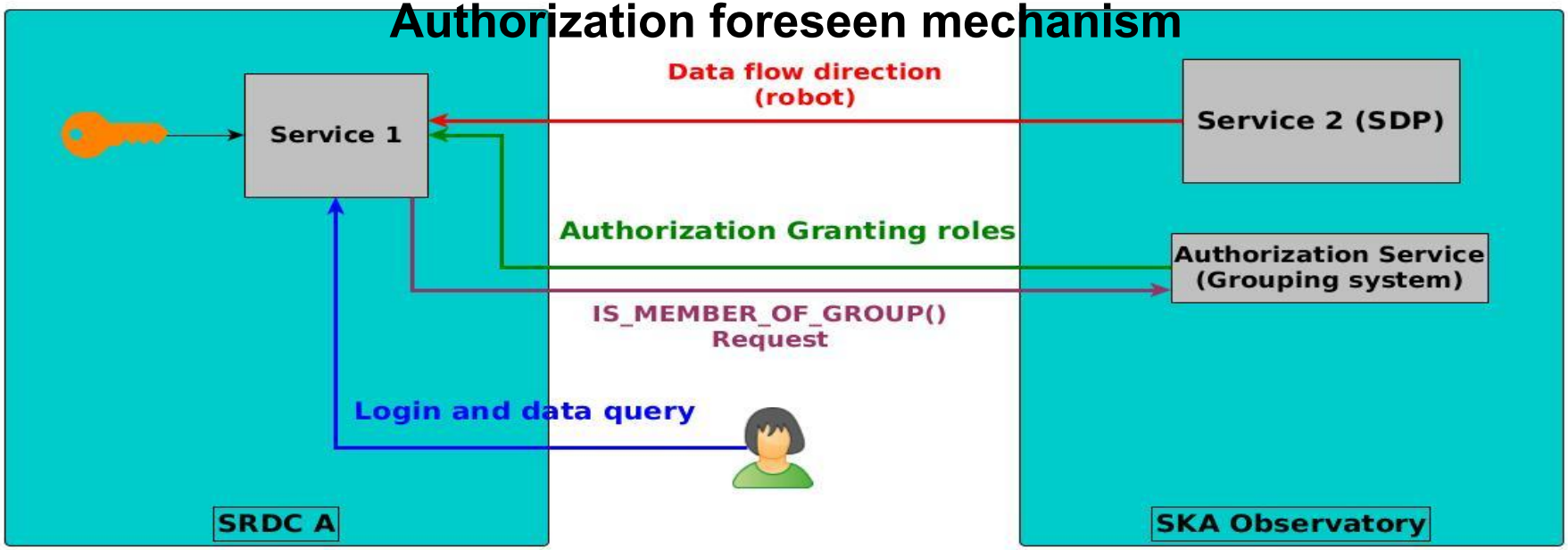


Data Retrieval and re -processing : the (VO) user space

- TAP Service
  - IA2 implementation
  - custom User Defined Functions to improve query performance
    - get_table = f(**pos**, freq,...) ;
      - **pos**= f(ra,dec,rad,..);
- ObsCore [and CAOM?] deployment
- UDF at TAP capability level or transparently mapped behind
  - yet to decide
- Datalink access to datasets
  - Access to the atomic datasets
  - planned to provide additional metadata description
    - probably requires an addition to Datalink semantics vocabulary
- VOSpace : VO Compatible user space where the users could upload, reduce, share data

Data Retrieval and re -processing : the (VO) user space

Authorization foreseen mechanism



Interoperable Authorization Requirements

1) To allow for restricted access certain resources

Only a certain set of individuals may access certain resources

2) To allow certain individuals to set the access rules on resources

The owner(s) of the resources need to manage the access rules

3) To be able to re-use granting rules between resources

Projects must authorize access to a variety of proprietary resources

4) To be able manage granting rules at a single location

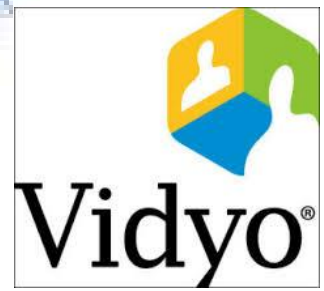
Projects should not have to update each resource on a change to a re-used grant

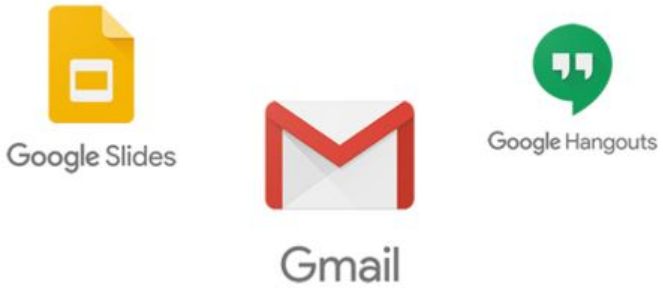
5) To be able to reference remote granting rules

Proprietary resources should not be confined to a single institution

Courtesy of B. Major

Data Retrieval : collaborative tools





Conclusions

- Data storage, curation and preservation:
  - 2PB @ 10Gb/s
  - data providers can store Telescope data and users can store their own data (Yabi, Owncloud, Google, KAFE) both in IA2 Data Center and their own facilities;
  - DOI for the dataset identification available for INAF;
- Data Retrieval:
  - users can access data via web interfaces or via VO clients and services
  - SSO;
  - authorization administration demanded to the PIs;
- Data re-processing, sharing and collaborative tools:
  - yabi for interactive pipelines;
  - collaborative tools
  - user VO Space will come soon!!