# The Italian radio telescopes archive and the VO perspective

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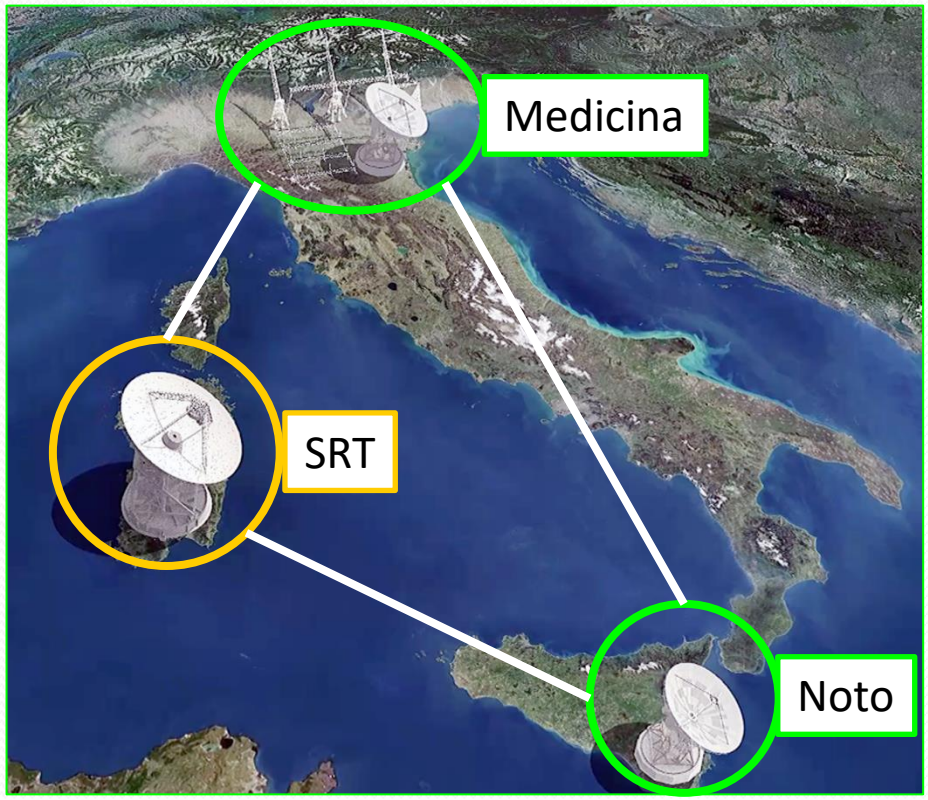
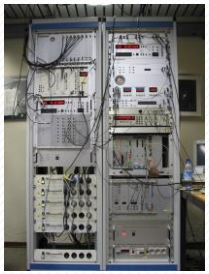
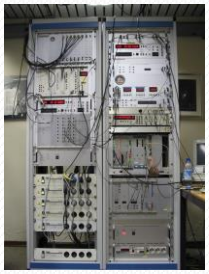
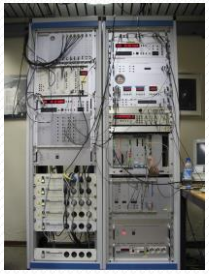
# The Italian Radio Telescope Network

- INAF currently manages three fully-steerable radio telescopes
- Harmonization and coordination of efforts and resources on a national basis









# Single Dish

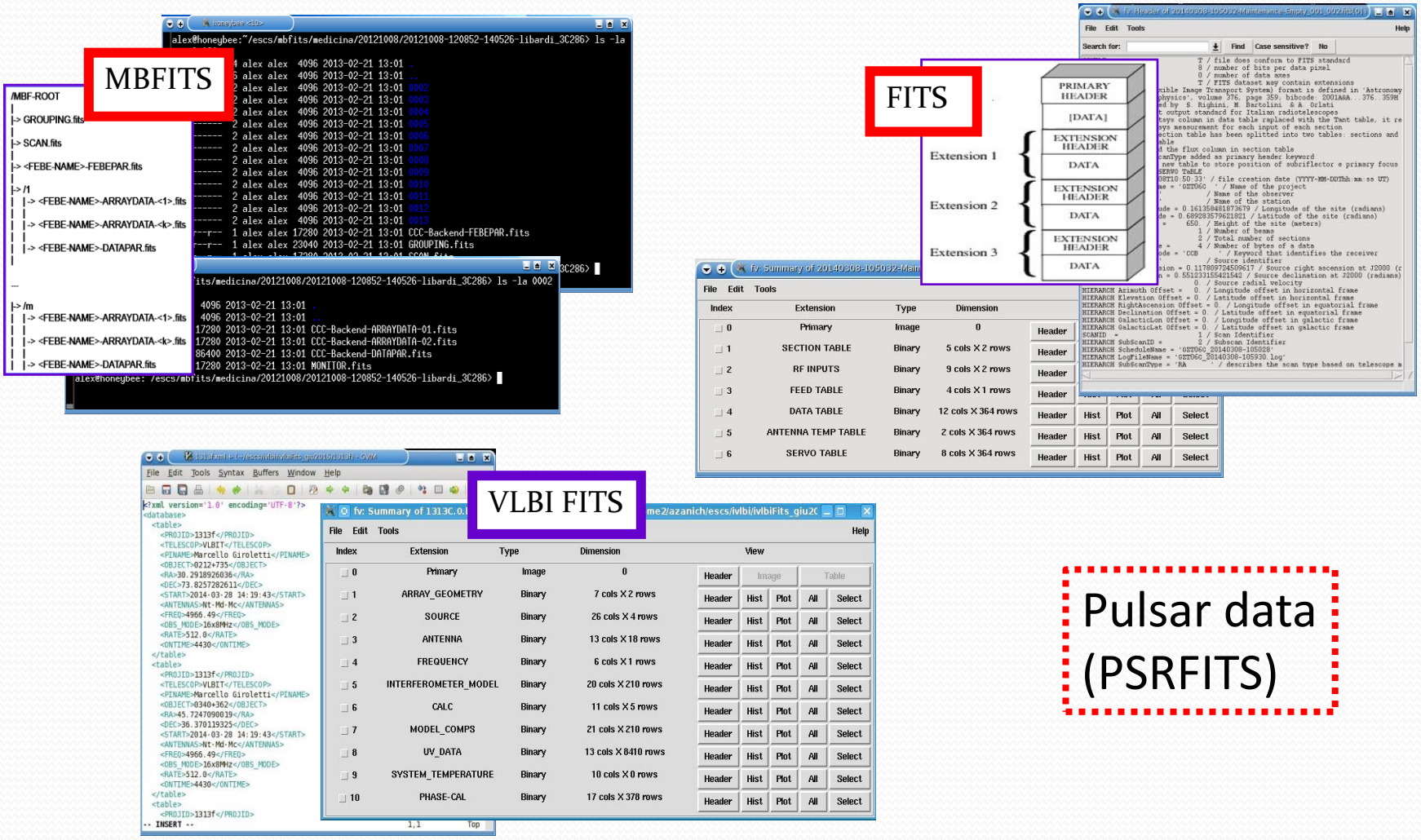

# Very Long Baseline Interferometry

# The present @ SRT, Medicina, Noto

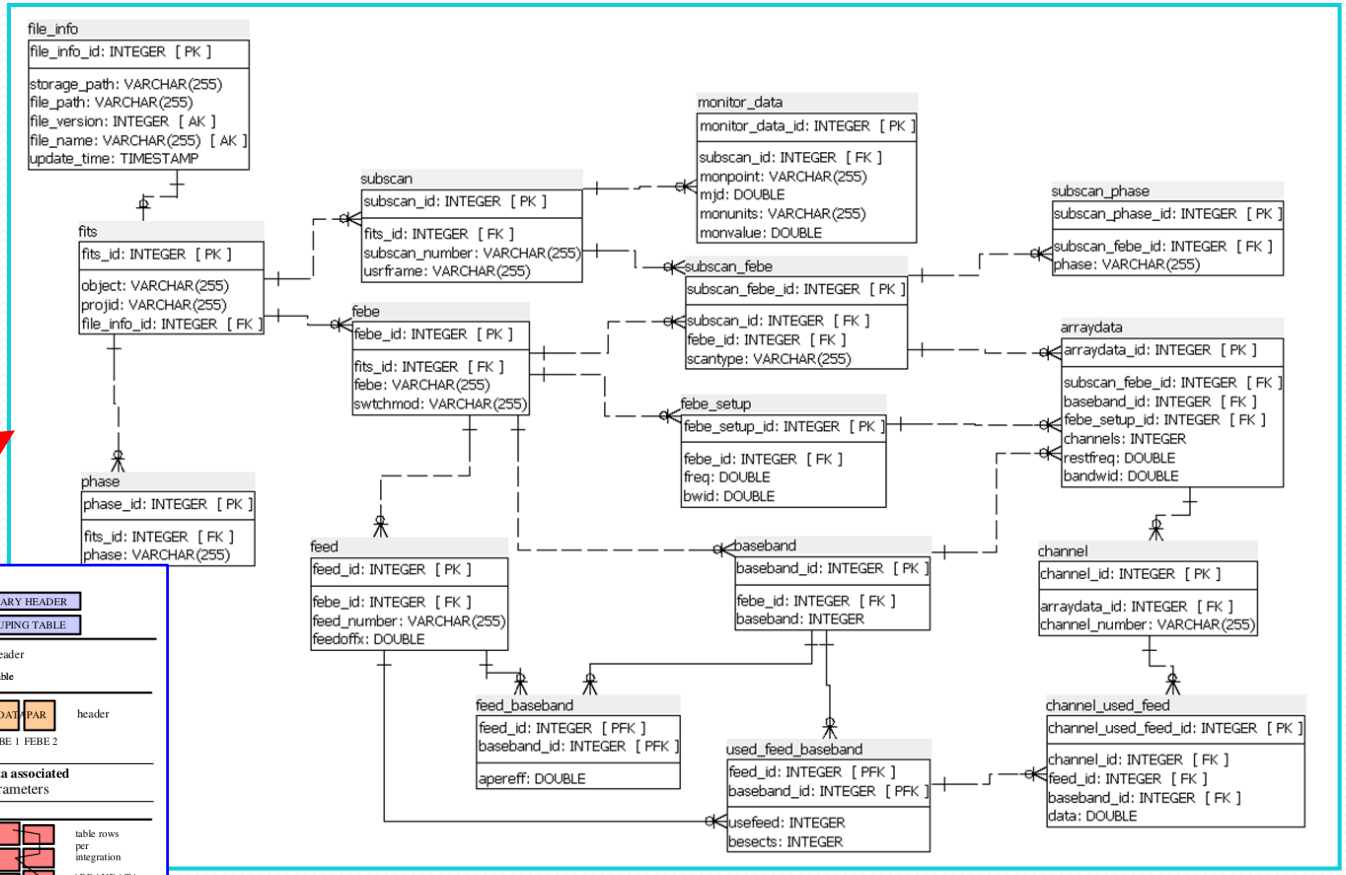
- Common Single-Dish Control System (DISCOS): integrated backends, common data format
- «Italian» VLBI Network experiments (EVN subarrays + others) quite common

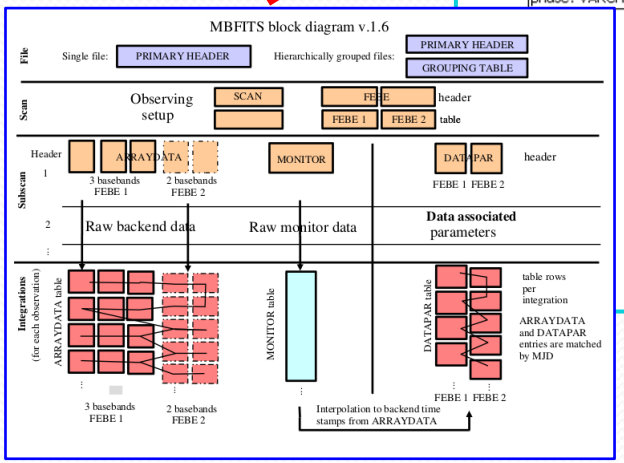
⇨ A public radio archive

# Data formats @ SRT, Med, Noto



# A common data model



# Astronomical data preservation

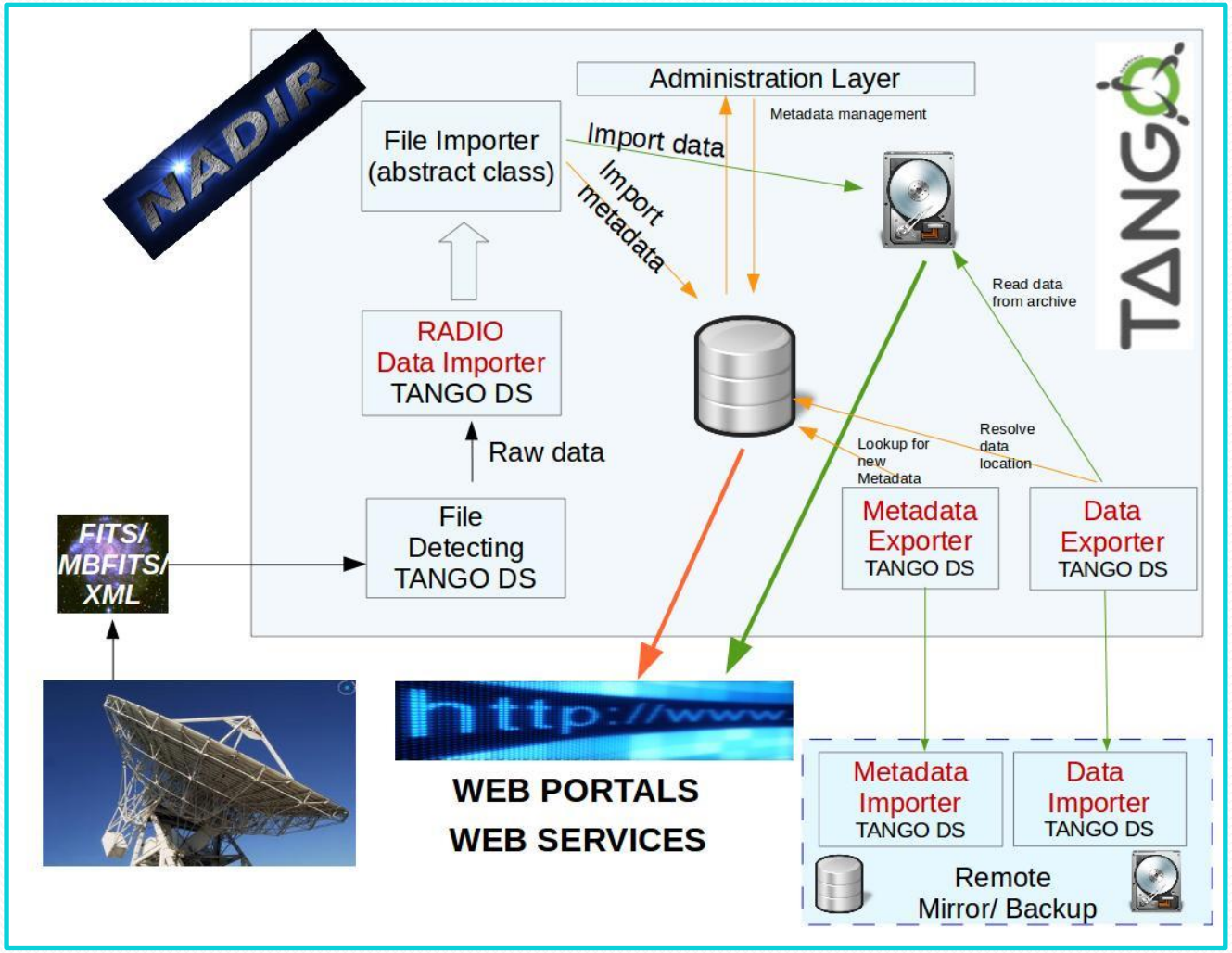
Observations comprise:

- The scientific exposures
- The [data+instrument+site] metadata
- The observing schedule
- The observing and telescope(s) logs

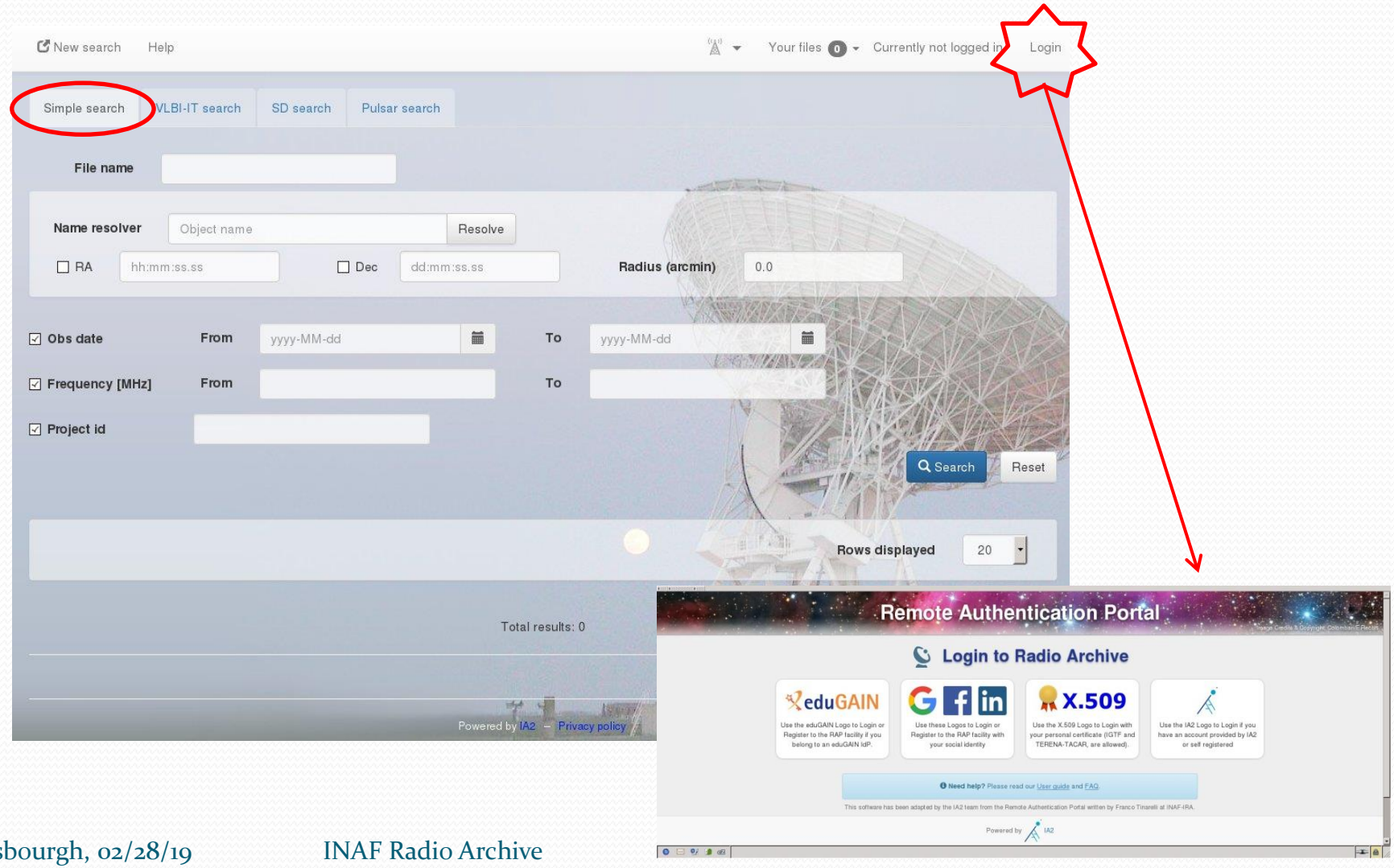
All this information is archived to guarantee data reuse, preservation and curation

⇨ **scientific exploitation**

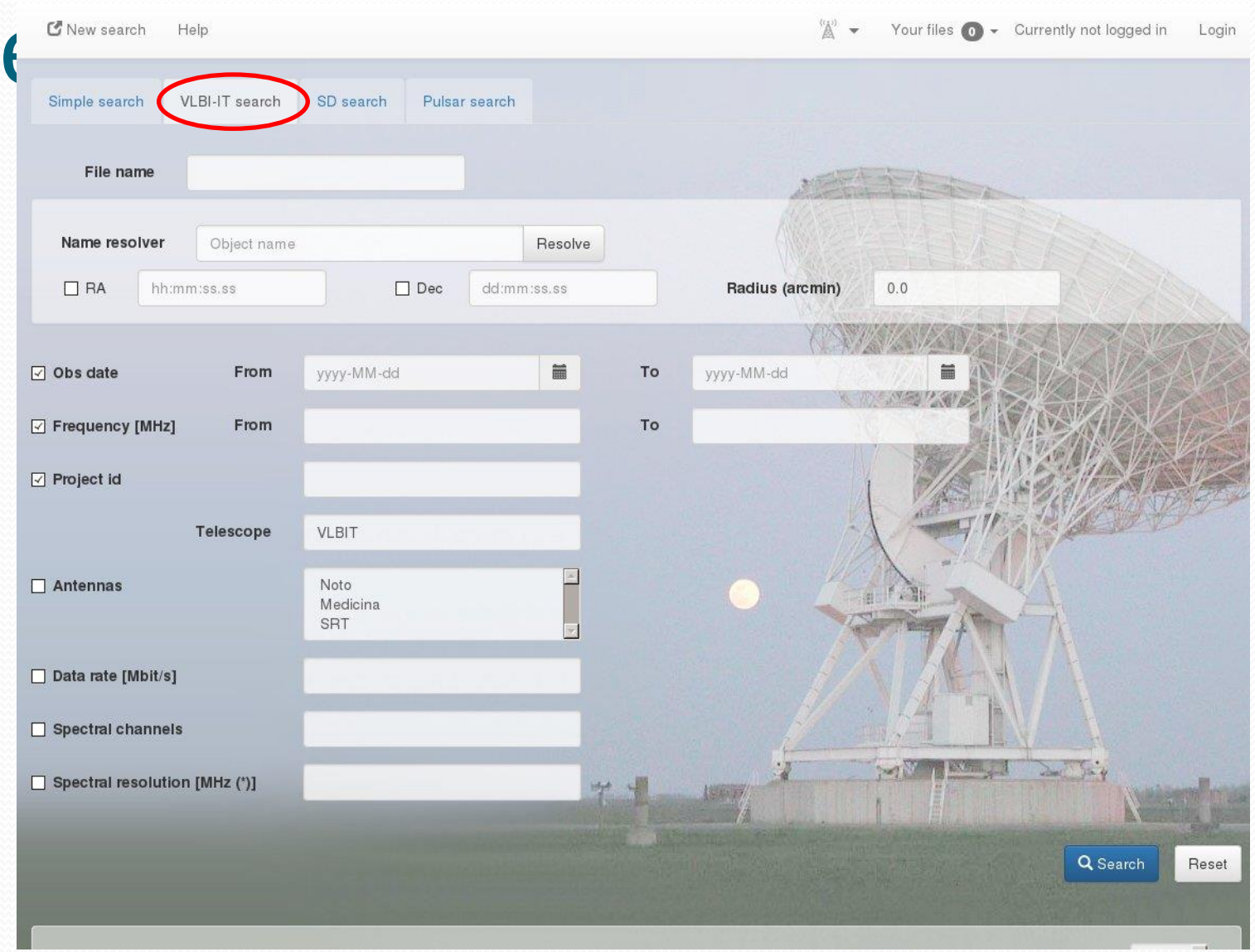
# The radio archive architecture

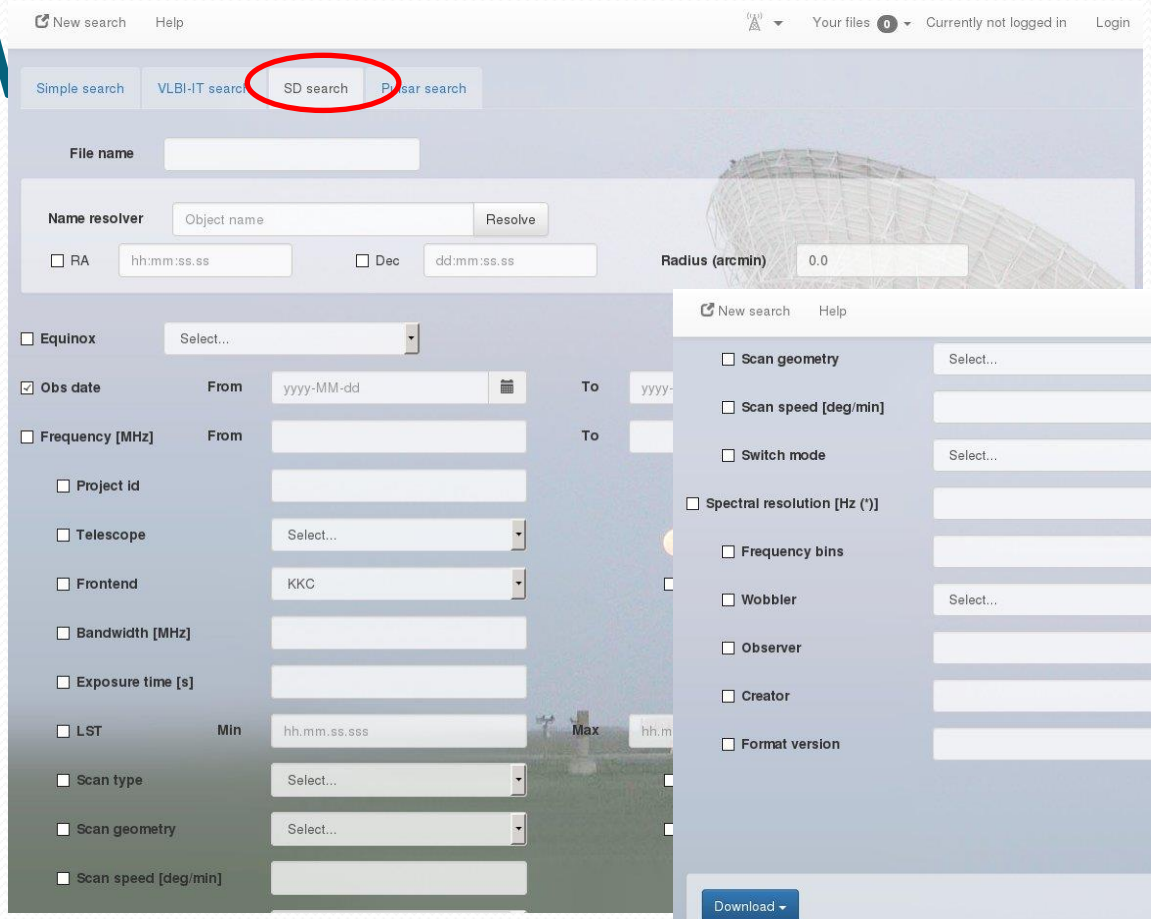


# Web interface



# We


New search
Help
Your files 0
Currently not logged in
Login
Simple search
VLBI-IT search
SD search
Pulsar search
File name
Name resolver
Object name
Resolve
RA
hh:mm:ss.ss
Dec
dd:mm:ss.ss
Radius (arcmin)
0.0
Obs date
From
yyyy-MM-dd
To
yyyy-MM-dd
Frequency [MHz]
From
To
Project id
Telescope
VLBIT
Antennas
Noto
Medicina
SRT
Data rate [Mbit/s]
Spectral channels
Spectral resolution [MHz (*)]
Search
Reset


New search
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Login
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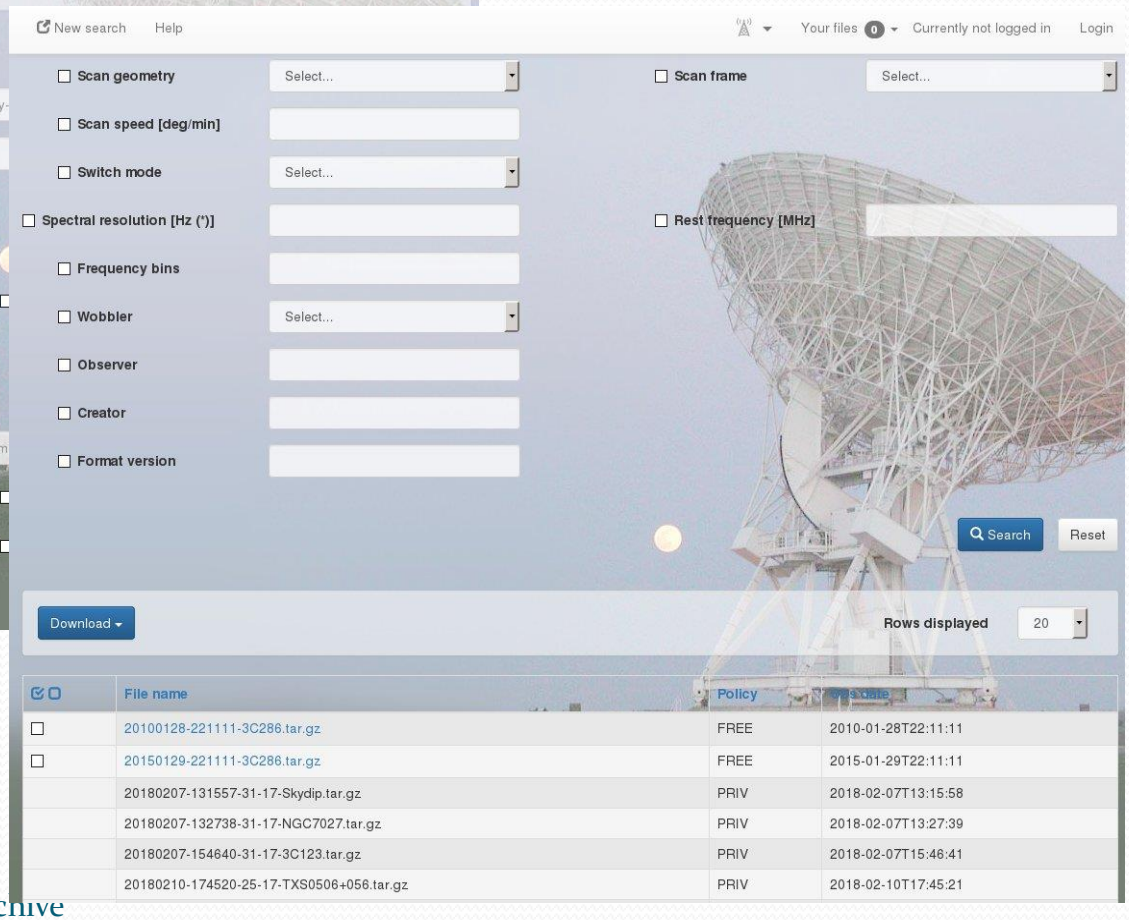
SD search
Pulsar search
File name
Name resolver
Object name
Resolve
RA
hh:mm:ss.ss
Dec
dd:mm:ss.ss
Radius (arcmin)
0.0
Equinox
Select...
Obs date
From
yyyy-MM-dd
To
Frequency [MHz]
From
To
Project id
Telescope
Select...
Frontend
KKC
Bandwidth [MHz]
Exposure time [s]
LST
Min
hh.mm.ss.sss
Max
Scan type
Select...
Scan geometry
Select...
Scan speed [deg/min]


New search
Help
Your files 0
Currently not logged in
Login
Scan geometry
Select...
Scan frame
Select...
Scan speed [deg/min]
Switch mode
Select...
Spectral resolution [Hz (*)]
Rest frequency [MHz]
Frequency bins
Wobbler
Select...
Observer
Creator
Format version
Search
Reset
Download
Rows displayed
20
File name
Policy
20100128-221111-3C286.tar.gz
FREE
2010-01-28T22:11:11
20150129-221111-3C286.tar.gz
FREE
2015-01-29T22:11:11
20180207-131557-31-17-Skydip.tar.gz
PRIV
2018-02-07T13:15:58
20180207-132738-31-17-NGC7027.tar.gz
PRIV
2018-02-07T13:27:39
20180207-154640-31-17-3C123.tar.gz
PRIV
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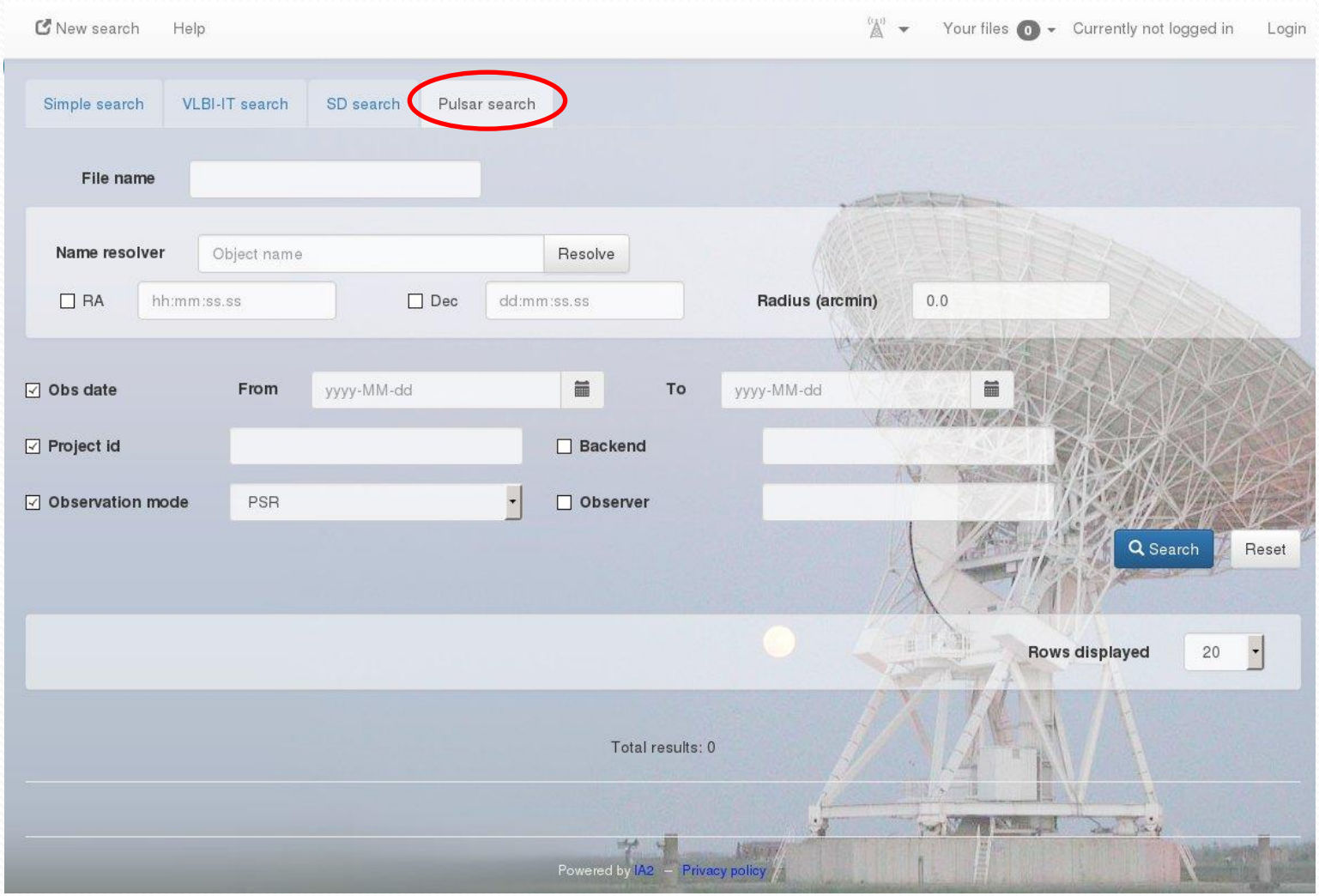
2018-02-10T17:45:21

W


New search
Help
Your files 0
Currently not logged in
Login
Simple search
VLBI-IT search
SD search
Pulsar search
File name
Name resolver
Object name
Resolve
RA
hh:mm:ss.ss
Dec
dd:mm:ss.ss
Radius (arcmin)
0.0
Obs date
From
yyyy-MM-dd
To
yyyy-MM-dd
Project id
Backend
Observation mode
PSR
Observer
Search
Reset
Rows displayed
20
Total results: 0
Powered by IA2 – Privacy policy

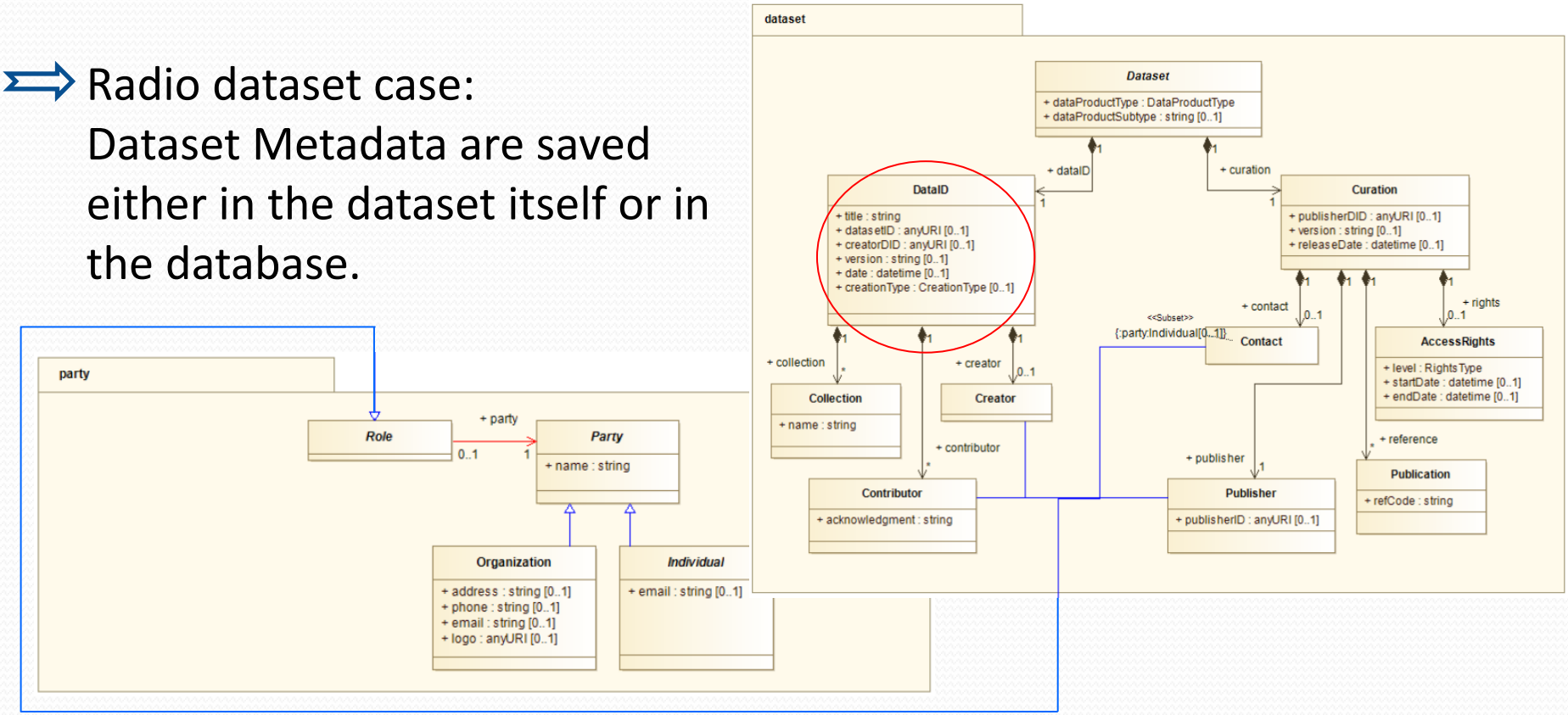
# The VO perspective

- Analysis of VO Dataset Metadata Model
- Analysis of VO ObsCore mandatory components
- A look at the CAOM model
- TAP service and data access via DataLink

# VO Dataset Metadata Model

Generic high-level metadata needed to describe a file or files which are considered to be a single deliverable (IVOA Dataset).

⇨ Radio dataset case:
Dataset Metadata are saved either in the dataset itself or in the database.

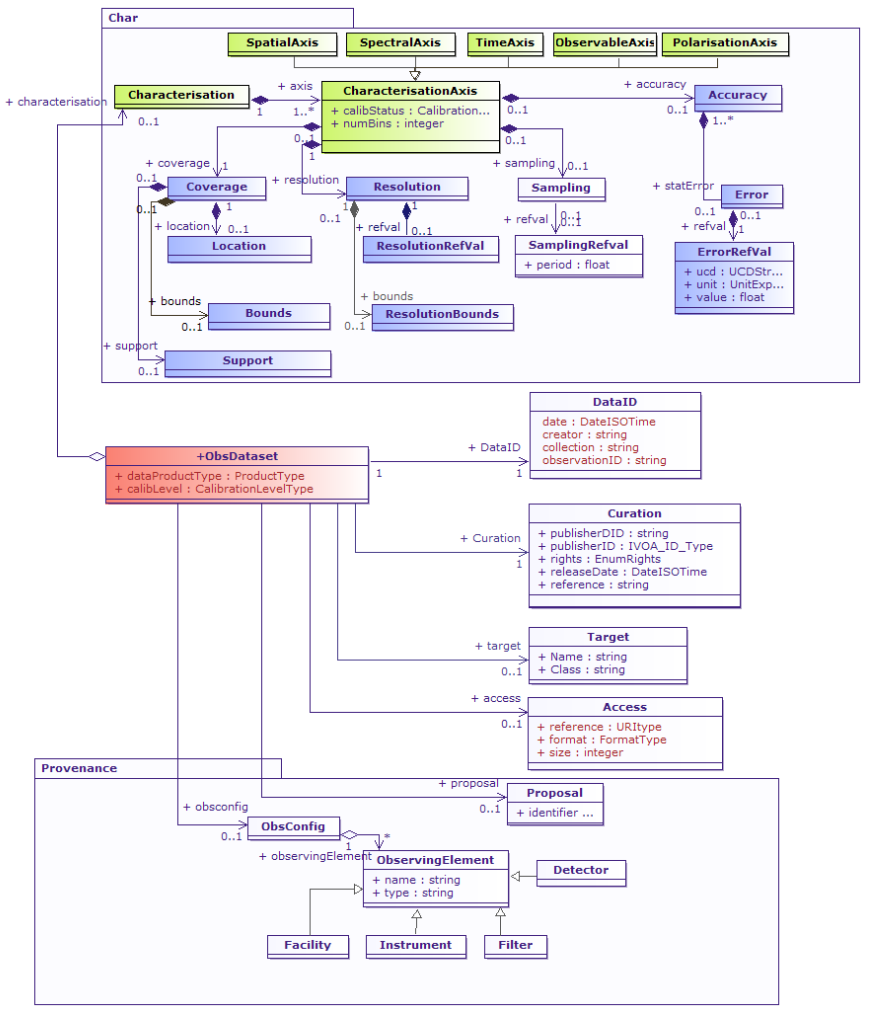


# VO ObsCore

Global data discovery and access requires to expose
a uniform, standard data model.

Analysis of the VO ObsCore **mandatory** components.

For data discovery purposes, all the required metadata core components are present in the radio data model.



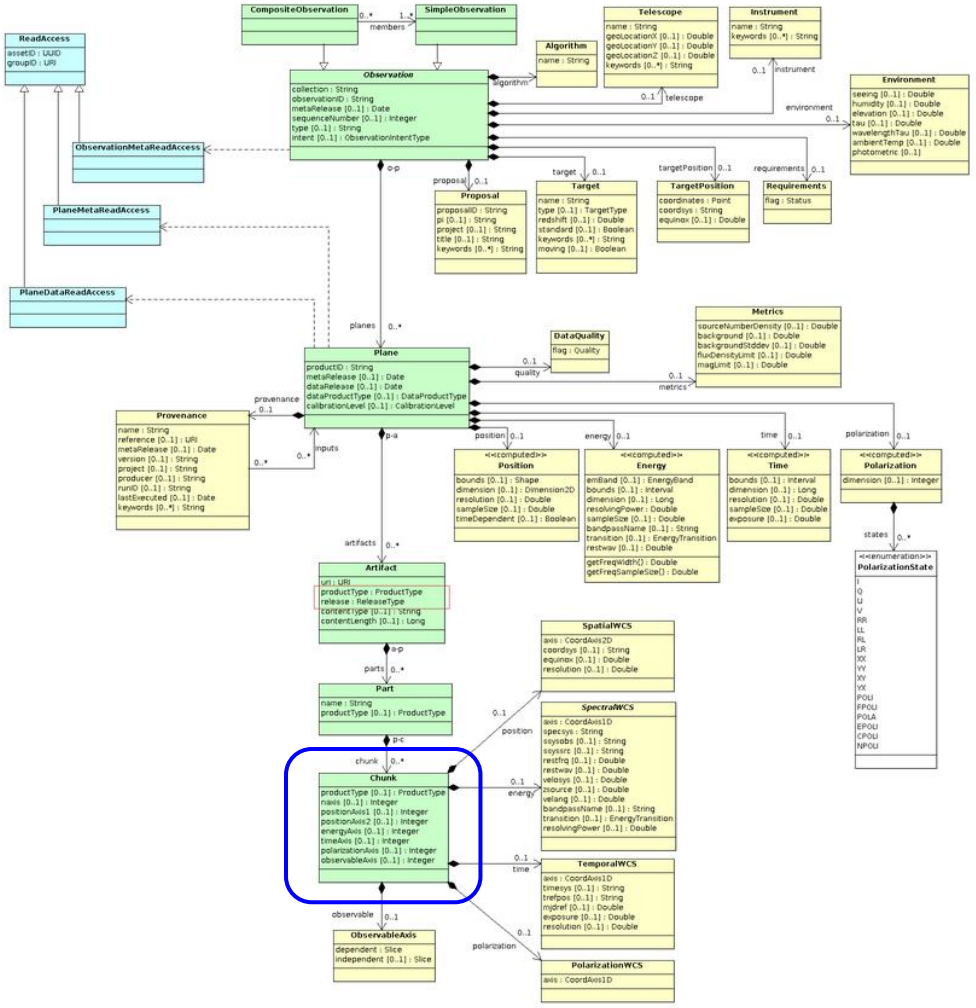
# The CAOM Model

Common Archival Observation Model @ CADC

CompositeObservation
-> Observing Project

Artifacts -> tar files / MBFits

Chunk -> single subscan or file denormalized



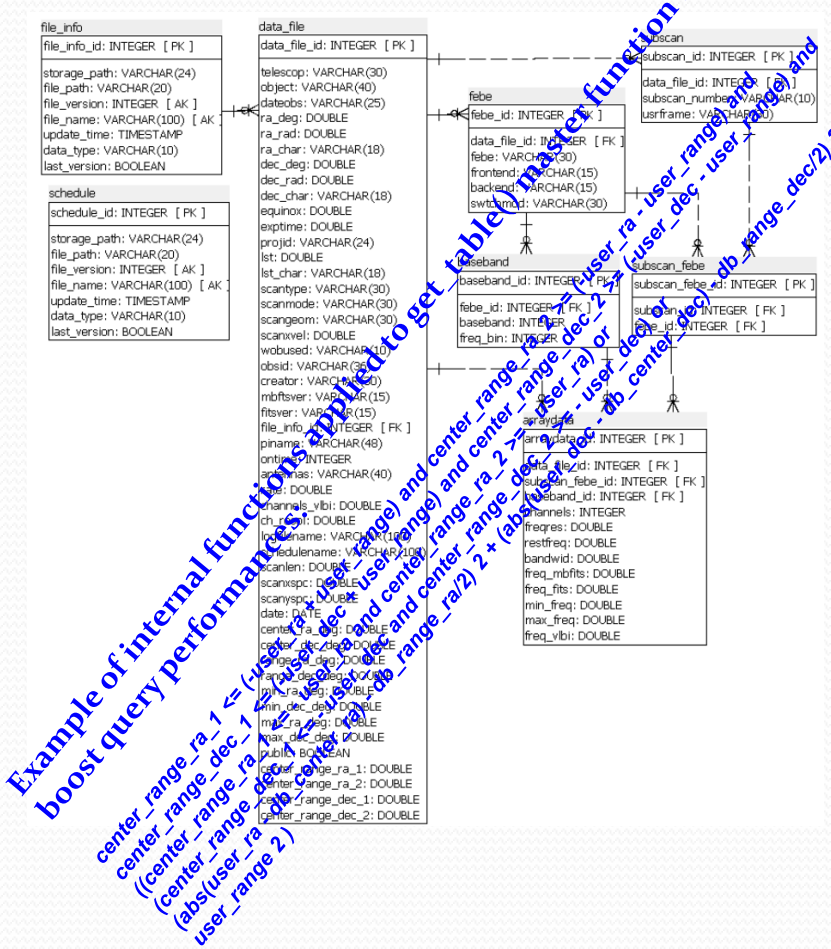
# TAP and DataLink

- TAP service:
  - IA2 implementation
  - custom User Defined Functions to improve query performance

    get_table = f(**pos**, freq,...);

    **pos**= f(ra,dec,rad,..);

- DataLink access to datasets
  - Access to complex datasets: content list, ancillary resources (related datasets)
  - additional metadata (provenance, data quality, etc.)



# Conclusions

- Public Archive for the Italian radio telescopes: definition of a common data model, flexible architecture
- Web interface: definition of query parameters, A&A
- The Radio Archive and the VO: what's next?