

Italian center for Astronomical Archives

INAF - IA2



Nicola F. Calabria
on behalf of the IA2 team



outline

- data center overview
- data ingestion and distribution landscape
- web and interoperable interfaces
- user authentication & authorization
- modular solution to VO services

IA2: goals and main activities

IA2 is the only INAF e-infrastructure for astronomical data storage and preservation.

IA2 is supported by INAF since 2005

IA2 aims at:

- coordinating different national initiatives to improve the quality of astrophysical data services;
- coordinating the developments and facilitating access to data for research purposes.

IA2's main goals consist in:

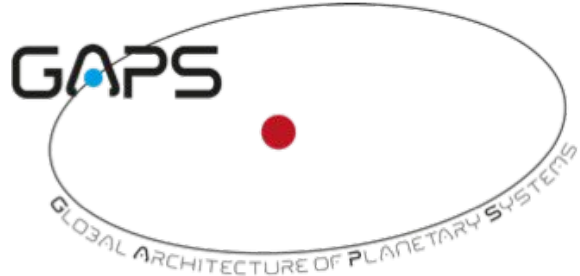
- data archiving systems and safety, including data hosting and data curation and preservation;
- data and metadata distribution over geographical sites and access services, including VO aware resources.



IA2 landscape

IA2 manages data from:

- TELESCOPES (raw; INAF ground based)
- SURVEYS (raw and/or calibrated)
- SIMULATIONS (exoclimates, spectral libraries)

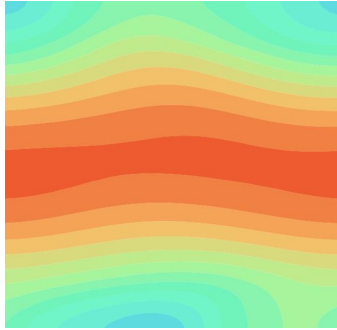




IA2 data resources

Telescope & Projects' data
managed/hosted:

- TNG : all instruments
- LBT : all instruments except LBTI
- Asiago Observatory : all instruments
- Serra La Nave
- SVAS (educational)
- ExoClimates (simulations)
- Intrigoss (simulations)
- Prisma (meteoric datasets)
- Radio (Medicina, Noto, SRT)
- BaSTI (simulations)
- MWA (mirror, in progress)



SRT-Medicina-Noto
Radio Telescopes

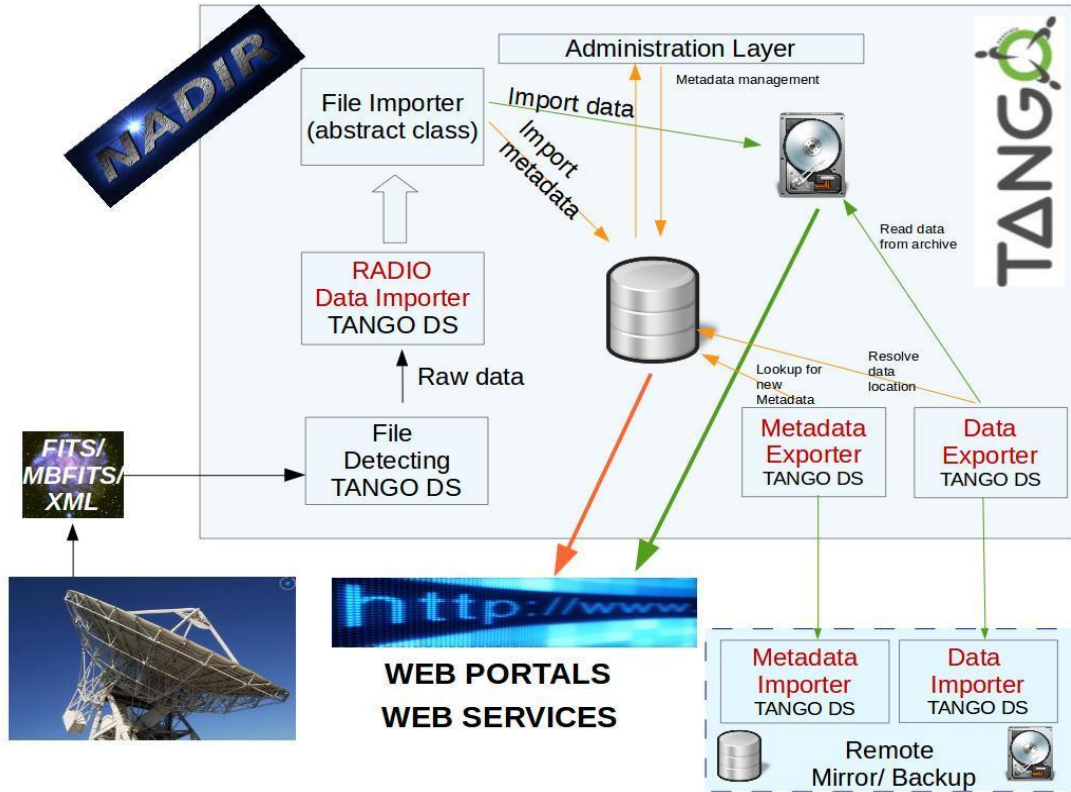


ASIAGO OBSERVATORY

IA2 geographical landscape



NADIR



Software

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

IA2 data discovery and access

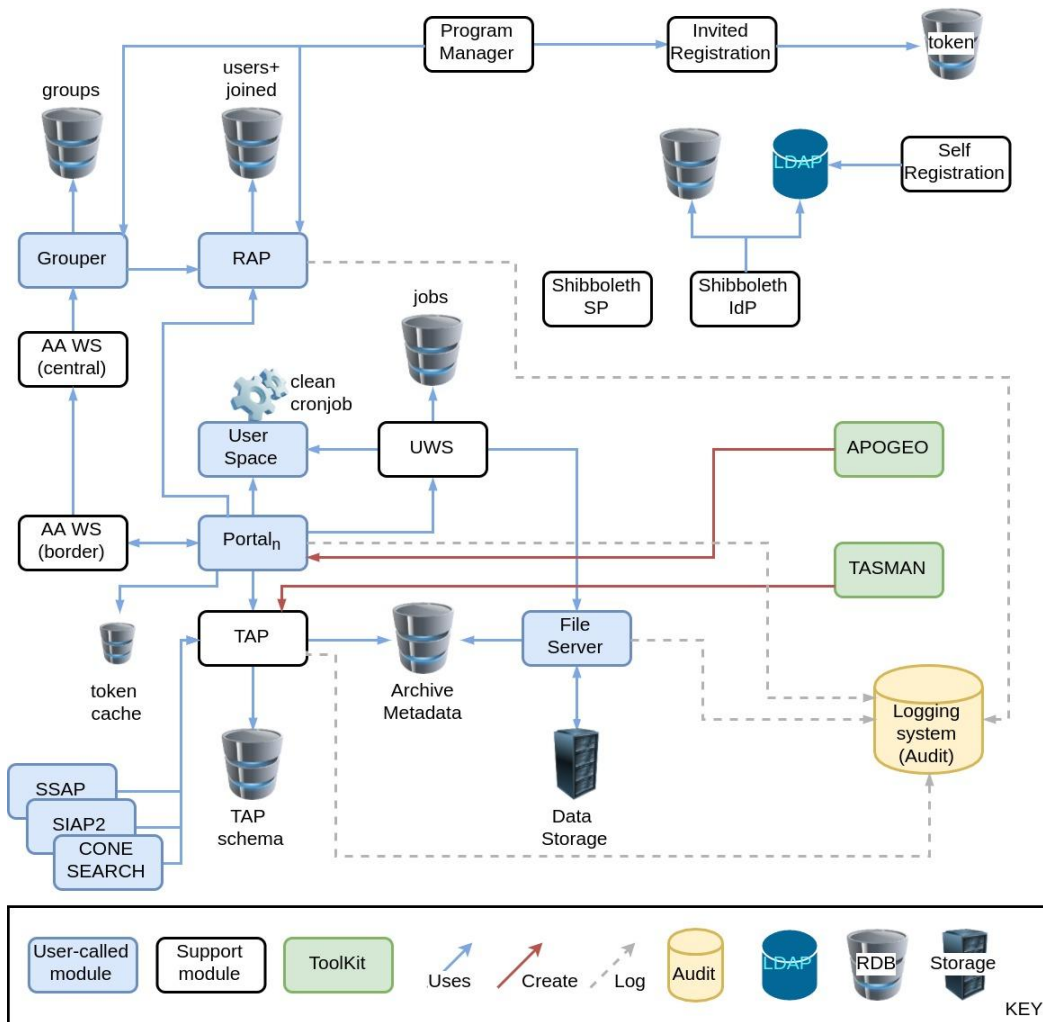
- Web portals
 - config-generated (APOGEO)
 - configuration
 1. TAP_SCHEMA
 2. query & form customization
 - portals are TAP clients
- Virtual Observatory services
 - (under reshaping - see later)
 - TAP
 - (will be) TAPlib (ARI/CDS)
 - TASMAn manager
 - Cone Search
 - SIAP (in progress v. 2.0)
 - SSAP (future)

The screenshot displays the TNG Archive web interface. At the top, there is a navigation bar with 'New search' and 'Help' links, and a user status indicator 'Currently not logged in' with a 'Login' link. The main heading is 'TNG Archive'. Below this, there is a search form with a 'Name resolver' field containing 'm87' and a 'Resolve' button. There are also fields for 'RA' (12:30:49.42), 'Dec' (+12:23:28.0), and 'Radius (arcmin)' (14). The search criteria section includes a 'Filename' field, and several checked options: 'Observ. Date' (with 'From' and 'To' date pickers), 'Obs. Type' (a dropdown menu), 'Object' (a text input), 'Exp. time' (with 'From' and 'To' date pickers), 'Night date' (with 'From' and 'To' date pickers), and 'Airmass' (with a 'From' date picker). There are also 'Instrum' and 'Program' dropdown menus. A green button labeled 'Single instrument search' is visible. At the bottom right of the search form, there are 'Search' and 'Reset' buttons. Below the search form, there is a table with columns: 'Filename', 'Observ. Date', 'Obs. Type', 'Instrum', 'Program', 'Object', and 'Policy'. The table contains several rows of data, with the first row highlighted. Below the table, there is a 'Rows displayed' dropdown set to '20' and a 'Create tar from selected' button.

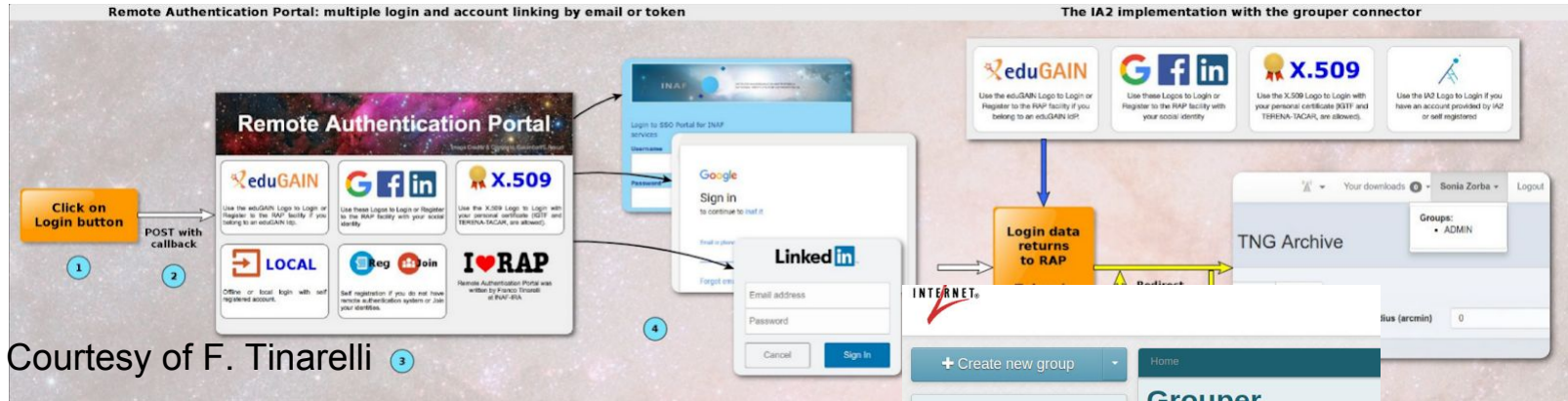
Filename	Observ. Date	Obs. Type	Instrum	Program	Object	Policy
LRS.2013-04-12T00-15-41.250.fits.gz	2013-04-12T00:14:17.840	OBJECT	LRS	A27DDT1	M87	FREE
LRS.2013-04-12T00-17-50.675.fits.gz	2013-04-12T00:16:27.488	OBJECT	LRS	TEST	M87	FREE
LRS.2013-04-12T00-19-34.966.fits.gz	2013-04-12T00:18:11.560	OBJECT	LRS	TEST	M87	FREE
LRS.2013-04-12T00-21-16.577.fits.gz	2013-04-12T00:19:52.910	OBJECT	LRS	TEST	M87	FREE
LRS.2013-04-12T00-33-40.559.fits.gz	2013-04-12T00:31:17.061	OBJECT	LRS	TEST	M87	FREE
LRS.2013-04-12T00-23-09.110.fits.gz	2013-04-12T00:21:45.358	OBJECT	LRS	TEST	M87	FREE

IA2 is also planning to offer a VOSpace (already has a minimal user space)

IA2 Service Architecture



RAP and Grouper



Courtesy of F. Tinarelli

INTERNET

Search

Logged in as GrouperSysAdmin - Log out

+ Create new group

Quick links

- My groups
- My folders
- My favorites
- My services
- My activity
- Miscellaneous
- Admin UI
- Lite UI

Browse folders

- Root
 - ASIAGO_GROUPS
 - TNG_GROUPS
 - A16TAC_1
 - A16TAC_10
 - A16TAC_11
 - A16TAC_12
 - A16TAC_13
 - A16TAC_14
 - A16TAC_15
 - A16TAC_16
 - A16TAC_17
 - A16TAC_18
 - A16TAC_19
 - A16TAC_2
 - A16TAC_20
 - A16TAC_21
 - A16TAC_22
 - A16TAC_23
 - A16TAC_24
 - A16TAC_25
 - A16TAC_26

Home

TNG_GROUPS

Folder contents Privileges More

Filter for: Folder, group, or attribute name Apply filter Reset

My groups

My folders

My favorites

My services

My activity

Miscellaneous

Admin UI

Lite UI

Browse folders

- Root
 - ASIAGO_GROUPS
 - LBT
 - RADIO
 - TNG_GROUPS
 - A16TAC_1
 - A16TAC_10
 - A16TAC_11
 - A16TAC_12
 - A16TAC_13

Recent activity

- Assigned 'Read' privilege to Alessandro Siviero
- Assigned 'Update' privilege to Alessandro Siviero
- Added Alessandro Siviero (IA2) as a member of
- Added Cristina Knapic (eduGAIN+Google+Link
- Added Marco Molinaro (eduGAIN+Google) as a
- Added Sonia Zorba (eduGAIN+X.509+Google) a

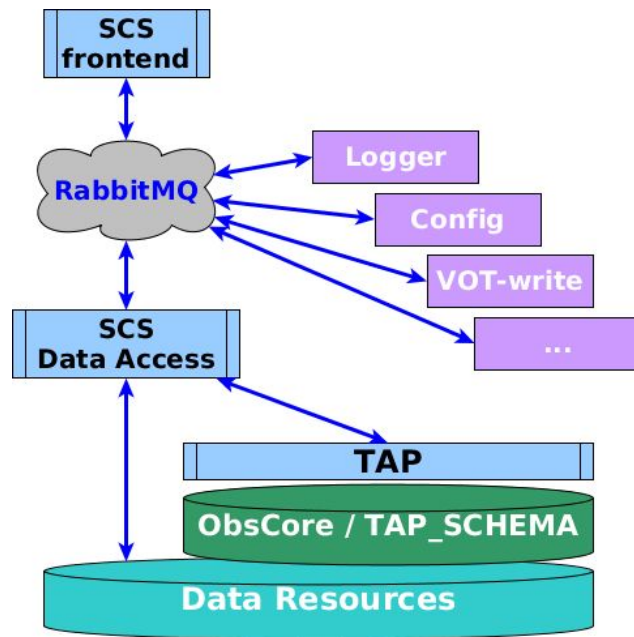
My favorites

View all favorites

RAP: account linking - Grouper: group based authorization service

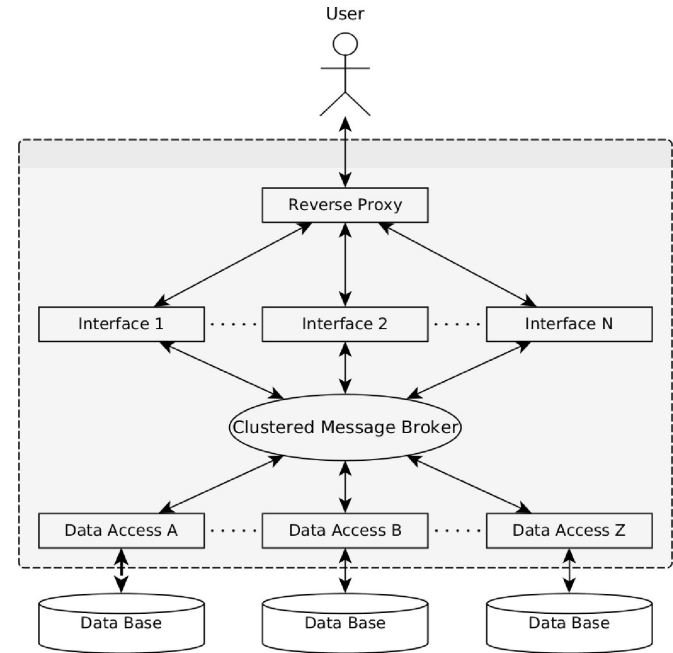
Distributed architecture for services modular approach

- Interface runs on a glassfish server
 - passive interface: doesn't perform any validation on input
- Backend
 - Configuration server
 - manages active services list and their configuration
 - data db
 - TAP_SCHEMA (metadata) db
 - message broker instance
 - logging service
 - Service server
 - performs service specific tasks according to call
 - Logging server
 - optional (currently minimal)



Messaging System

- AMQP based
 - RabbitMQ broker Advanced Message Queuing Protocol (AMQP)
- JSON formatted messages
 - queue identification + actual message
- Can run on a dedicated machine
 - helps in distributing the architecture
- Known issue
 - messaging is completely custom
 - possible future solution describing the system through a workflow language



Cone Search and SIAP-2.0 (status)

- New packages incoming for code reuse and interchangeability
- Query String Parser
 - validates mandatory parameters
- Input Parser
 - particularly useful for SIA: manages ranges parsing and internal representation
- Query Builder
 - validates parameters values and generates SQL queries
- VOTable generator (simple and light)
- Interface-implementing Enums
 - allow extension of supported parameters on the fly
 - C-printf like syntax for complex parameters to be parsed (e.g. POS)
 - Interfaces allow code interchangeability

Summary

- IA2 keeps managing heterogeneous data resources
 - distributed archival solution is in place
- web “portals” and VO-based API architecture are evolving
 - heritage resources will be moved to new solutions
 - modular solution should help software integration
- resource interoperability still lacking
 - but we’re working on it
- moving from data archive to data providing and service center is a long way to go