

The background of the slide features a photograph of a historic stone building with a prominent tower, likely the Observatorio Astronomico di Trieste. In the foreground, there is a large, lush bush of white roses. The sky is clear and blue.

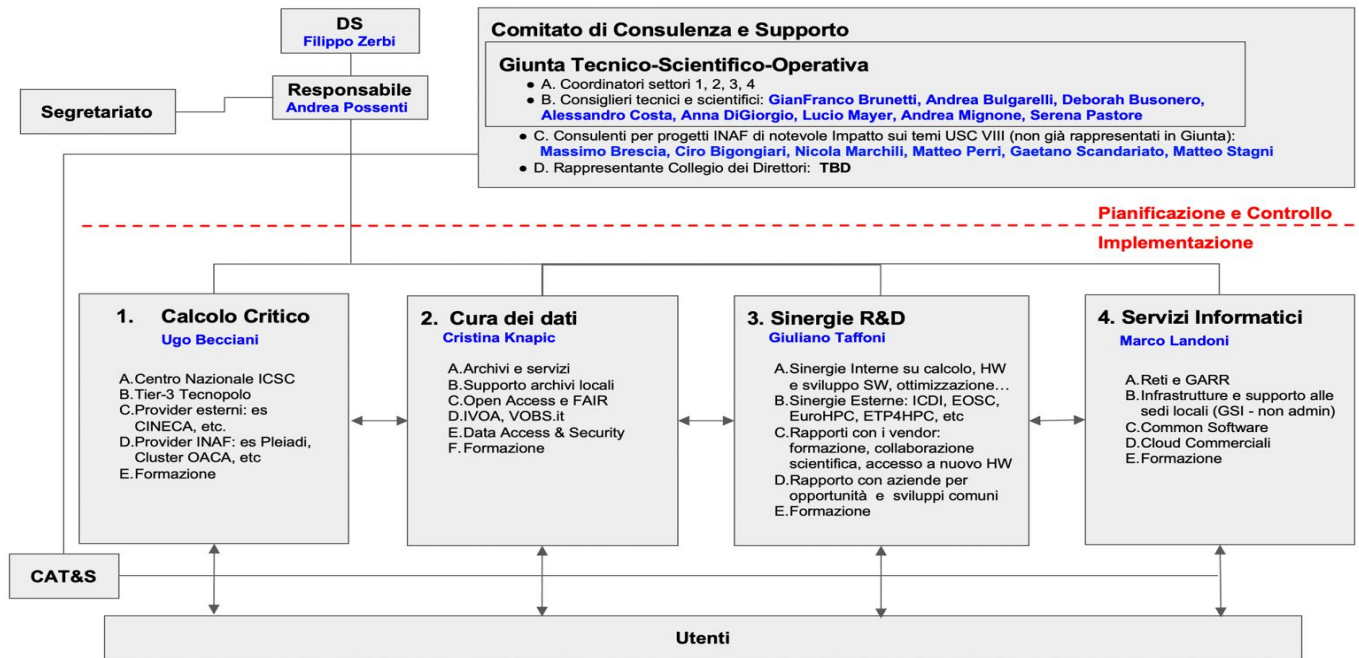
IA2 and USC8 services@ OATs portfolio

Cristina Knapic & Marco Landoni

Due Conti fra le Stelle - Osservatorio Astronomico di Trieste, 25/03/2024

Initial organizational structure

The "**governance**" structure of USC VIII-Computing according to the required principles (decreo 50/2022 of the CdA) of *scientific leadership and solid technical skills, community representation, adaptation to changings of the field, and focus on major infrastructures and major projects*



Always reviewable with experience and with a not too long turn-over

The areas within which Sector 2 «Data Care» will operate will mainly be the archiving, care, preservation and usability of astronomical data and products of astrophysics science, in synergy with the computational, services and development part.



- **Archives and services**
 - Distributed storage for telescopes, instruments, satellites or collaborations
 - <https://www.ia2.inaf.it/>;
- **Storage of science products and preservation**
 - <http://vospace.ia2.inaf.it/ui/> ;
 - <https://www.ia2.inaf.it/index.php/ia2-services/data-sharing-preservation>
- **Support services** (Workflow management Systems, Twiki, DOI, preservation, user home access);
- **Science gateway** (connection of analysis tools to archives and vice versa - Data Flow - Connection with Services);
- **Local Archives support**
 - Support for the definition of Data Models and Data Management Plans;
- **Open Data and FAIR policies**
 - Implementation of Open Data policies;
 - Implementation of Findable Accessible Interoperable Reusable principles;



IA2 *Italian Center for Astronomical Archives*
Centro Italiano Archivi Astronomici



- Home
- Services ▾
- Projects ▾
- Software
- Additional Info ▾
- IA2 Group






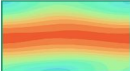
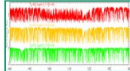




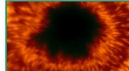

ABOUT US collapse [-]

IA2 (Italian center for Astronomical Archive) is an Italian Astrophysical research e-infrastructure project that aims at co-ordinating different national initiatives to improve the quality of astrophysical data services. It aims at co-ordinating these developments and facilitating access to this data for research purposes. The IA2 is supported by INAF since 2005. 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, access services including publication within the VO scenario. IA2 provides also services and tool to the community, like data sharing (owncloud), project management (redmine), software collaboration (git-lab) and has available a workflow manager (Yabi) for computational needs.

[contact us](#)

MAIN ACTIVITIES collapse [-]

TELESCOPE ARCHIVES & SIMULATIONS

MAIN	 TNG	 LBT	 Asiago	 SVAS	 RADIO
MAIN	 Exoclimates	 INTRIGOSS	 LBT OLD		
HOSTED	 Byurakan	 INES	 BaSTI	 IBIS-A	 other archives @ INAF

<https://ia2.inaf.it/>

OTHER SERVICES

 ownCloud	 redmine	 VO initiatives	 GitLab	 yabi
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PROJECTS expand [+]

Infrastructure: SW



- **USC8 Services** (on IA2 infrastructure)
 - 280/day di accesso alla home page ICT
 - **owncloud** (250 utenti)
 - **redmine** (350 Utenti)
 - **gitlab** (~250 Utenti / ~ 370 progetti)
 - **indico** (~ 1100 inaf; ~700 esterni)
 - **DOI** service <https://doi.ict.inaf.it/>

Infrastructure: SW



Virtualization: VMWARE

Monitoring: Ganglia & Nagios
(Zabbix)

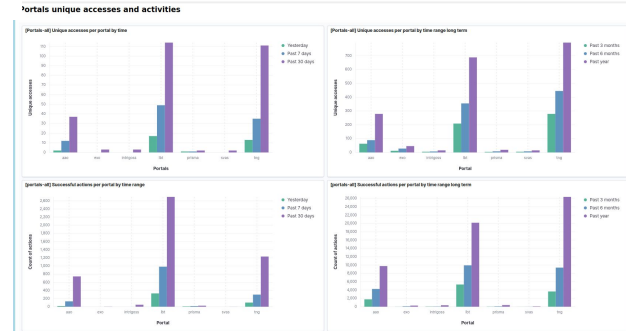
Logging: Kibana on db

License server



kibana

Nagios®



Infrastructure: HW



Storage

LUSTRE:
800TB + 1,2PB on JBOD

Synology: 270TB
QSAN: 400TB

Transfer Node:
IBM 100TB all flash

Cross Backup
Synology +LUSTRE --> QSAN;
QSAN --> Synology

Total: 2.6 TB on-line

Virtualization

3 SuperMicro server 40CPU 512GB RAM
2 Lenovo 32 CPU 1 TB RAM

Storage for VMs
100TB all flash
10TB on HD

DB machines

2 servers DELL 2CPU (2x32 core)
256GB RAM
3.5 TB all flash

Total: 90 on-line VMs



TS450 - 6 drive LTO8 + 2 drive LTO8
240 Cartridge of ~ 9TB

Total: ~**2PB**

Data in Tape:

400 TB used (78 cartridge)

1600TB free (162 cartridge)

Free space is not real since we must check data before copying them on Tape (see ARI-L project).

Front-end: 2 Lenovo server SR 650

IBM FlashSystem 92 TB all flash

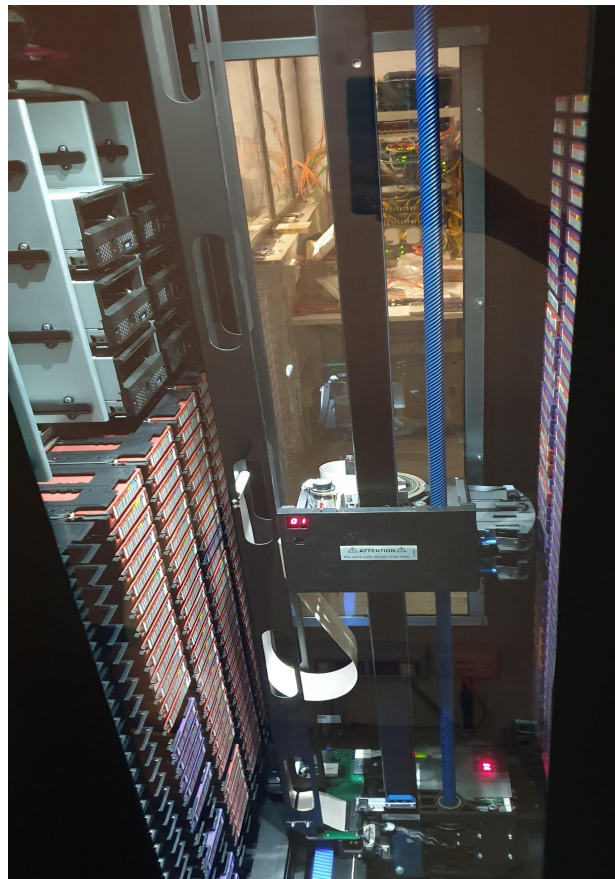
70 TB licensed IBM Spectrum Scale

Spectrum Archive (File System)

Spectrum Protect (File System)

Partitions:

Filesystem	Size	Used	Avail	Use%	Mounted on
lv_archive_01	25T	24G	25T	1%	/ia2_tape_archive_01
lv_generic_rw_01	13T	3.1T	9.2T	26%	/ia2_tape_generic_rw_01
lv_stb_01	32T	14T	18T	44%	/ia2_tape_stb_01



Infrastructure: HW



- Future expansions:
 - Tape library:
 - Completion of the LTO7 rack;
 - LTO8 new rack;
 - Transfer node expansion to full capacity all flash
 - Virtualization system:
 - acquisition of at least 2 servers (2x32 core; 1TB RAM)
 - storage expansion all flash (+100TB)
- Net: request for a data dedicated subnet through INAF data centers.

Supported Projects



IA2 hosts data and services for several Projects:

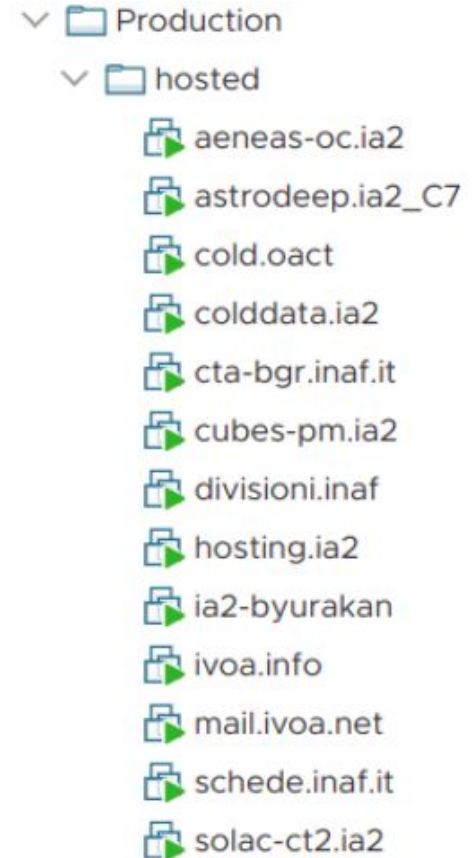
- ECOGAL;
- EUROPLANET;
- ARI-L;
- CUBES;
- MINCE;
- ViaLactea / VLKB;
- SKA DC;

It also hosts web pages and services:

- Home page of the Astronomical Observatory of Rome;
- Solar Telescope of the Catania Astrophysical Observatory;
- Schede INAF;
- Computing Catania
- Open Access storage;

IA2 activities to support INAF

- INAF survey;
- INAF researchers to store simulated data out of CINECA



Contribution to Projects



IA2 personnels were/ are involved in:

- AENEAS;
- INDIGO Data Cloud;
- SKA TM;
- SKA RC;
- PNRR;
- IVOA;
- EuroPlanet;
- ARI-L;
- CN1 - HPC: Spoke3 Astrophysics and Cosmos Observations
- ..

IA2 host also all USC8 - Settore 4 Servizi Informatici in house services

IA2 participated to

- Google platform PoC
- IBM Spectrum Scale PoC

IA2 expertise:

- data archive handling;
- database management;
- data center architecture;
- System Administration;
- web based application development;
- data distribution software development;
- Distributed and parallel filesystems (GPFS, LUSTRE);
- authentication and authorization systems;
- astronomical interoperability standards;
- services provision;
- user support;
- workflow management system & pipelines;
- scientific use cases (radio and optical)



Contact points

If you need support for the offered services (e.g. problems, activation of new accounts, etc.) please contact us at:

[**supporto-servizi-usc8@inaf.it**](mailto:supporto-servizi-usc8@inaf.it)

On demand resource access on the Cloud

- We are currently offering access to AWS Cloud service for computational power via on-demand request.
- You can request resources at any time by filling out this form (or scan the QR Code)
- Requests will be evaluated in few days

<https://forms.gle/5rJmuCwNjPYMXBAGA>



IA2 offered services

Storage support:

WEB → VOSpace <http://vospace.ia2.inaf.it/ui/>

SSH → IDEM Credentials on dedicated VM;

- < 20TB ask for storage compiling the Pleiadi CALL;
- > 20 TB fill the dedicated [form](#)
 - today cost in preservation for 10 TB ~ 70 Euro (ivato)
 - warning: provisioning and production timing is not immediate!
 - for best practices on data transfer please visit [here](#)

VMs support: IA2 can release VMs but the management and software update is not on its duty. You are request to accept the update responsibility policy for possible software vulnerabilities.

Request VM filling the [form](#) and read and sign the [agreement document](#).

Web page hosting: please ask directly to ia2@inaf.it



Tape library

The INAF - IA2 tape library is a peculiar hardware to perform data preservation. It is not intended to be used like an online storage also if it is very fast in data writing and retrieval.

It is intended for WRITE ONCE - READ MORE and data stored there is immutable, so please use it consequently.

For more details please feel free to contact us at ia2@inaf.it



Training and dissemination

If you need help in data organization please visit the training course offered by the USC VIII:

[“Fondamenti di data management plan e data models applicati alla scienza”](#)

For more details and support please write at the following email address:

supporto-curadati-usc8@inaf.it

Thanks!