

Support for experiments at INFN-T1

C. Pellegrino - CHEP 23 - May 8th 2023



The Italian WLCG T1

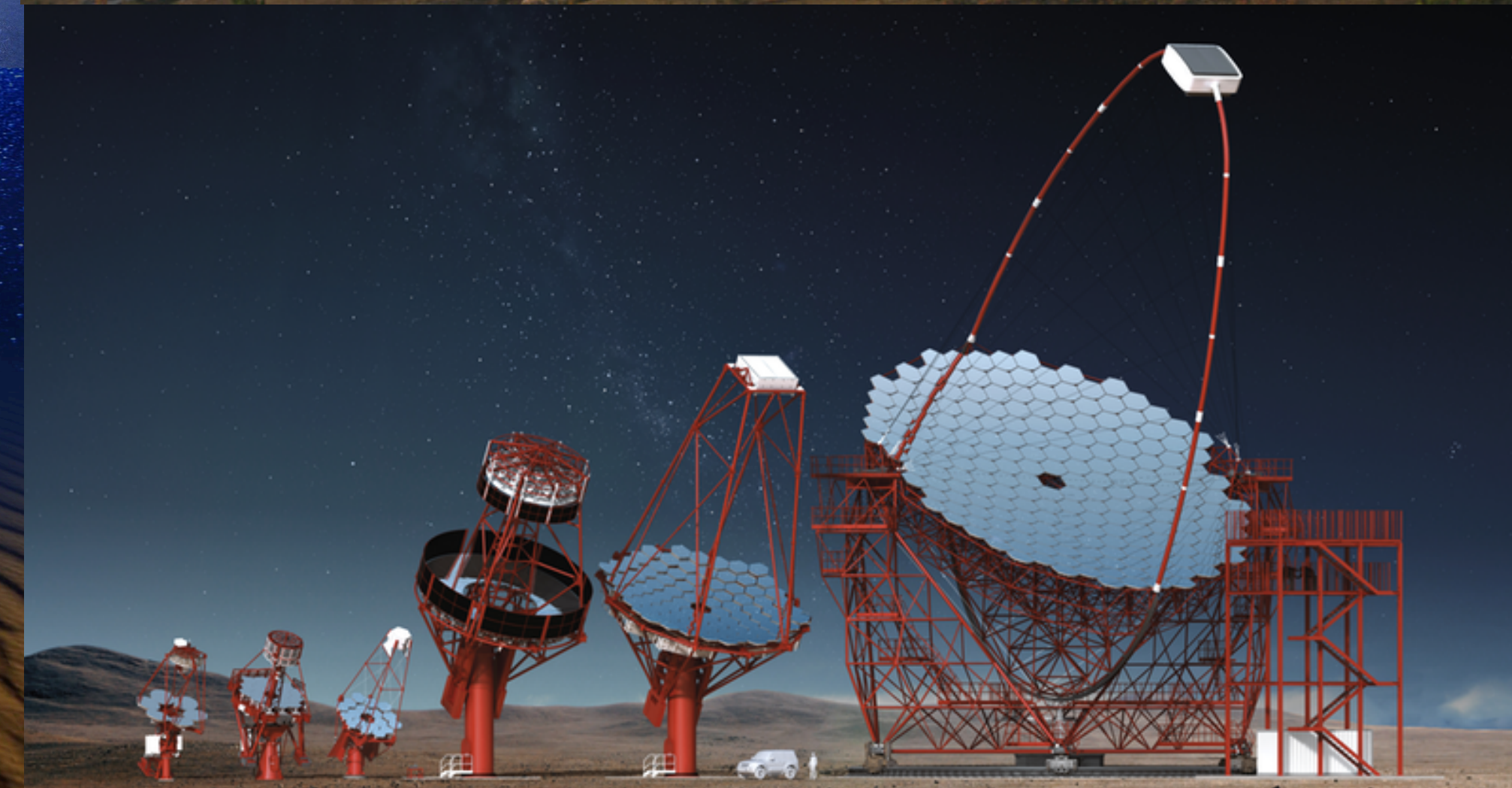
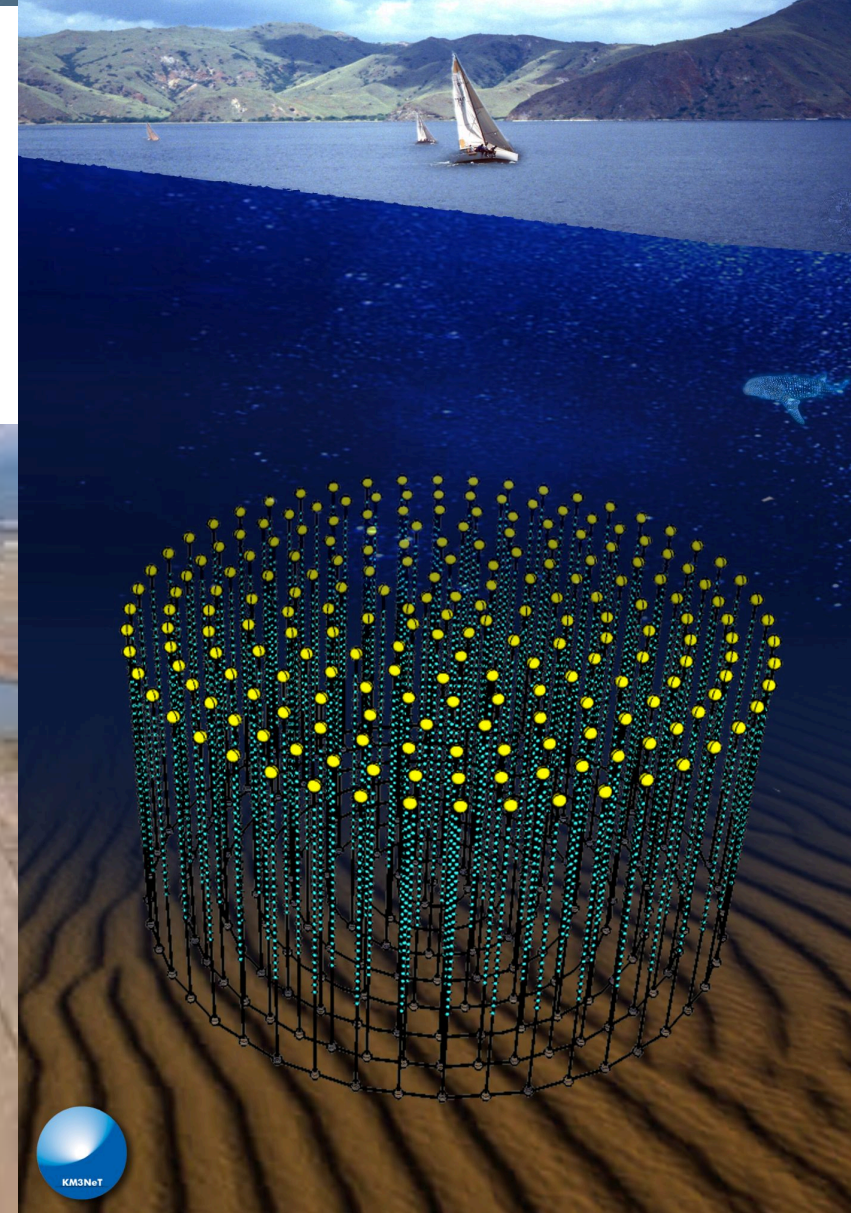
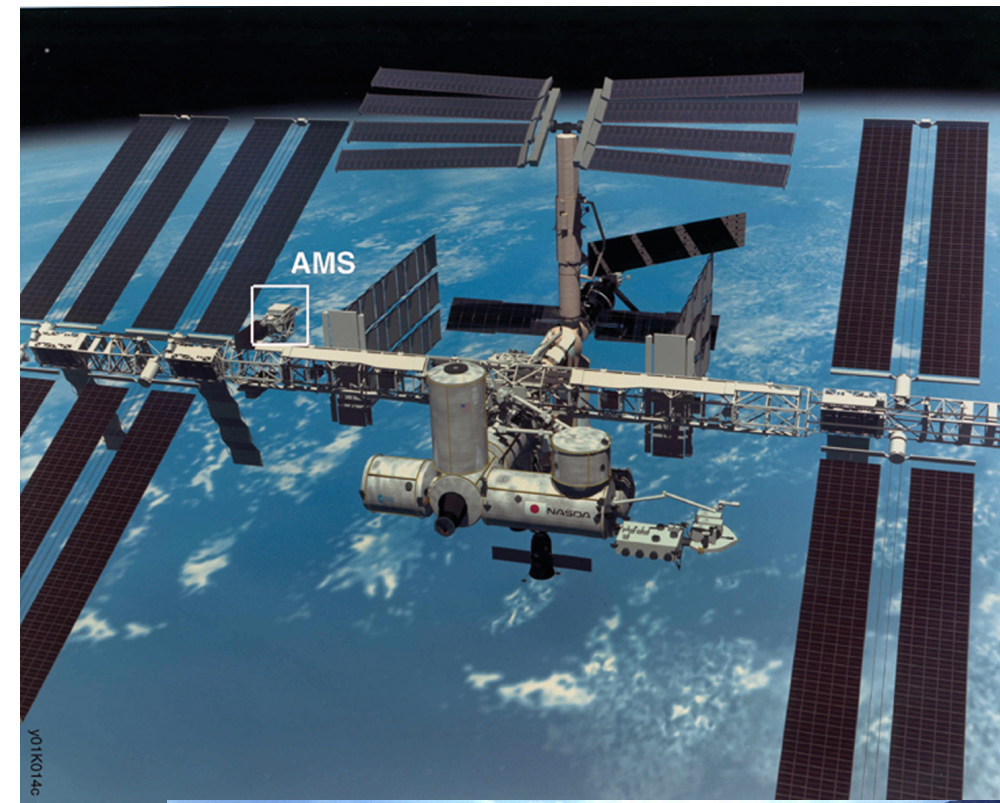
- The Italian WLCG Tier-1 is located in **Bologna (Emilia Romagna)**
 - managed by **INFN-CNAF** (<https://www.cnaf.infn.it/>)
- **~2.000 computing nodes** (physical and virtual machines)
 - **~60.000 core** managed by a batch system
- **~70 PB of disk**
- **~130 PB of tape** for long-term storage
- supports 60+ scientific communities
 - not only LHC and not only from the Physics field



Not only WLCG

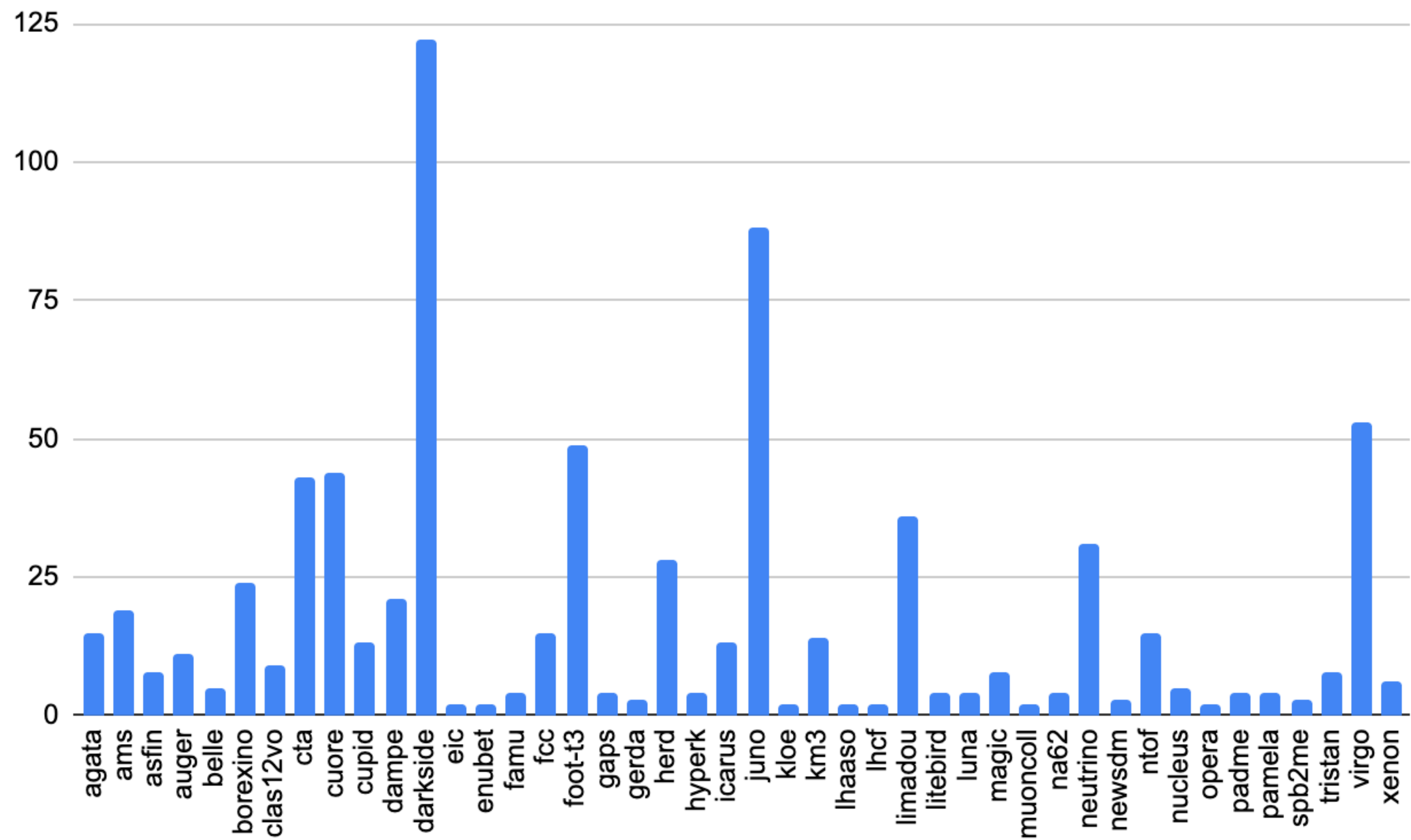
Other supported scientific communities

- High-Energy Physics: 8
- Astroparticle Physics: 18
- Gravitational Waves: 2
- Nuclear Physics: 15
- Dark Matter: 6
- others: 10



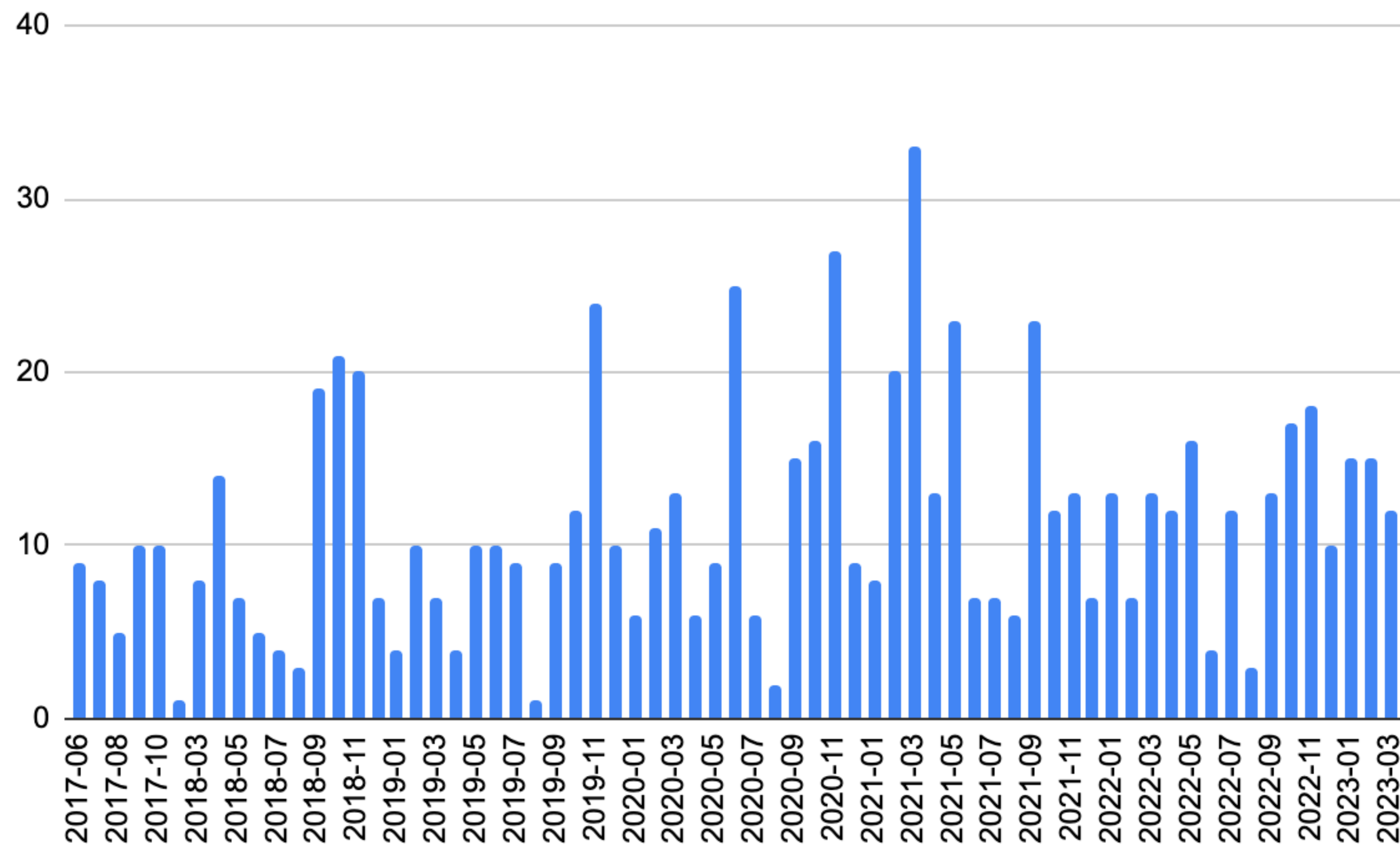
Local users per experiment

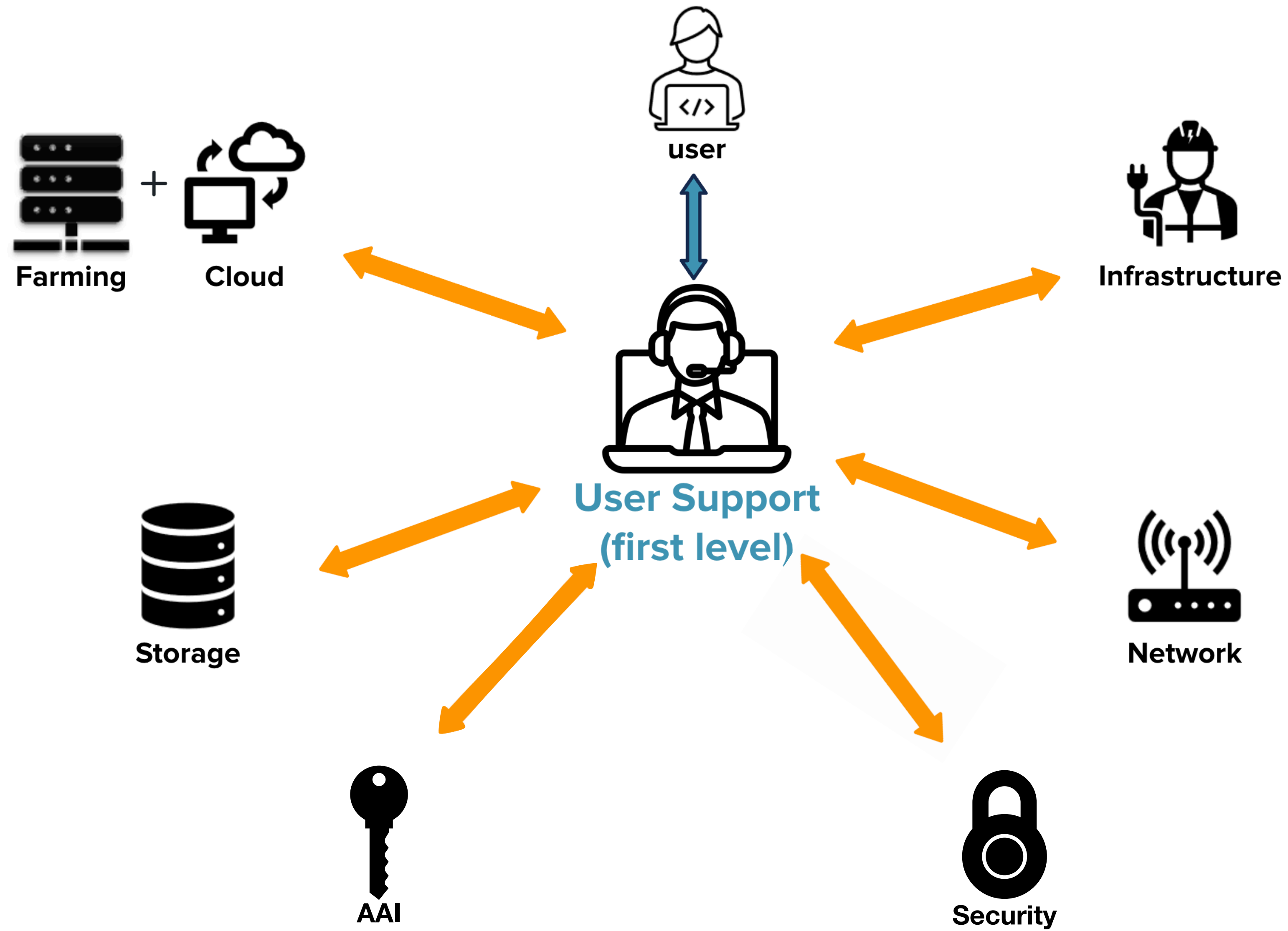
Since June 2017



Local registrations per month

Since June 2017





The User Support unit

- Mission: solve most of the basic problems, and to write **documentation** to improve the usage of **solutions** and **standard tools** the Centre provides. Among them:
 - **HTCondor**, is the batch system for HTC, and **SLURM** for HPC
 - **gfal2-util**, is the tool for data transfer/management via Grid
 - **oidc-agent**, is the CLI tool to manage JWT tokens
 - **singularity/apptainer**, is the container solution
- Supporting the use of specific software:
 - personalised support on certain, specific, use cases. E.g.: user scripts, environment, etc...
 - different scientific communities need different software
- Composition: 6 people coming from different scientific fields

Support activities

- **On-boarding** of new **scientific communities** (projects, experiments, others)
- User **registration** procedure (recognition, authorisation, account creation)
- **Documentation** for users:
 - INFN-T1 **user guide** <https://l.infn.it/t1guide>
 - Automatically updated **useful pages** <https://www.cnaf.infn.it/~usersupport/>
- **Communication:**
 - Direct user communication (personal emails, chat)
 - Announces (mailing list, gocdb)
 - Periodic presentations (comitato di gestione (CdG), special events)
 - Dedicated meetings with experiments' people (on-boarding, special requests)

The INFN Tier-1 User Guide

<https://l.infn.it/t1guide>

▼ INFN-CNAF Tier-1 User Guide (April 2023 - v16)

- 1 - CNAF
- 2 - Tier-1
- 3 - Bastion & user interfaces
- 4 - Farming
- 5 - Storage
- › 6 - The HPC cluster
- 7 - Cloud @ CNAF
- 8 - Digital Personal Certificates and Proxies manager
- › 9 - Job submission
- › 10 - Data Transfers
- 11 - Monitoring
- 12 - Helpful information and tips
- 13 - Support
- 14 - Problem report
- Appendix A - Submit Description File Commands
- Appendix B - Helpful links
- Bibliography

Dashboard / Tier1 - Documentation

INFN-CNAF Tier-1 User Guide (April 2023 - v16)

Pages / ... / 9 - Job submission

Examples

All the options and the submit description commands of the `condor_submit` command are available in the `submit.description` file and its commands you can see the [Appendix A](#).

Some helpful examples follow below.

Multiple job submission

HTCondor allows multiple job submission by using the **queue** command.

For jobs which don't depend on parameters, it is possible to submit the same job many times specifying a different integer number.

Here's a `.sub` file example to submit a simple job for 3 times:

```
-bash-4.2$ cat sleep.sub
# Unix submit description file
# sleep.sub -- simple sleep job

executable      = sleep
log              = sleep
```

Pages / Tier1 - Documentation / INFN-CNAF Tier-1 User Guide (April 2023 - v16)

Analytics

- at least, 3 of the following 5 classes must be used (uppercase, lowercase, numbers, symbols, ...)

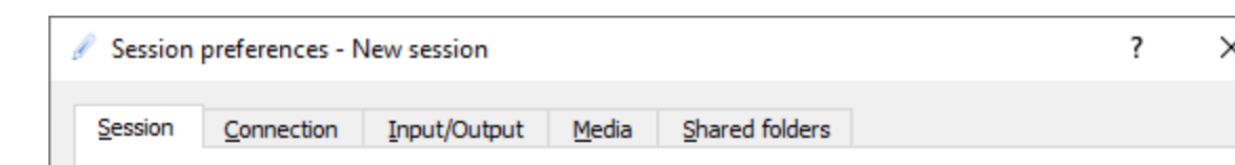
x2go

Due to popular demand, we set up a x2go server on our main UI, ui-tier1.cr.cnaf.infn.it.

The connection still requires the user to cross our jump host (bastion.cnaf.infn.it) hence the user is the only option as session manager. See the included picture as a reference.

The support of this service is still experimental, we must evaluate the impact on both the jump host and the available resources are enough to stand the overhead of this service.

N.B. It is recommended to download the version 4.1.2.0-2018.06.22 of the x2go client, as it seems to be the most stable.



Pages / ... / 10 - Data Transfers

Removing a file

```
[arendina@ui-tier1 ~]$ gfal-rm davs://xfer-archive.cr.cnaf.infn.it:8443/j
davs://xfer-archive.cr.cnaf.infn.it:8443/juno/test0107  DELETED
```

Third-party-copies

In order to properly perform a third-party-copy between two endpoints which support the [http](#) protocol and the [macaroon](#) authentication.

Indeed, this token is used to authenticate the user always to the [second](#) endpoint. For this reason, the second endpoint must be able to release a macaroon and the used gfal version is greater or equal to 4.1.2.0-2018.06.22.

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Handy links to useful pages 1/2

- Automatically updated useful pages every night
- To advertise specific information about the services available to the communities in a form that is easy to access and use:
 - <https://www.cnaf.infn.it/~usersupport/>

Storage Areas per service
and experiment

LCG envs via CVMFS

Welcome to the user support page of CNAF

The features of the storage areas are available at:

- [StoRM storage areas](#)
- [StoRM webDAV storage areas](#)
- [StoRM webDAV storage areas with JWT authentication](#)
- [XrootD storage areas](#)

LCG environments list

- [LCG envs from CVMFS](#)

In the table below you find the updated list of LCG environments available through CVMFS. Pick one of your choice from the list below, depending on the compiler version, root version etc., and then run the following command on a user interface:

```

#####(#####(#####
#####@,#####
#####@.#####
#####,#####
#@#####.
.##########%#/#########.
@##########.@#,%#/####@,#@
#####/#####%#(#####*#####@/@/
.##########%#/####@.###
@#####@#####%#(#####.###
#####%#####/
#####%#/#/#####CNAF
*#####@%,

```

StoRM WebDAV storage areas with JWT authentication

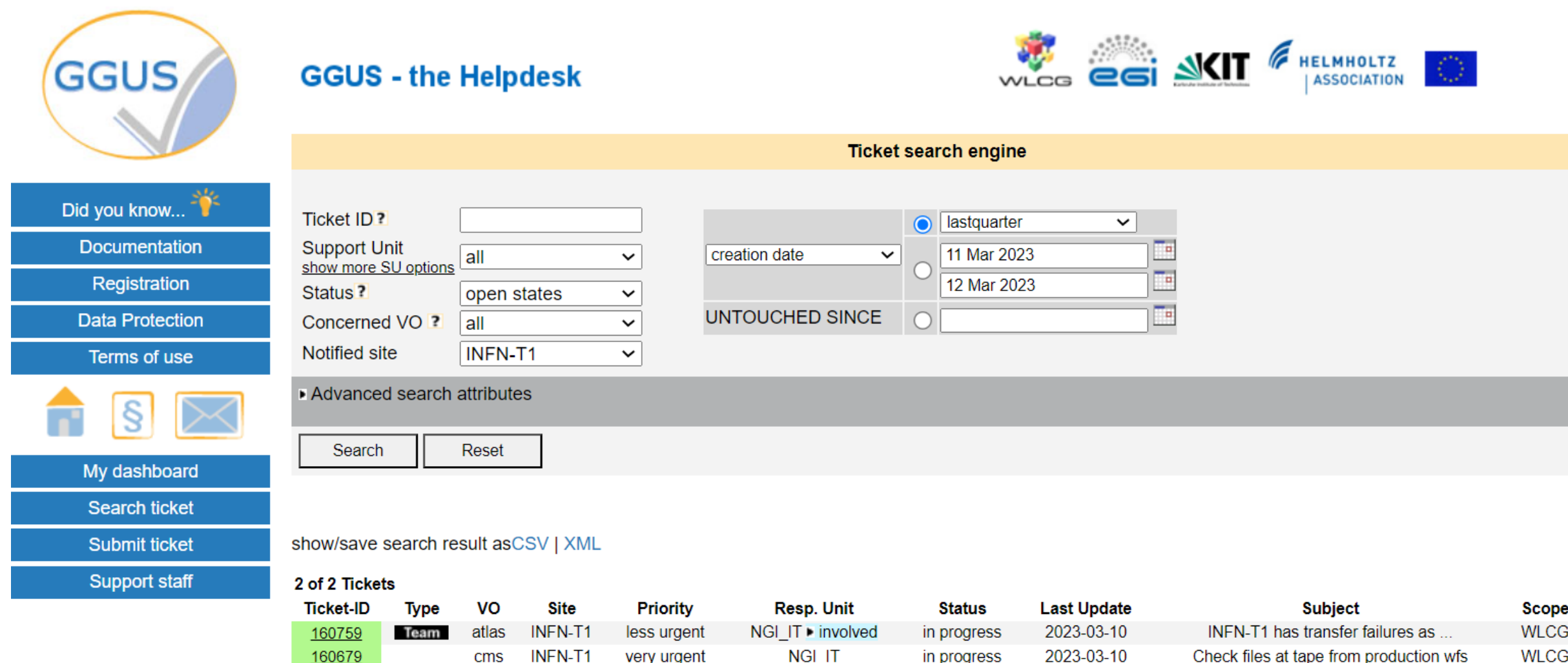
StoRM WebDAV endpoint	Access point	Root path
xfer.cr.cnaif.infn.it	/DataCloud-TB	/storage/gpfs_escape/datacloud-tb

StoRM WebDAV endpoint	Access point	Root path
xfer-archive.cr.cnaf.infn.it	/belle	/storage/gpfs_data/belle

StoRM WebDAV endpoint	Access point	Root path
xfer-archive.cr.cnaf.infn.it	/cta-lst	/storage/gpfs_data/ctadisk/cta-lst

Communication channels

- Mailing lists to reach the users regarding the datacentre status
- Ticketing systems:
 - GGUS, mainly for WLCG VOs
 - Ticketing system for internals
 - Ticketing system for users (in development)



GGUS - the Helpdesk

Ticket search engine

Ticket ID ?

Support Unit [show more SU options](#)

Status ?

Concerned VO ?

Notified site

creation date

UNTOUCHED SINCE

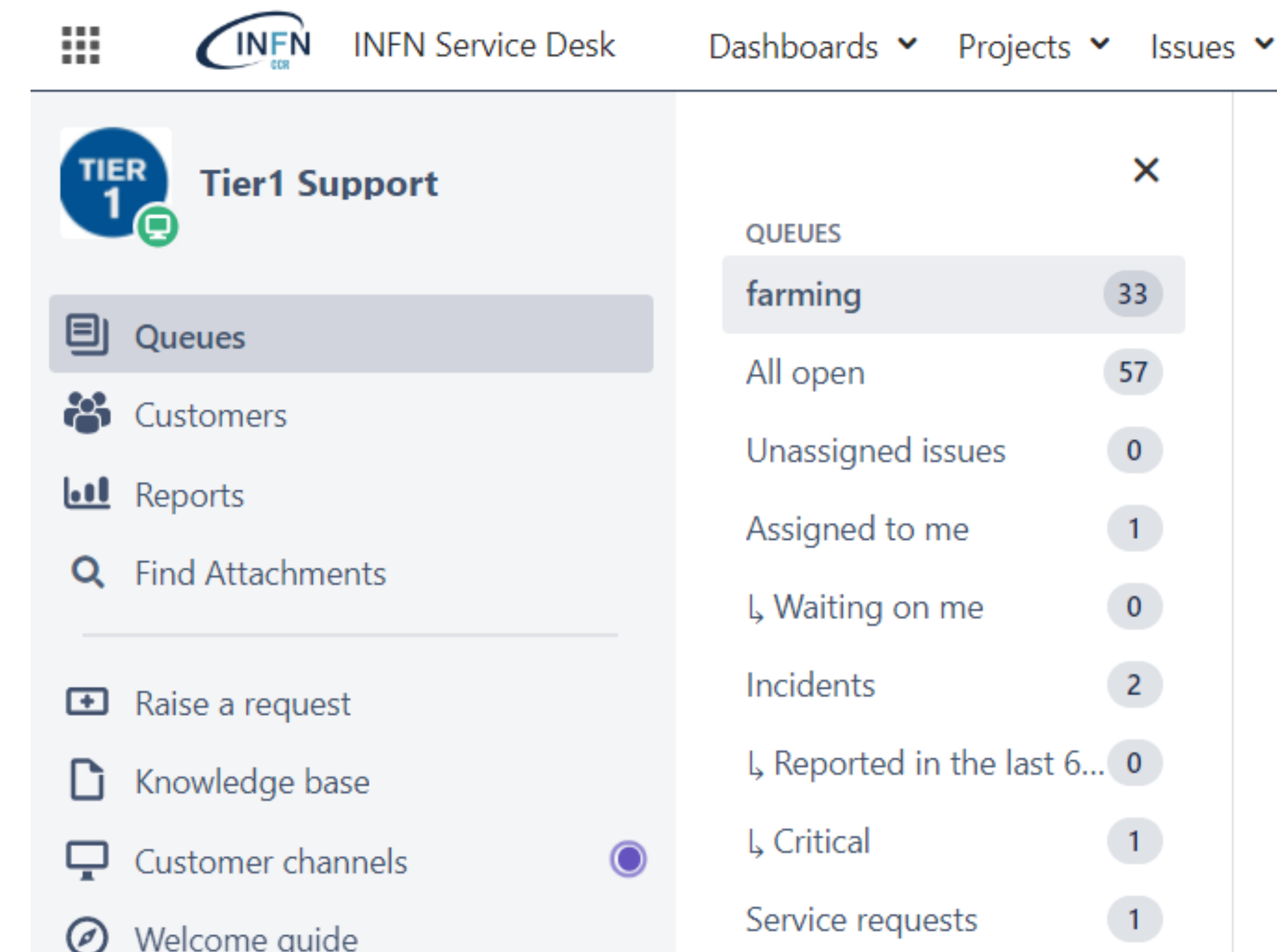
Advanced search attributes

Search Reset

show/save search result as [CSV](#) | [XML](#)

2 of 2 Tickets

Ticket-ID	Type	VO	Site	Priority	Resp. Unit	Status	Last Update	Subject	Scope
160759	Team	atlas	INFN-T1	less urgent	NGI_IT ▶ involved	in progress	2023-03-10	INFN-T1 has transfer failures as ...	WLCG
160679		cms	INFN-T1	very urgent	NGI_IT	in progress	2023-03-10	Check files at tape from production wfs	WLCG



INFN Service Desk

Dashboards ▾ Projects ▾ Issues ▾

TIER 1 Tier1 Support

Queues

Customers

Reports

Find Attachments

Raise a request

Knowledge base

Customer channels

Welcome guide

QUEUES

farming	33
All open	57
Unassigned issues	0
Assigned to me	1
↳ Waiting on me	0
Incidents	2
↳ Reported in the last 6...	0
↳ Critical	1
Service requests	1

Typical issues

- **First level** support
 - disk quota exceeded
 - issues with batch jobs (not running, getting killed, etc...)
 - explanations/documentation requests
- **Second level** support (usually escalated to other CNAF teams)
 - installation of software
 - filesystem access management (SA configuration, POSIX permissions)
 - network problems
- Due to the overlap with other units, part of the second level support is also carried out in cooperation with the User Support team

Conclusions and perspectives

- Challenges for the User Support:
 - **keep its central role** between scientific communities and the INFN computing ones
 - support over multiple infrastructures => increase in workload driven by the DataCloud project (see poster 27 on Thursday)
 - an increasing adoption of automation techniques
 - getting more people involved to keep a sustainable personal effort
- Future plans:
 - **Harmonisation** of the INFN-Cloud and T1 **documentations**
 - Gain good visibility of on both **cloud** and **T1** usage.
- Fostering the creation of **a community of users** who provide **mutual support** on common computing topics

Thank you for your attention