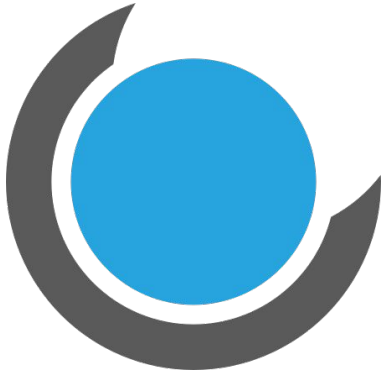
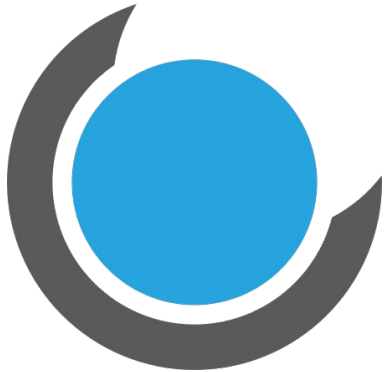


ICARE & Fink: How alerts flow from the sky to shifters

Camille DOUZET - 09/06/2026

What are Skyportal and ICARE ?



The challenge:

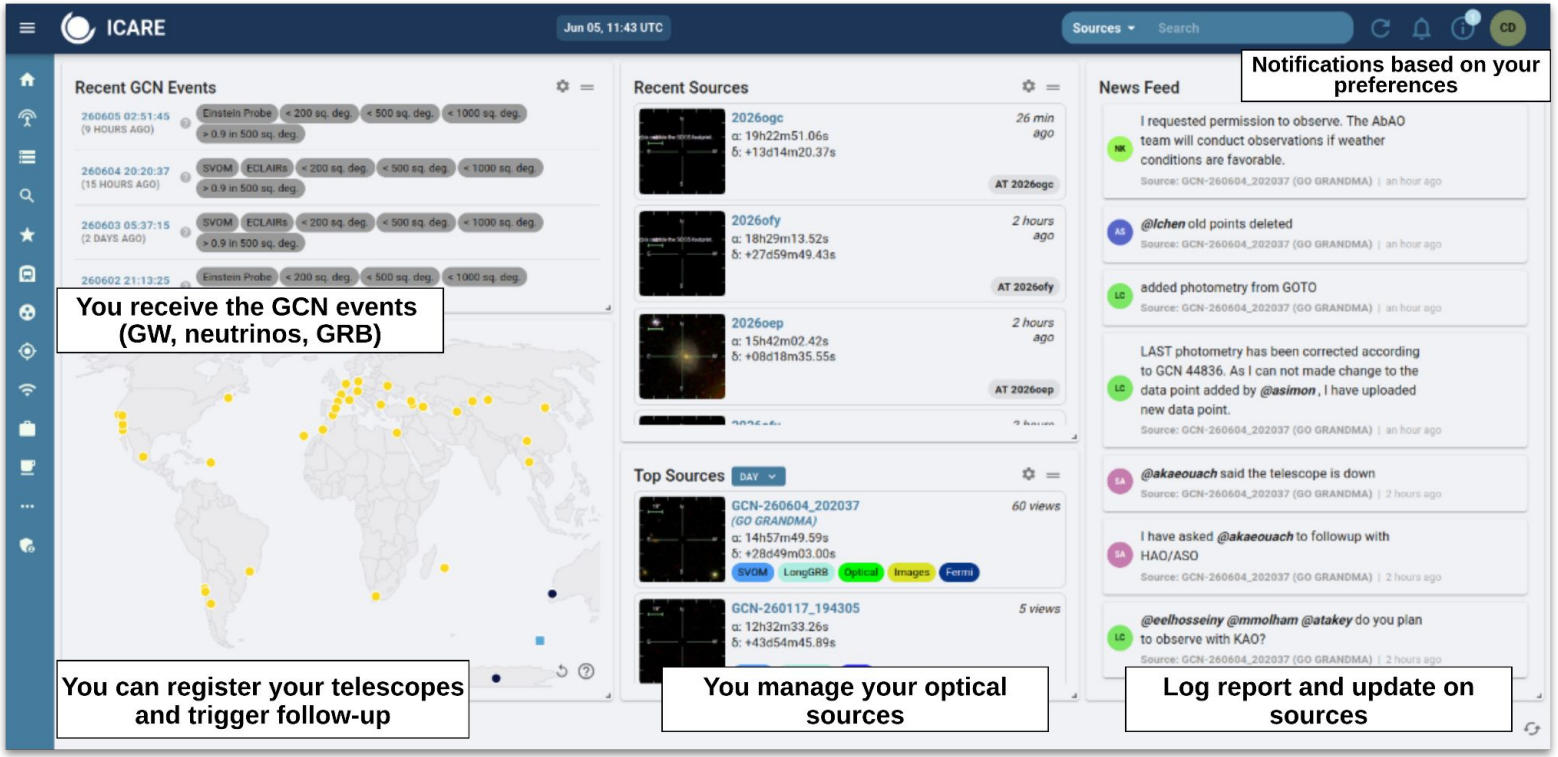
- Millions of alerts per night with LSST
- Rare multi-messenger events requiring rapid response
- Need for **real-time collaboration**

Our solution: **Skyportal-ICARE** (https://skyportal-icare.ijclab.in2p3.fr/)

- ICARE is an open-source platform for multi-messenger astronomy built on SkyPortal.
  - A single platform covering: **alerts → analysis → follow-up → offline work**.
  - The European instance of SkyPortal (ACME project), customized for our users.
  - Deployed at IJCLab, open to all collaborations.

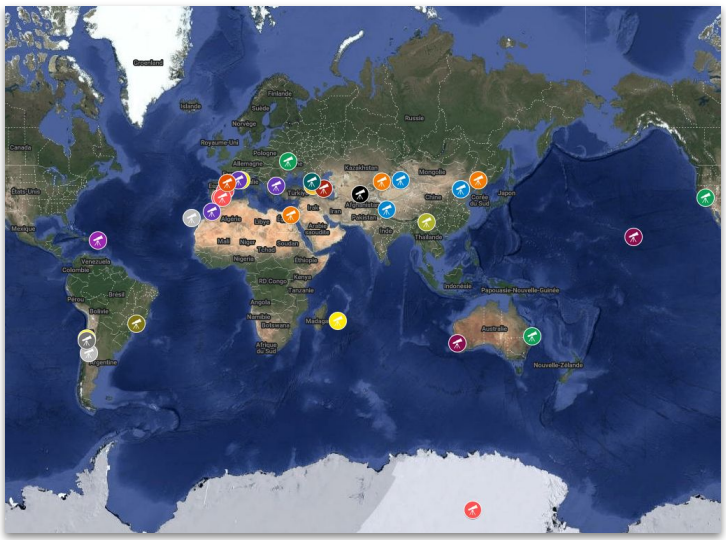
ICARE overview

Connection simplified with your ORCID account !



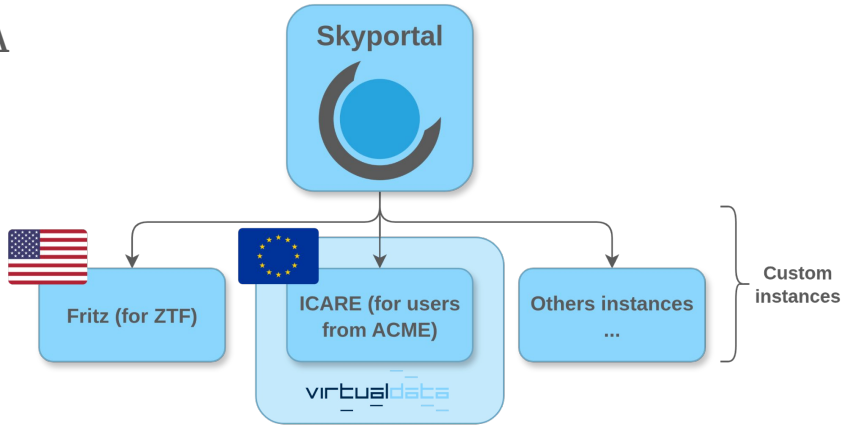
GRANDMA science case

- Funded by Sarah Antier and Patrice Hello in 2018
- 37 telescopes, 21 countries
- A network of telescopes connected across the world, equipped with photometry and spectrometry capabilities, dedicated to Time-domain Astronomy.
- Interested in fast transient, especially in
  - Kilonovae
  - GRB afterglow
  - TDE
  - Lbot
  - Superluminous supernova
- [Website link]



Skyportal and ICARE history

- 2019: Skyportal is created for Zwicky Transient Facility (ZTF) by J. Bloom
- 2020: ICARE instance is opened to GRANDMA
- 2022: First integration of **Fink** KNC filter outputs to follow ZTF survey
- 2025: ICARE open for all collaborations with ACME
- 2025: Customization of ICARE for LSST/ZTF streams
- 2026: First integration of **Fink** filter outputs for the **LSST survey** in the context of ACME (and BOOM)



Who is behind Skyportal and ICARE ?

Instance hosted at

C. Douzet
(ACME, dvp)
Manager of the application

S. Antier
(ICARE scientist lead for the GRANDMA collaboration)

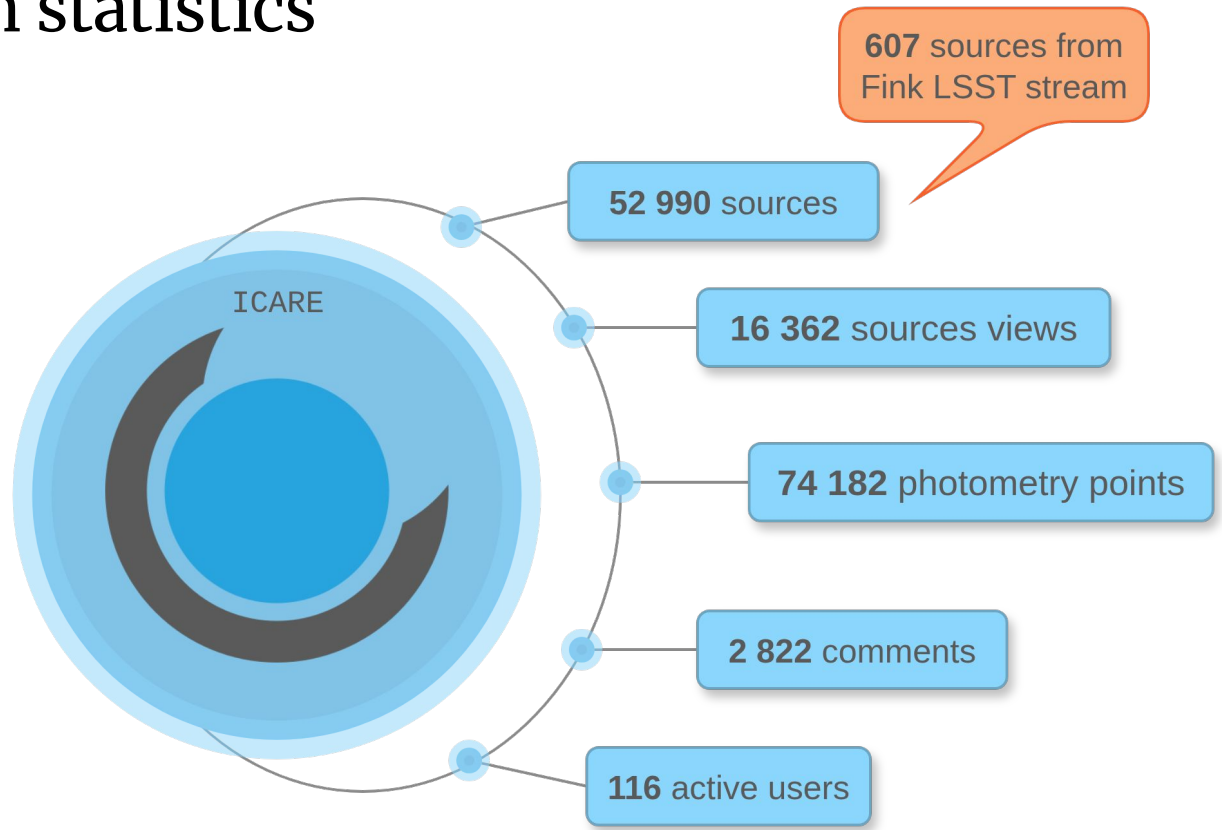
J. Peloton
(Dvp and security manager, IJCLab)

T. Du Laz
(Dvp)

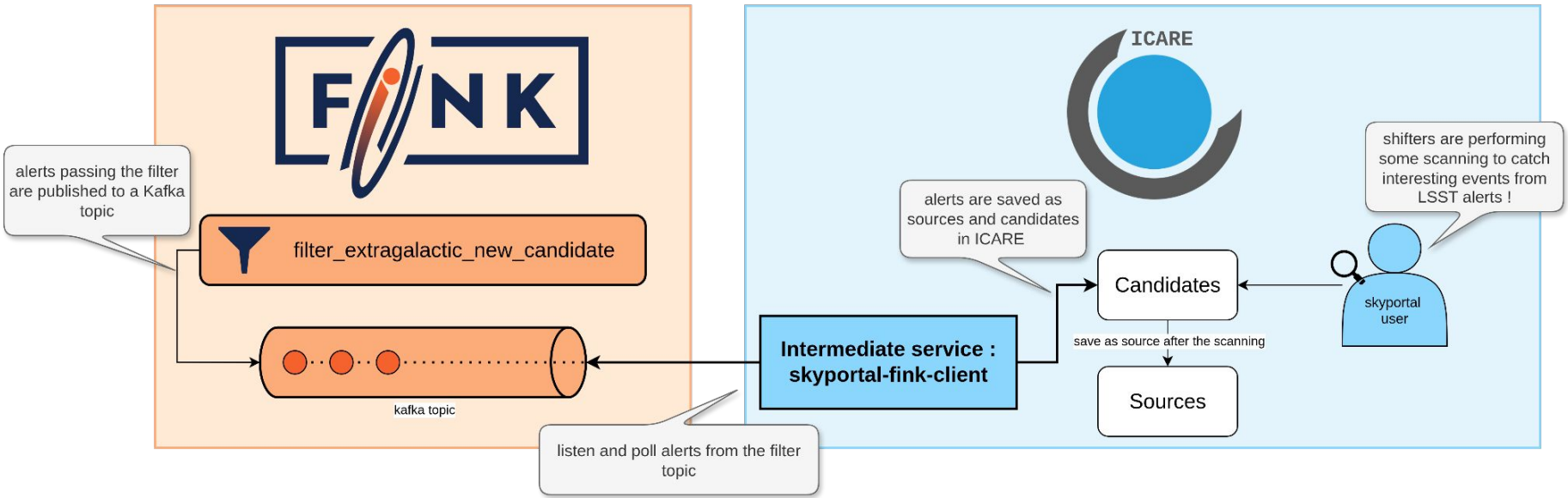
A.Le Calloch
(Dvp, UMN)

T. Cullino
(Dvp, Caletch)

Platform statistics



Overview



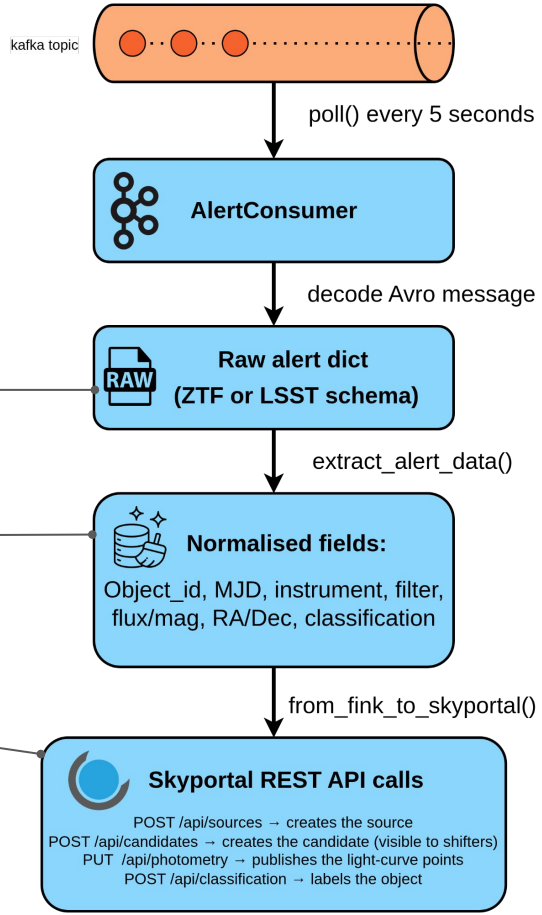
skyportal-fink-client is the bridge that continuously polls Fink and feeds ICARE with classified transient candidates.

skyportal-fink-client : an intermediary service

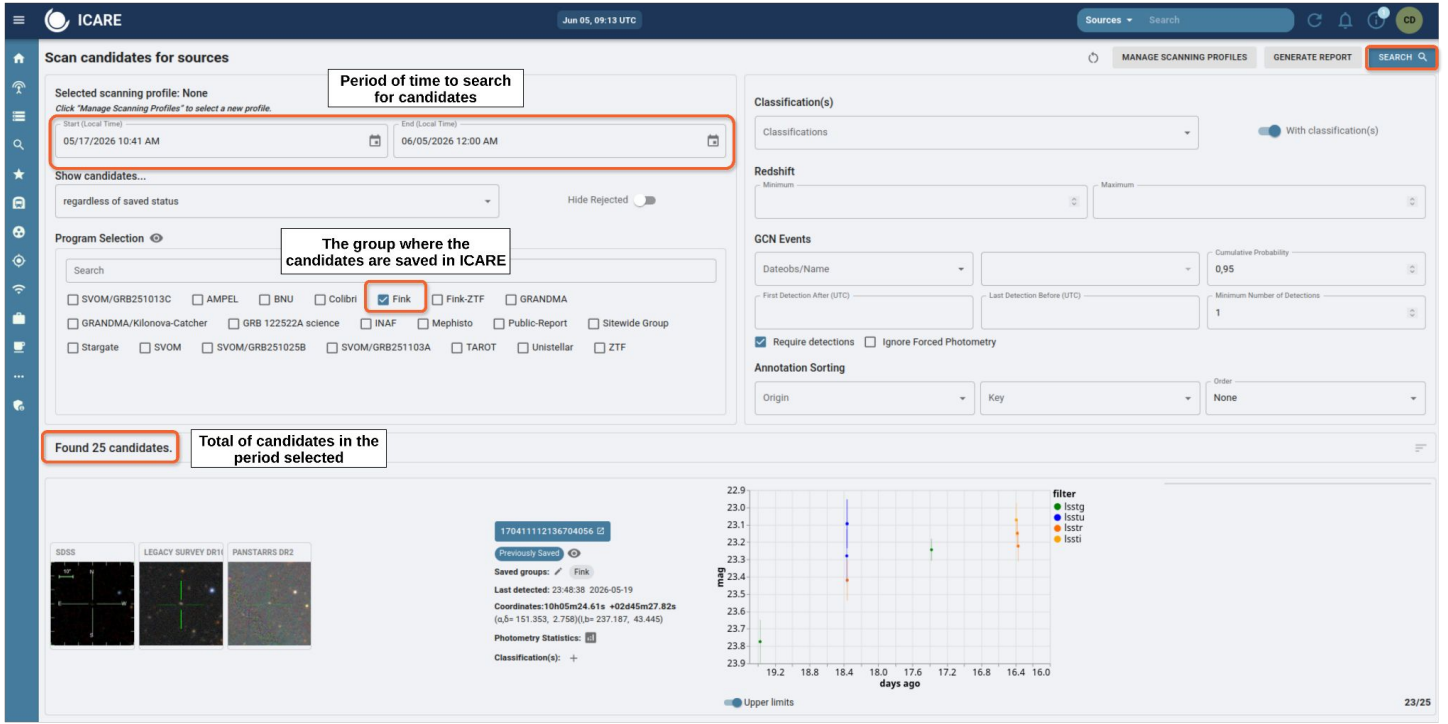
- A standalone Python service run as a service along ICARE deployment
- Goal: listen to Fink → parse alerts → push to ICARE
- Handles both ZTF and LSST/Rubin alert streams (two independent instances)
- Configured via a simple config.yaml file:
  - Which Fink topics to subscribe to
  - Which SkyPortal group receives the alerts
  - Authentication credentials for both Fink (Kafka) and ICARE (API token)
- Stateless: Kafka tracks the consumer offset via fink_group_id, so the service resumes where it stopped after a restart — no alerts are lost or duplicated (within Fink's 7-day retention)

The alert pipeline: step by step

	ZTF	LSST
Alert format	objectId + candidate dict	diaSource + diaObject dict
Photometry units	Magnitude (AB)	Flux (nJy)
Filters	ZTF-g / ZTF-r / ZTF-i	LSST u/g/r/i/z/y
Instrument name	ZTF / CFH12k	LSSTCam / LSST



LSST scanning in ICARE



LSST candidates from Fink appear directly in the scanning queue and are filterable by program (here: Fink group).

ICARE + Fink for LSST : what it brings to you

What it changes for shifters:

- Candidates arrive directly in your scanning queue → no manual ingestion + pre-filtered list
  - ***< 10 seconds from Fink publication to candidate visible in scanning queue***
- Classification from Fink is attached to every object on arrival
- Light curves in mag or flux are ready for analysis
- Save as source in one click → easy to trigger follow-up from the source page

What it can change for your collaboration:

- **Single platform**: Fink feeds it, your team analyzes in it, telescopes are triggered from it
- Data stays at IJCLab, access controlled per group
- Resumable stream → no alerts lost if the service restarts

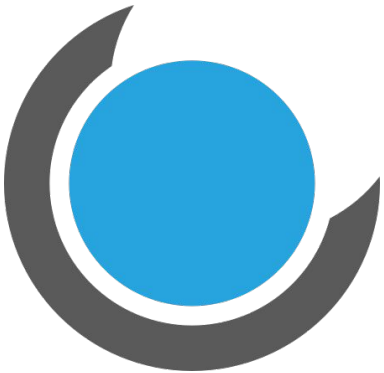
Fink and ICARE are complementary for LSST fast transients :
Fink (notify) & ICARE (manage): LSST + Follow-up to boost the cadence

Next steps for ICARE relative to LSST

- Generalization of this service for other groups
- For fast transient, combine streams of Fink results with other brokers on cuts defined by the IJCLAB's GW-Fast transient group

  → Generalization of the service to be multi-broker

- TVS members have express the need of science portal to combine LSST alerts with follow-up



Get in touch | Resources

- Create an issue on Github describing your need or the bug:
  - Skyportal (https://github.com/skyportal/skyportal)
  - ICARE (https://github.com/grandma-collaboration/icare)

OR

- Send an email to me: camille.douzet@ijclab.in2p3.fr

Do not hesitate to ask questions or share feedback !

Documentation:

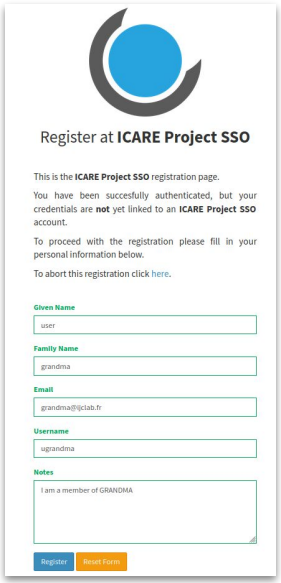
- Wiki dedicated to Skyportal : https://forge.in2p3.fr/projects/grandma/wiki/
- GitHub repositories
  - Skyportal: https://github.com/skyportal/skyportal
  - ICARE: https://github.com/grandma-collaboration/icare
- Documentation
  - Skyportal: https://skyportal.io/
  - ICARE: https://grandma-skyportal.readthedocs.io/

Thank you :)

Backup slides

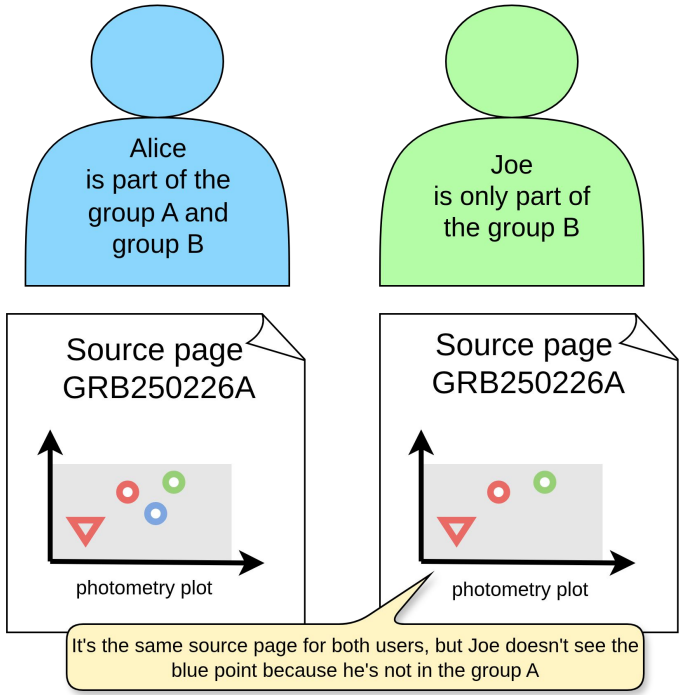
First connection to Skyportal-ICARE

1. Go to : https://skyportal-icare.ijclab.in2p3.fr/ and click on *Sign In with IAM*
2. Choose the method of your choice : *ORCID* (recommended) or Edugain
3. You has been redirected to a form →
4. Wait for your account approval, an email will be sent
5. Your registration is done and you can access to ICARE



Key concepts of Skyportal

1. **Groups**: A key Skyportal concept for data access: Data is shared between groups (using the "Share data with" button). The default group of Skyportal is *sitewide group*.
2. **Sources**: For each event, we only have one source page. This means that the header data is common, but other fields, such as photometry, are specific to each group.
3. **Telescopes and Instruments**: Anyone can add new items and check which filters are associated to the instruments



User rights - Access to data

By default, you are a **Full User**

- Overview of Skyportal roles:

Role	What you can do
View Only	View sources and data
Full User	Comment, classify, upload data, request observations
Group Admin	Everything above + manage team, shifts, sources PI or person defined by PI
Super Admin	Full system access IJCLAB Infrastructure team

- Common needs:

Need	What you can do
Organize shifts	Ask for *Manage Shifts* ACL
Validate photometry points	Ask for *Manage Sources* ACL
Modify imported photometry spectroscopy points	Ask for *Manage photometry* ACL

`You can see your ACL on your profile`

Instance of Skyportal for your own collaboration ?

Data sovereignty & access control

- Full control over permissions and data access
- No data sharing with competing collaborations or projects → Data privacy and rights fully handled in ICARE as part of ACME, in compliance with European data protection standards

Proven & trusted platform

- Well-established platform, deployed and actively used for several years → Reliable and production-ready, with a long track record across multiple projects.

Develop and integrate custom plugins

- Benefits from the continuous feedback from all science teams
- Improved communication across teams (beyond email exchanges)
- Facilitate inter-operability and data formatting
- Manage updates and long-term maintenance (it is an IJCLAB project)

Protection of the data of the various teams

Register level: Someone cannot access Skyportal without approval of the admins (can think about coptation as posting in arxiv)

Application level:

- Any member uploading data / annotation they have uploaded : They can modify it, remove it.
- Any member cannot modify data of other members except for special permission
- Any member can look on data depending on their rights promoting by the science teams and their authorities.
- Any member is allowed to create a science team.
- Same data may be shared across different science teams (no duplication).
- The data may be public with a shared link accessible to everyone, decision defined by science teams which own the data.

Infrastructure level:

- All the data are stored locally at IJCLAB. ICARE used only servers at IJCLAB.
- Only the IJCLAB infrastructure team (and their manager, S. Antier) is authorized to manage the database and their update. No one else has access to the database.
- The IJCLAB infrastructure team has discretionary rights over the data and must not use them for any improper purpose and pressure.
- The IJCLAB infrastructure team won't approve any request to export data or annotations outside of Skyportal.

Startup : setting up ICARE to receive Fink alerts

Before polling starts, the service initializes all required entities in SkyPortal via its REST API:

1. **Group** : creates or retrieves the Fink group (who owns the incoming alerts)
2. **Stream** : creates a fink_stream (the data channel)
3. **Filter** : creates a fink_filter linked to the stream and group (determines which candidates appear in the scanning view)
4. **Taxonomy** : posts (or updates) the Fink Taxonomy, a hierarchical classification tree used to label objects

This is idempotent: if the entities already exist, they are reused.