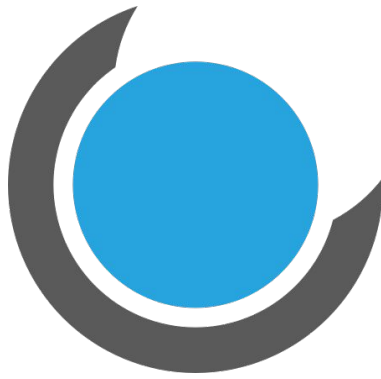




ICARE & Fink: How alerts flow from the sky to shifters



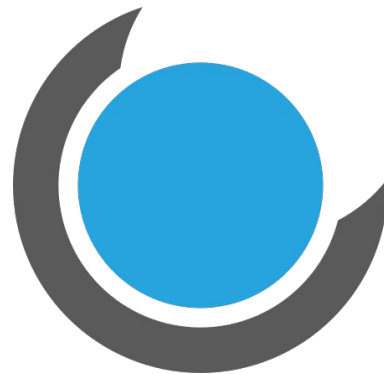
What are Skyportal and ICARE ?

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 !

The screenshot displays the ICARE web interface with a dark blue header. The main content area is divided into several panels:

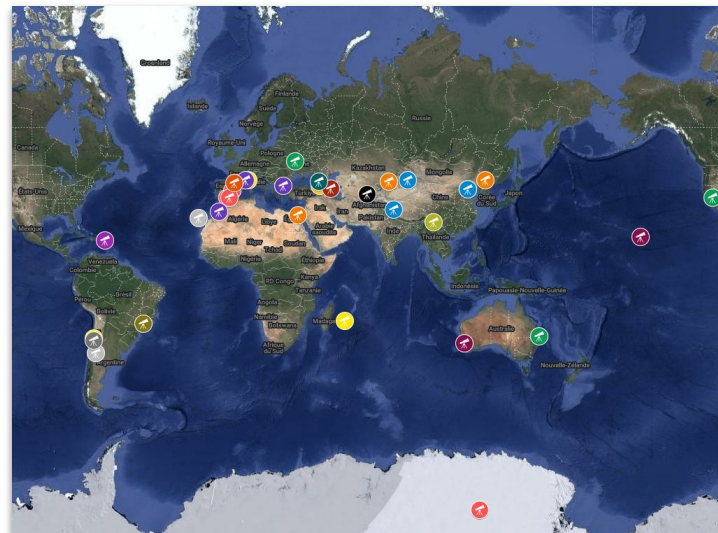
- Recent GCN Events:** A list of recent events with details like '260605 02:51:45 (9 HOURS AGO)' and 'Einstein Probe'. A callout box states: 'You receive the GCN events (GW, neutrinos, GRB)'.
- Recent Sources:** A list of astronomical sources with details like '2026ogc' and '26 min ago'. A callout box states: 'You manage your optical sources'.
- Top Sources:** A list of top sources with details like 'GCN-260604_202037 (GO GRANDMA)' and '60 views'. A callout box states: 'You can register your telescopes and trigger follow-up'.
- News Feed:** A feed of user notifications and updates, including 'I requested permission to observe. The AbAO team will conduct observations if weather conditions are favorable.' and '@lchen old points deleted'. A callout box states: 'Log report and update on sources'.

A world map is visible in the background of the 'Recent GCN Events' panel. The interface also includes a search bar, a notification bell, and a user profile icon in the top right corner.

GRANDMA science case

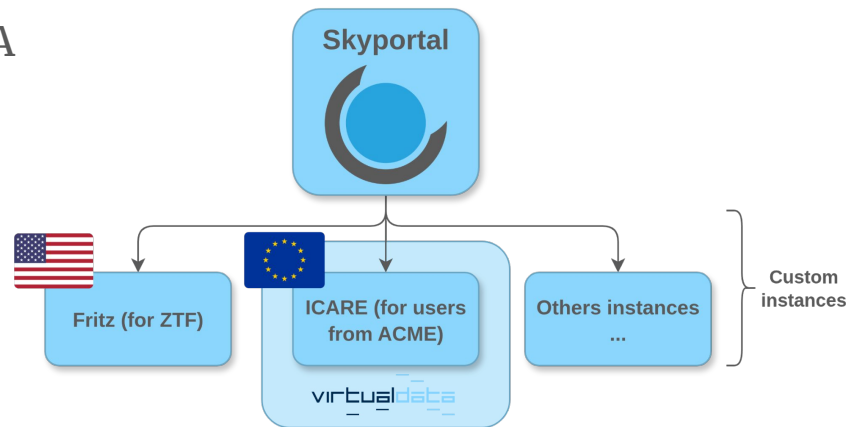


- Funded by Sarah Antier and Patrice Hello in 2018
- 37 telescopes, 21 countries
- A network of telescopes connected across the world, equipped with photometry and spectrometry capabilities, dedicated to Time-domain Astronomy.
- Interested in fast transient, especially in
 - Kilonovae
 - GRB afterglow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

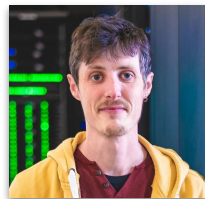


Who is behind Skyportal and ICARE ?

Instance hosted at



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



J. Peloton
(Dvp and security
manager, IJCLab)



A. Le Calloch
(Dvp, UMN)



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

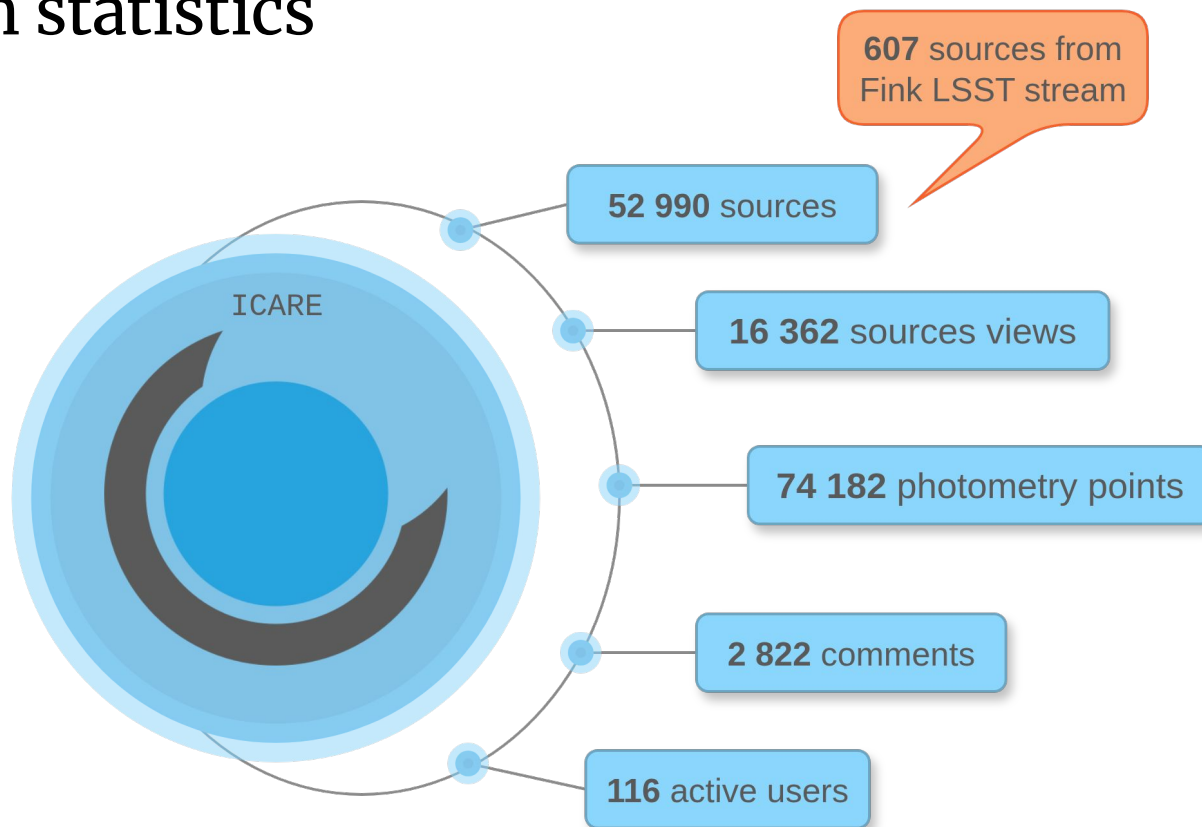


T. Du Laz
(Dvp)

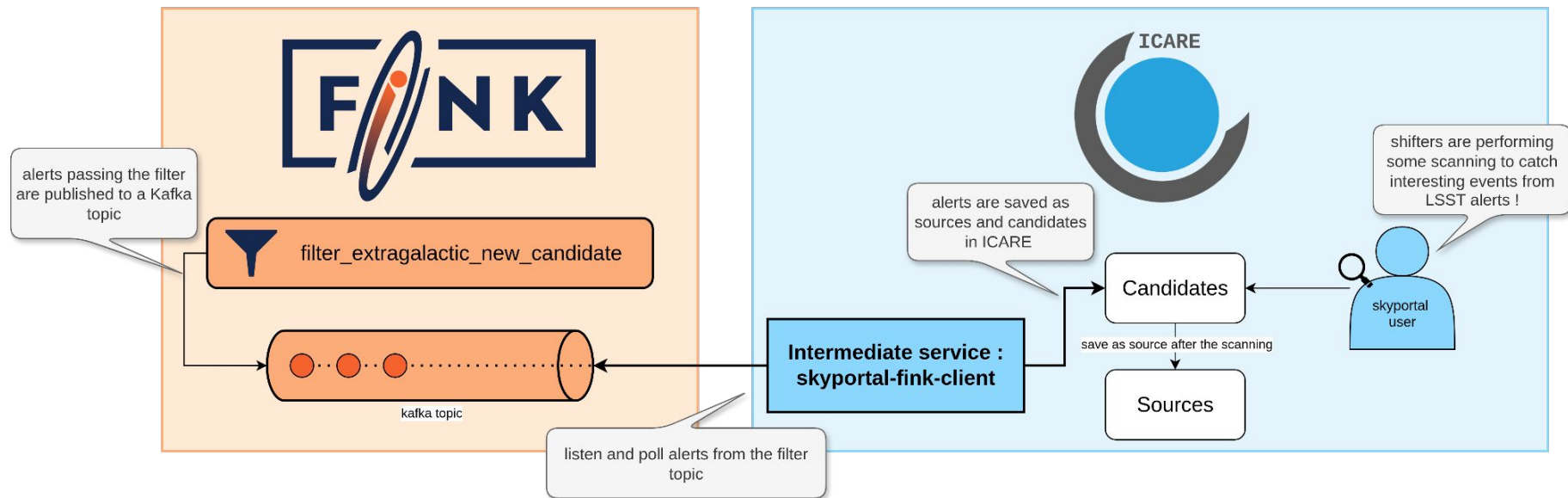


T. Cullino
(Dvp, Caletch)

Platform statistics



Overview



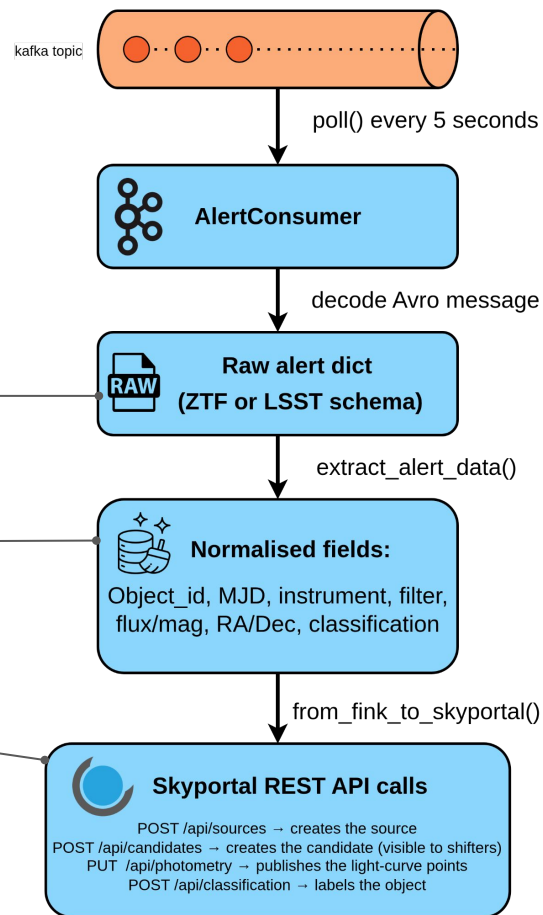
skyportal-fink-client is the bridge that continuously polls Fink and feeds ICARE with classified transient candidates.

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

The screenshot displays the ICARE web interface for scanning candidates. The top navigation bar includes the ICARE logo, a date/time indicator (Jun 05, 09:13 UTC), and a search bar. The main content area is titled "Scan candidates for sources" and contains several sections:

- Selected scanning profile:** None. A link to "Manage Scanning Profiles" is provided.
- Period of time to search for candidates:** A date range from 05/17/2026 10:41 AM to 06/05/2026 12:00 AM.
- Show candidates...** dropdown set to "regardless of saved status".
- Program Selection:** A list of programs with checkboxes. The "Fink" program is selected and highlighted with a red box. Other programs include SVOM, AMPEL, BNU, Colibri, Fink-ZTF, GRANDMA, GRANDMA/Kilonova-Catcher, GRB 122522A science, INAF, Mephisto, Public-Report, Sitewide Group, Stargate, SVOM, SVOM/GRB251025B, SVOM/GRB251103A, TAROT, Unistellar, and ZTF.
- Classification(s):** A dropdown menu.
- Redshift:** Minimum and Maximum input fields.
- GCN Events:** Dateobs/Name dropdown, Cumulative Probability (0.95), First Detection After (UTC), Last Detection Before (UTC), and Minimum Number of Detections (1).
- Require detections:** Checked checkbox.
- Ignore Forced Photometry:** Unchecked checkbox.
- Annotation Sorting:** Origin, Key, and Order (None) dropdowns.

At the bottom, a status bar indicates "Found 25 candidates." and "Total of candidates in the period selected". Below this, there are three small images (SDSS, LEGACY SURVEY DR1, PANSTARRS DR2) and a detailed view of a candidate (170411112136704056) with its coordinates, photometry statistics, and classification. A scatter plot on the right shows magnitude (mag) versus days ago, with data points colored by filter (lsstg, lsstu, lsstr, lssti).

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

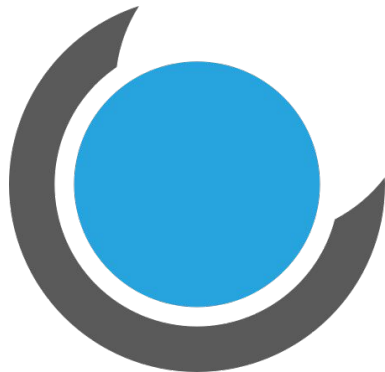
What it can change for your collaboration:

- **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:

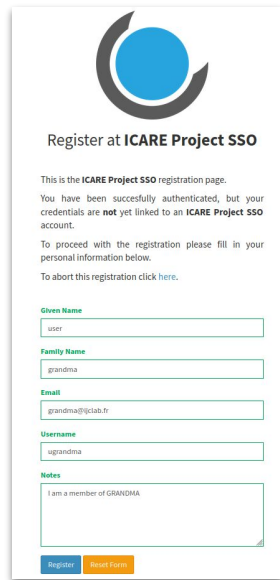
- Wiki dedicated to Skyportal : <https://forge.in2p3.fr/projects/grandma/wiki/>
- GitHub repositories
 - Skyportal: <https://github.com/skyportal/skyportal>
 - ICARE: <https://github.com/grandma-collaboration/icare>
- Documentation
 - Skyportal: <https://skyportal.io/>
 - ICARE: <https://grandma-skyportal.readthedocs.io/>

Thank you :)

Backup slides

First connection to Skyportal-ICARE

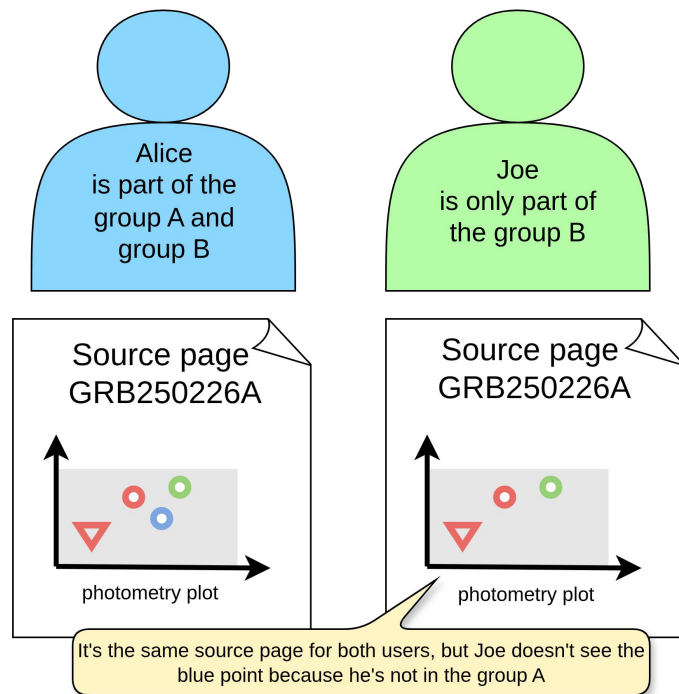
1. Go to : <https://skyportal-icare.ijclab.in2p3.fr/> and click on **Sign In with IAM**
2. Choose the method of your choice : **ORCID** (recommended) or Edugain
3. You has been redirected to a form —————→
4. Wait for your account approval, an email will be sent
5. Your registration is done and you can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



The screenshot shows a web form titled "Register at ICARE Project SSO". At the top is the ICARE logo, a blue circle with a grey swoosh. Below the title, a message states: "This is the ICARE Project SSO registration page. You have been successfully authenticated, but your credentials are not yet linked to an ICARE Project SSO account. To proceed with the registration please fill in your personal information below. To abort this registration click [here](#)." The form contains several input fields: "Given Name" (with "user" entered), "Family Name" (with "grandma" entered), "Email" (with "grandma@ijclab.fr" entered), and "Username" (with "ugrandma" entered). There is also a "Notes" section with a text area containing "I am a member of GRANDMA". At the bottom are two buttons: "Register" (blue) and "Reset Form" (orange).

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 <i>Manage Shifts</i> ACL
Validate photometry points	Ask for <i>Manage Sources</i> ACL
Modify imported photometry spectroscopy points	Ask for <i>Manage photometry</i> 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 cooptation 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.