

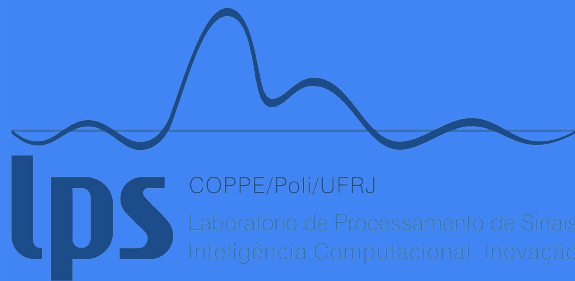
Glance Search Library

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UNIVERSIDADE FEDERAL
DO RIO DE JANEIRO

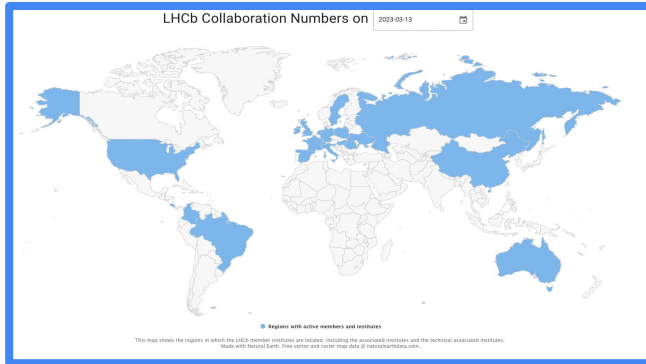


The logo for The Glance Project, featuring a stylized 'G' that incorporates a circular shape with a white dot inside, resembling an eye or a lens, followed by the word 'lance' in a bold, sans-serif font.

The Glance Project logo

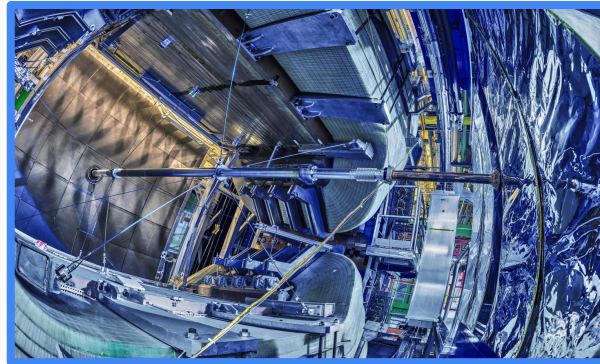
The Glance Project

- Active since 2003
- Used by 3 CERN experiments
- +20 web systems



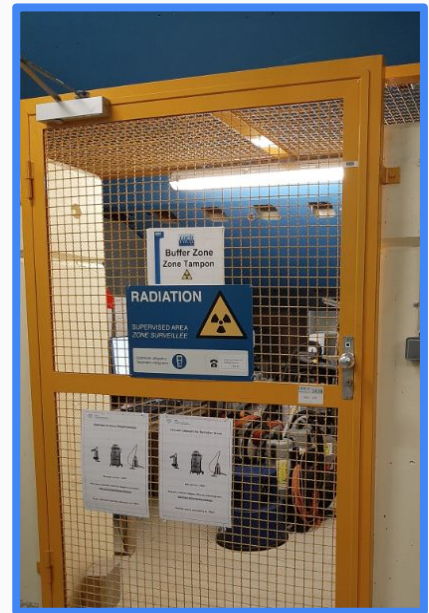
Membership

- **96** Institutes
- **1571** Members
- **1077** Authors
- **21** Countries



Equipment Management

- **53617** Assets
- **1080** Models
- **25110** Cables



Radiological Protection Survey

- **10536** radiation measurements
- **240** surveys
- **83** points



How many members joined the Collaboration in 2023?



Which assets were removed from the detector last week?



How to extract all radioactive measurements in CSV?



Glance Search Library

Precursor: FENCE

The FENCE Framework

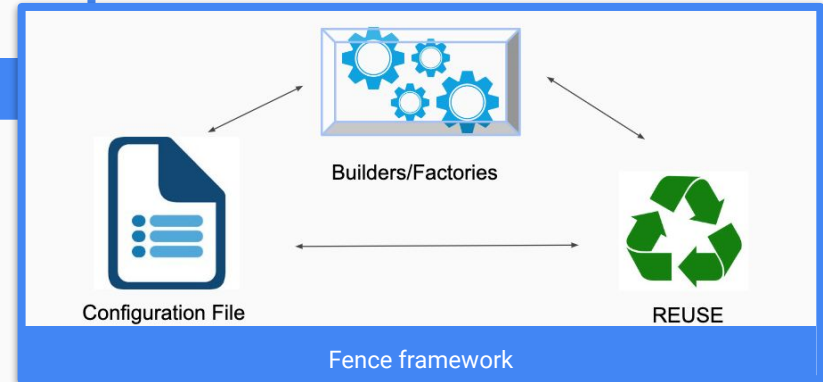
- A software framework:
 - is an environment that provides already implemented functionalities to be used as part of a system that is being developed.
 - provides a standard way to implement systems.
 - a framework (structure that serves as a support or guide) is wider than a library (building blocks that can be used anywhere).
- FENCE is an object oriented framework:
 - Gathers the required knowledge to develop systems that are suitable to CERN.
 - It is continuously being evolved by innovation.
 - Promotes reuse and gathers the concepts of inheritance.
 - Standardization on how to develop systems
 - Minimize the impacts of team turnover (less effort to be trained, understand requirements, etc)
 - Offers high level of configuration (heterogeneous users/needs).
 - Offers transition between:
 - Static relational and normalized BD x Dynamic and procedural system



Fence goals

! Issues

- High coupling
- Limited customization
- Lack of documentation



Precursor: FENCE

The screenshot shows the 'LHCb Cables' search interface. The search criteria are: Start Point contains v2. The logic workspace shows a visual representation of the query with nodes for Start Point (v2), End Point (PIA02), and Start Point (v3). The sort by dropdown is set to 'Connector SCEM End' and 'descending'. A search button is visible at the bottom right.

Create query

The screenshot shows the search results for the query. The table has columns: Status, Last Change, Creation Date, Item ID, Start Point, End Point, Diameter, EDMS link, Institute, Label, and Labe. The results are filtered to show 25 items per page. A red box highlights the first five rows of the table.

Status	Last Change	Creation Date	Item ID	Start Point	End Point	Diameter	EDMS link	Institute	Label	Labe
Removed	021-07-20 011.10	2017-01-30 19.31.44	4TCCERV001800	Rack V2A01	Rack P1A02	18	not defined	European Organization for Nuclear Research (CERN)	4TYCERV001800	TV_V2
Removed	021-07-20 026.28	2017-01-30 19.31.44	4TCCERV001824	Detector Part VSAC	Rack P1A02	18	not defined	European Organization for Nuclear Research (CERN)	4TYCERV001824	TV_V3
Removed	021-07-20 026.11	2017-01-30 19.31.44	4TCCERV001823	Detector Part VSAC	Rack P1A02	18	not defined	European Organization for Nuclear Research (CERN)	4TYCERV001823	TV_V3
Removed	021-07-20 017.44	2017-01-30 19.31.44	4TCCERV001822	Rack V2A01	Rack P1A02	18	not defined	European Organization for Nuclear Research (CERN)	4TYCERV001822	TV_V2
Removed	021-07-20 017.31	2017-01-30 19.31.44	4TCCERV001821	Rack V2A01	Rack P1A02	18	not defined	European Organization for Nuclear Research (CERN)	4TYCERV001821	TV_V2

CERN Accelerating science

```
"columns": [
  {
    "label": "",
    "icon": "user",
    "value": {
      "tag": "a",
      "attributes": {
        "target": "_blank",
        "href": "{CURRENT_FOLDER}/details.php?id=[id]",
        "data-cableId": "[[id]]"
      }
    },
    "content": {
      "tag": "span",
      "attributes": {
        "class": [
          "glyphicon", "glyphicon-share-alt"
        ]
      }
    }
  }
]
```

Query results

New complex interfaces

The screenshot shows the LBEMS Asset search interface. At the top, there is a search bar with the text "Search models and equipment...". Below it, the "Asset search" section is active. The search criteria are: "Item ID" contains "CERSOCK". The results table shows three items:

On EAM-TREC	Item ID	Asset type	Description	Responsible Persons	TREC Responsible	Responsible Subsystems	Responsible Institute	Insta
<input type="checkbox"/>	4IXCERSOCK0001	Equipment	Electrical sockets from zone globale UX85	[Redacted]	[Redacted]	IX - Infrastructure / General	Conseil European Recherche Nucl. (CERN)	Rem
<input type="checkbox"/>	4IXCERSOCK0002	Equipment	Electrical sockets from zone globale UX85	[Redacted]	[Redacted]	IX - Infrastructure / General	Conseil European Recherche Nucl. (CERN)	Rem
<input type="checkbox"/>	4IXCERSOCK0003	Equipment	Electrical sockets from zone globale UX85	[Redacted]	[Redacted]	IX - Infrastructure / General	Conseil European Recherche Nucl. (CERN)	Rem

Red arrows indicate the flow of information: from the search criteria, to the table, to a specific row, to a "Column" panel, and finally to a "Popup window".

New complex case

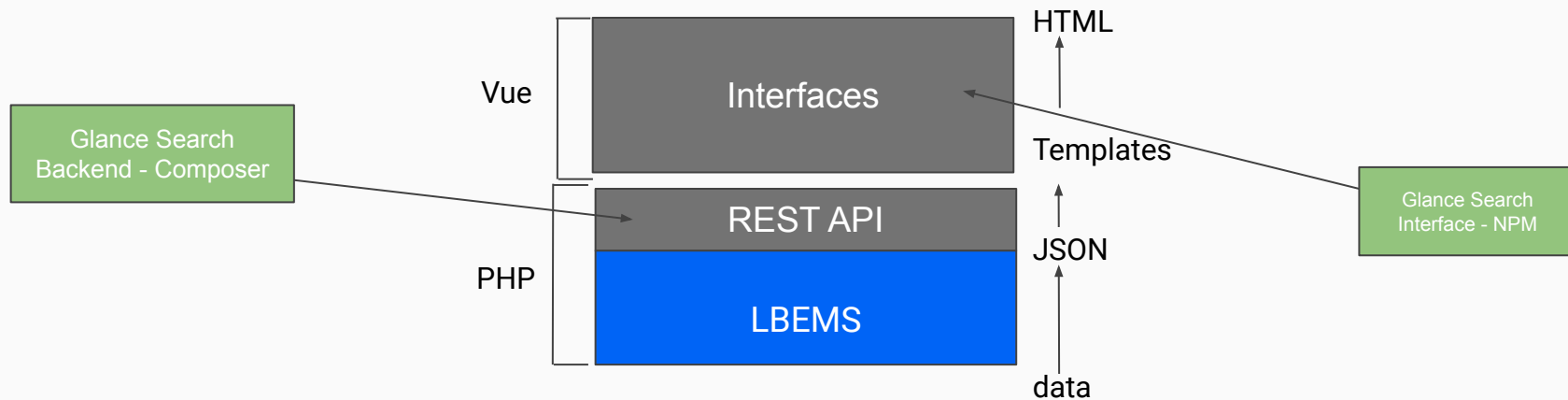
The "Column" panel displays details for the selected asset. It shows a list of items with checkboxes and status indicators (green checkmarks). The top item is "On EAM-TREC" with a checkbox and a green checkmark. Below it are two more items, each with a checkbox and a green checkmark. The panel is labeled "Column" at the bottom.

The "Popup window" displays detailed information for the asset "4IXCERSOCK0001". It includes a "VIEW IN EAM LIGHT" button and the following details:







- Description: Electrical sockets from zone globale UX85
- Responsible: [Redacted]
- Location: H
- Status: Installe et Maintenu
- Comission date: 08-MAR-2023 00:00

Popup window

New architecture



- The new architecture inherited a backlog of 20 issues from the Fence Super Search

 Save search not persistent and limited	 Caching
 Sorting / Lookup	 Preloaded searches and custom interfaces
 Download	 API

Glance Search Library Backend - Query language

💡 **Create a query language that is easy to write and translate to a SQL WHERE clause**

🗣️ "I want to see all active members who joined LHCb in 2022 and all members who left that year. "

👤 "(startDateInLHCb >= 01-01-2022 AND startDateInLHCb <= 31-12-2022 AND employmentStatus = active)
OR
(endDateInLHCb >= 01-01-2022 AND endDateInLHCb <= 31-12-2022)"

Elements that compose a Search **Filter**:

- Search field
 - Search Operator
 - Search Value
 - Conjunction
 - Grouping mark
- ➔ Search Statement

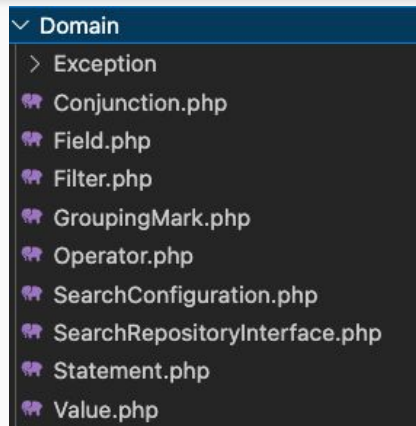


```
...  
WHERE ((START_DATE_IN_LHCB >= TO_DATE('2022-01-01', 'YYYY-MM-DD') AND START_DATE_IN_LHCB <=  
TO_DATE('2022-12-31', 'YYYY-MM-DD') AND UPPER(EMPLOYMENT_STATUS) = UPPER('Active')) OR (  
END_DATE_IN_LHCB >= TO_DATE('2022-01-01', 'YYYY-MM-DD') AND END_DATE_IN_LHCB <= TO_DATE  
( '2022-12-31', 'YYYY-MM-DD')));
```

Glance Search Library Backend - Provider

- Search field
- Search Operator
- Search Value
- Conjunction
- Grouping mark

Mapped to



- A **Provider** class exposes all methods available. **Search configuration** provides the necessary information to map a **Search field** to a database table column. It also includes **caching** information.



```
public function runSearch(SearchInputDTO $command, string $configurationPath): array
```



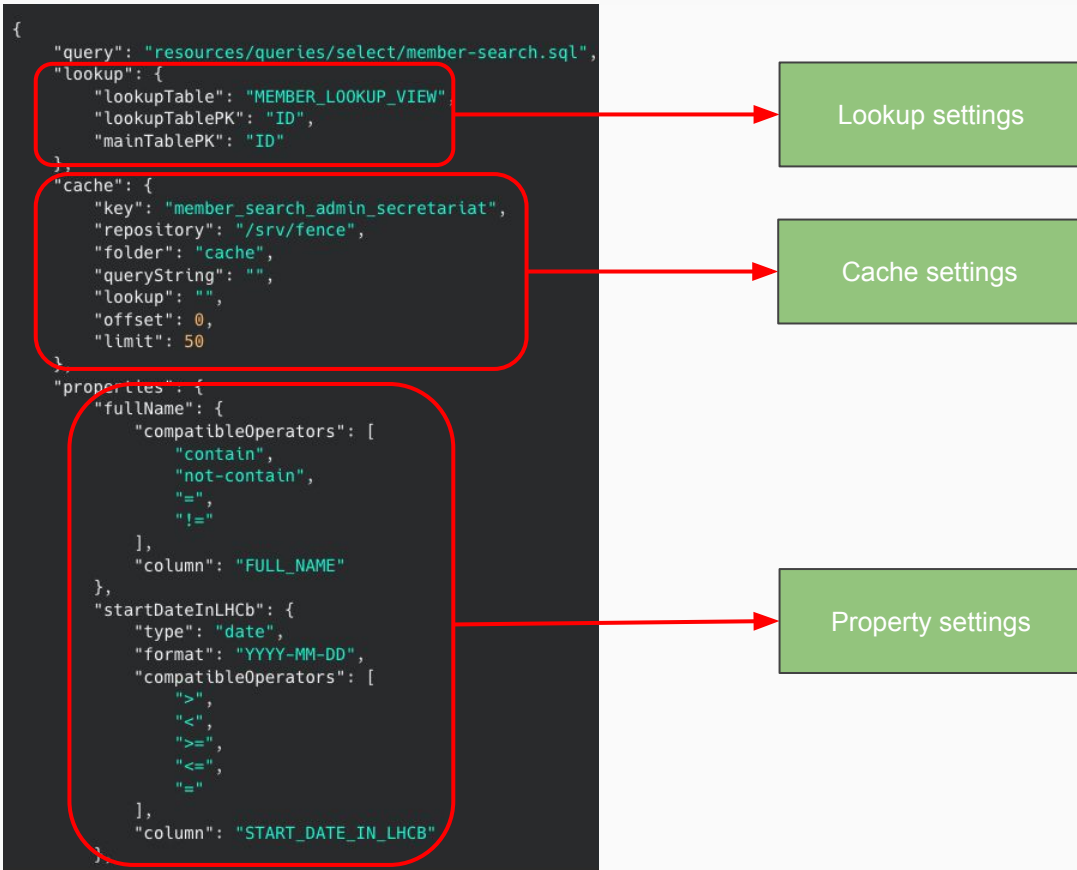
```
public function saveSearch(array $input, int $agentId): int
```

```
public function getSearchConfigurationById(int $searchId): array
```





```
public function getMemberSearchConfigurations(int $memberId): array
```

```
public function deleteSearch(int $searchId): void
```

Glance Search Library Backend - Configuration



Configuration:

-  Simpler configuration files
-  Proper lookup
-  Results can be exposed with API
-  Cache a specific query

Glance Search Library Frontend

The screenshot shows the 'Member search' interface. It features an 'ADVANCED SEARCH' section with three filter boxes: 'Employment status' (dropdown), 'Search operator' (equals), and 'Filter value' (Active). Below these are search criteria: 'Start date in LHCb' greater or equals '2022-01-01' AND 'Start date in LHCb' less or equals '2022-12-31' AND 'Employment status' equals 'Active'. An 'OR' dropdown is also present. Further down, there are more criteria: 'End date in LHCb' greater or equals '2022-01-01' AND 'End date in LHCb' less or equals '2022-12-31'. At the bottom, there are buttons for '+ SEARCH GROUP', 'X CLEAR FILTERS', 'Results per page' (50), 'Visible Columns' (Details, Employment status, +33 others), 'Filter results...' (with a character limit), and a 'SEARCH' button. The results table below has columns: Details, Employment status, Full name, First name, Last name, First name initials, Membership access, and First name (LaTeX). The first row shows a member with 'Active' status, 'A. A.' initials, and 'Software Associate' membership.

The 'Save search settings' dialog shows the search name 'CHEP Search' and a field to provide a name to the custom search. It has 'CANCEL' and 'SAVE' buttons.

The 'Choose settings' dialog shows a dropdown menu with 'All active members' selected. It has 'APPLY' and 'CANCEL' buttons.

The 'Visible Columns' dialog shows a list of columns with checkboxes: Details, Employment status, Full name, First name, Last name, and First name initials. All are checked.

- ✓ Save search
- ✓ Pagination
- ✓ Lookup
- ✓ Download all
- ✓ Caching

👤 All components are grouped in a wrapper: **SuperSearch.vue**. This component receives a set of properties that define the available search fields.

🌟 Slots

The diagram shows a 'parent template' with a `<FancyButton>` component containing a 'Click Me' button. This is replaced by a `<FancyButton>` component containing a `<slot>` component. The replacement is labeled 'replace'.

Vue documentation

Glance Search Library Frontend - Predefined searches

Membership

Search members and institutes...

FAQ Help gsouzaes

All official institutes

Only institutes with ACTIVE participation are displayed

Showing 1 to 49 of 70 records
No records selected

Filter results...
Please provide at least 4 characters

EXPORT RESULTS AS CSV

Results per page... Visible Columns: Details Name (+23 others)

Details	Name	Short Name	Foundation Code	Members Status	Participation Status	Participation Type	Collaboration Entry Date	Associated To
Details	Budker Institute of Nuclear Physics (BINP)	BINP	000763	Active	Active	Official	01-JAN-94 12.00.00.000000 AM	-
Details	CBPF - Centro Brasileiro de Pesquisas Físicas (CBPF)	CBPF	000156	Active	Active	Official	01-JAN-94 12.00.00.000000 AM	-
Details	Cavendish Laboratory, University of Cambridge	Cambr	003401	Active	Active	Official	01-JAN-94 12.00.00.000000 AM	-
Details	Center for High Energy Physics, Tsinghua University	Tsinghua U.	072663	Active	Active	Official	01-JAN-94 12.00.00.000000 AM	-
Details	Centre de Physique de Particules de Marseille (CCPM), Inst. Nat. Phys. Nucl. et Particul. (IN2P3)	CPPM	000369	Active	Active	Official	01-SEP-97 12.00.00.000000 AM	-
Details	Conseil European Recherche Nucl. (CERN)	CERN	000197	Active	Active	Official	01-JAN-94 12.00.00.000000 AM	-
Details	Consejo Nacional de Rectores (CONARE)	Consejo Nacional de Rectores (CONARE)	107476	Active	Active	Official	10-JUN-22 12.00.00.000000 AM	-
Details	Department of Physics and Astronomy, University of Manchester	UNIMAN	000427	Active	Active	Official	01-JAN-94 12.00.00.000000 AM	-
Details	Department of Physics, University of Warwick	War	095382	Active	Active	Official	27-NOV-08 12.00.00.000000 AM	-
Details	Fac. of Phys. & Applied Comp. Sci., AGH University of Science and Technology	CracAGH	003696	Active	Active	Official	01-JAN-94 12.00.00.000000 AM	-
Details	Fakultaet Physik, Technische Universitaet Dortmund	TUD	000273	Active	Active	Official	01-JAN-94 12.00.00.000000 AM	-

< 1 2 >

- All active institutes
- All official institutes
- All associated institutes
- All institutes for author affiliation
- All technical associate institutes
- All institutes hosted at the pit

Glance Search Library Frontend - Predefined searches

LHCb Equipment Management System - LBEMS

Search models, equipment and equipment clusters ...

Assets

- SEARCH ASSETS
- REGISTER EQUIPMENT
- CALORIMETER EQUIPMENT
- INFRASTRUCTURE EQUIPMENT
- M1 CONTROL CABLES**
- MUON EQUIPMENT

Equipment Models

SEARCH MODEL

Latest Updates

- [4CECERPLA9366](#), modified on 2023-04-30 22:52
Comments changed from - to ZDR x=-10cm, y=-39cm
- [4CECERPLA9823](#), modified on 2023-04-30 22:51
Comments changed from - to ZC x=-274cm, y=-311cm
- [4CECERPLA9980](#), modified on 2023-04-30 22:49
Comments changed from - to ZC x=-383cm, y=67cm
- [4CECERPLA3193](#), modified on 2023-04-30 22:48
Comments changed from - to ZC x=-
- [4CECERPLA5676](#), modified on 2023-04-30 22:47
Comments changed from - to ZDR x=-87
- [4CECERPLB2580](#), modified on 2023-04-30 16:39
Comments changed from - to ZC x=355cm, y=
- [4CECERPLA1598](#), modified on 2023-04-30 16:38
Comments changed from - to ZC x=-197cm

Muon Equipment Filter results ...

Showing 1 to 50 of 3857 records
No records selected

Asset	Equipment Model	Functional Position	Physical Location	User
<input type="checkbox"/>	Details	M1 control cables	them as spares. Sample 4UCLNF00000006 (ref: 3124225) measured via gammaspec at 0.1 LL, these are the same M1 cables from the same area. Will be declared waste in order to remove them from traceability system, but Muon will keep them as spares.	4UCLNF00000008
<input type="checkbox"/>	Details	M1 control cables	Sample 4UCLNF00000006 (ref: 3124225) measured via gammaspec at 0.1 LL, these are the same M1 cables from the same area. Will be declared waste in order to remove them from traceability system, but Muon will keep them as spares.	4UCLNF00000009
<input type="checkbox"/>	Details	MUON Chamber C side M3R3		4UAPNF03300051
<input type="checkbox"/>	Details	Muon Chamber M3R4		4UAPNB03400058
<input type="checkbox"/>	Details	MUON Chamber C side M3R4	Two gaps in short: B&C	4UAPNB03400134
<input type="checkbox"/>	Details	Medium bag with steel pipe	To be checked via gammaspec	

Results

- 10 search interfaces currently deployed to production, helping hundreds of active users;
- 2 external applications querying our APIs to power their systems;
- The Glance Search Library fulfilled one of the most important requirements among all applications maintained by Glance in LHCb. This made possible the upgrade of Legacy Systems to a more modern stack.

Goals for the future:

- Implement the Glance Search Library on every future LHCb Glance system;
- Keep adding new features to the Glance Search Library;
 - Improving both the user and the developer experience;
- Adoption of the Glance Search Library by the other experiments at Glance;
 - For now, only LHCb uses the library.

Thanks!

Glance project presentations at CHEP 2023:

- The ALICE Glance Membership system
 - Poster session, Poster #13, 15:30 - 16:30
- The ALICE Glance Service Work system
 - T8 May 8th, 2023, 15:00 - 15:15
- Iterative and incremental development of the ATLAS Publication Tracking system
 - T5 May 9th 2023, 14:00 - 14:15
- Enhancing data consistency in ATLAS and CERN databases through automated synchronization
 - T5 May 9th 2023, 14:15 - 14:30
- The migration to a standardized architecture for developing systems on the Glance project
 - T5 May 9th 2023, 14:45 - 15:00

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