

Enhancing data consistency in ATLAS and CERN HR databases through automated synchronization

Gabriel Aleksandravicius
Ana Clara Loureiro Cruz
Carolina Niklaus Rodrigues
Gabriela Lemos Lúcidí Pinhão
Pedro Henrique Goes Afonso
Rodrigo Coura Torres
on behalf of the ATLAS Collaboration



What is Foundation?

Human resources management system at CERN

Person History

New Query Print View Save Logout Help

Fields with asterisks (*) are obligatory and must be filled in

Person

Name or ID:
Gabriel DE ARAGAO ALEKSANDRAVICIUS (EP) Tel:
CERN id: 0, Person id: [REDACTED] Date of Birth: 19.05.2000, Nationality: BRAZIL (BR), Status: EXTN, Org-Unit: EP, Sex: M

Personal data history

Person Information History

From: * 26.11.2021	To: * -	Types: Assignments:
Title: * Mr. [v]	First Name: * Gabriel	Middle Names:
Lastname: * De Aragao Aleksandravicius	Alternative Email: 	
Previous Lastname: 		
Preferred First Name: 		
Date of Birth: * 19.05.2000	Sex: * Male	
Nationality: * Brazilian [v]	Second Nationality: 	<input type="button" value="Apply"/>
Birth place: 	Birth Country: 	
Contact Person for Externat: 	Reason: PROJ(Projects) [v]	
Start of External Period: 	End of External Period: 	
Comments: 		

Management of CERN personnel data - Foundation

Handling of member and their participations within CERN

Participation to an Experiment

New Query Print View Save Logout Help

Fields with asterisks (*) are obligatory and must be filled in.

Person

Name or ID:
[Gabriel DE ARAGAO ALEKSANDRAVICIUS \(EP\)](#) Tel:

CERN Id: **0**, Date of Birth: **19.05.2000**, Nationality: **BRAZIL (BR)**, Status: **EXTN**, Org-Unit: **EP**, Sex: **M**

From Date*: To Date*:

Experiment*: Institute*: Primary participation? Yes

Is in grey book? No Phone: Fax:


Oracle HR Message: Comments:

Participation to an Experiment history

Participation to an Experiment Information History

From Date: **01.01.2021** To Date: **30.06.2023**

Is in Grey Book: **No**

 Experiment: **ATLAS - ATLAS** Institute: **Universidade Federal do Rio de Janeiro, RIO DE JANEIRO (6159)**

Phone: _____ Fax: _____

Message: _____ Comments: _____

Previous HR Messages: _____

What is ATLAS Glance?

ATLAS Glance systems

The screenshot shows the ATLAS Glance web interface. At the top, there is a blue header with the ATLAS logo on the left and navigation icons (home, documents, graduation cap, bar chart) and a user profile 'gdearaga' on the right. Below the header is a light blue navigation bar with 'ATLAS' and a dropdown arrow. The main content area features a large heading 'Welcome to the ATLAS Glance Interfaces'. Below this, there are four columns of categories, each with a plus sign icon and a list of items:

- Collaboration**
 - + Membership
 - + Appointment
 - + Collaboration Board
 - Meetings
 - + Author lists
 - + Idea Box
- Publications**
 - + Analysis - Phase 0
 - + Analysis - Papers
 - + Analysis - CONF Notes
 - + Analysis - PUB Notes
 - + Analysis - PLOTS
 - + Thesis
- Speakers**
 - + SCAB
 - + Speakers Committee
 - + TDAQ Speakers
 - + Public Pages
- Equipment**
 - + ACES
 - + CORE Value Recognition

At the bottom of the interface, there is a blue footer with the text 'CERN Accelerating science' on the left, 'The GLANCE Project' with an envelope icon in the center, and a dark blue button with a star icon and the text 'report an issue' on the right.

Management of CERN personnel data - Glance

ATLAS membership: handles, among other member-related data, ATLAS employments

The screenshot displays the ATLAS Membership Management interface. The top navigation bar includes the ATLAS logo, the word "Membership", and a search bar. Below this, a breadcrumb trail shows "ATLAS > Membership > Members > Profile". The main content area is divided into several tabs: "Basic Info", "Employments", "Qualification", "Analysis", "Appointments", "Talks", "Theses", "OTP", "SCAB", and "Grants". The "Employments" tab is active, showing a single employment record for Gabriel Aleksandravicius. The record is titled "Engineering student @ Universidade Federal do Rio De Janeiro, COPPE/EE/IF" and is marked as "ACTIVE". The employment period is from 2021-01-01 to 2023-06-30. The record includes various details such as Start Date, End Date, Profession, Institute, Funding Agency, Email, CERN Office, CERN Phone, and CERN Mobile. A "delete employment" button is visible at the bottom right of the record. The left sidebar contains a profile card for Gabriel Aleksandravicius, including a photo, name, email, and a "delete member" button. A green banner at the bottom of the page indicates the last modification by DANNESBOE, Lina on February 08th, 2021 (16:59:56).

ATLAS Membership search for members & institutes...

ATLAS > Membership > Members > Profile

2021-01-01 2023-06-30
ATLAS member since 2021-01-01.

In case of any information inconsistency, please contact **Atlas Secretariat**

Gabriel Aleksandravicius
delete member

gabriel.aleks@nano.ufrj.br
Engineering student
Rio de Janeiro UF
Universidade Federal do Rio De Janeiro, COPPE/EE/IF

Basic Info | **Employments** | Qualification | Analysis | Appointments | Talks | Theses | OTP | SCAB | Grants

You have 1 employment record:

Engineering student @ Universidade Federal do Rio De Janeiro, COPPE/EE/IF ACTIVE

2021-01-01 2023-06-30

Start Date: 2021-01-01
End Date: 2023-06-30
MO Free?: No
Affiliation: **Institute and Head institute**
Profession: Engineering student
Comments: -
On Leave Dates: -
+ add on leave dates
Institute: Universidade Federal do Rio De Janeiro, COPPE/EE/IF
Funding Agency: Brazil
Exceptional atlas-current-physicists egroup
Start Date: -
End Date: -
Email: gabriel.aleks@nano.ufrj.br
CERN Office: 3150R-016
CERN Phone: 1234
CERN Mobile: 123456

delete employment

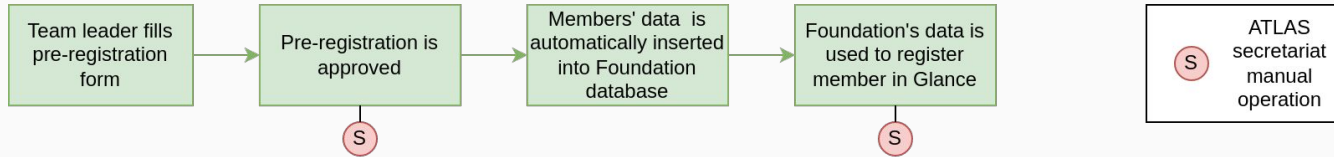
actions:
* create new employment

last modification by DANNESBOE, Lina on February 08th, 2021 (16:59:56).

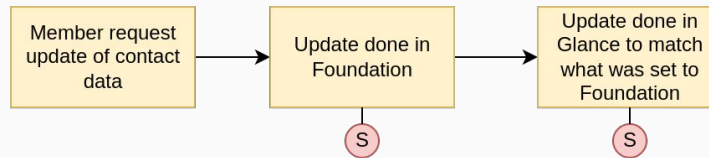
CERN Accelerating science The GLANCE Project report an issue

Current employment workflow

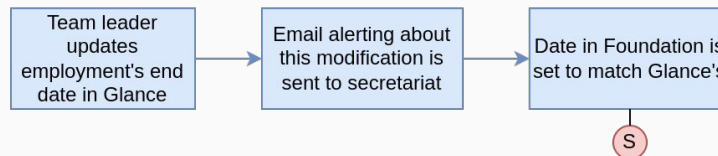
Registering a new member



Updating contact data (office, mobile or phone)



Updating employment end date

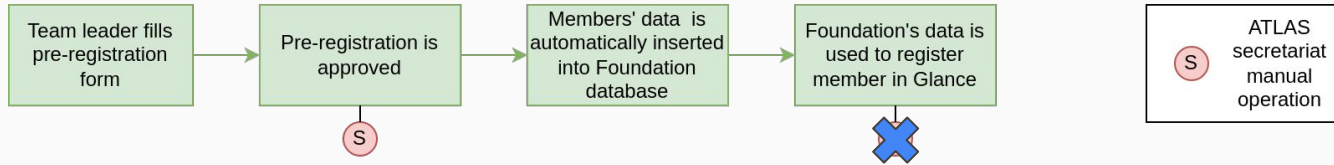


Problems on how ATLAS employments are managed today:

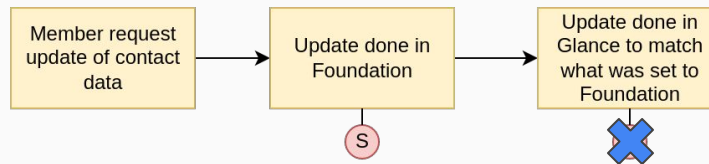
- Intense work: multiple registrations and updates done within a day.
- Manual labor makes it prone to error, leading to desynchronization between databases.

Improving data consistency for each process

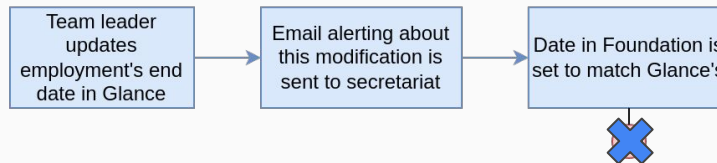
Registering a new member



Updating contact data (office, mobile or phone)



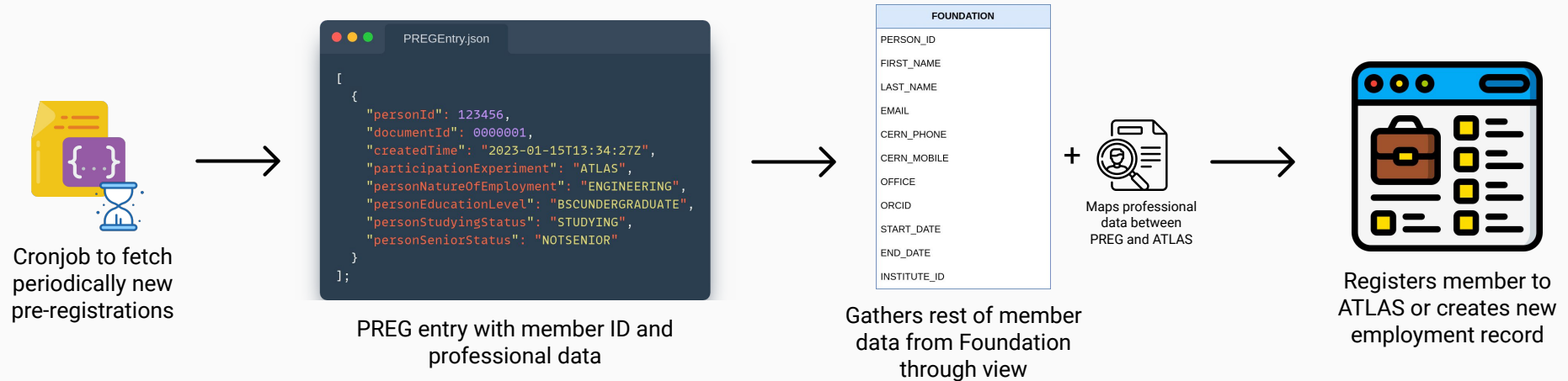
Updating employment end date



How to enhance processes:

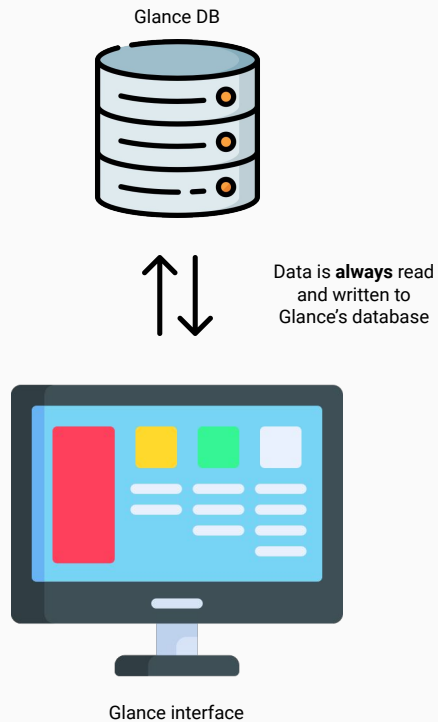
- Streamline data updates in Glance and Foundation databases through automated synchronization.
- Definition of single source of truth.

Automating registration of new ATLAS member

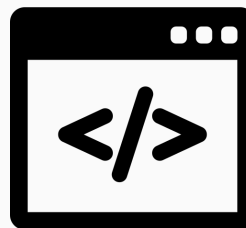


Contact information: how it's done today

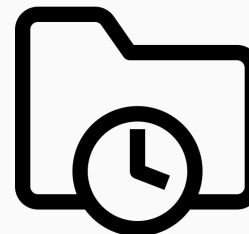
Database side



Software side



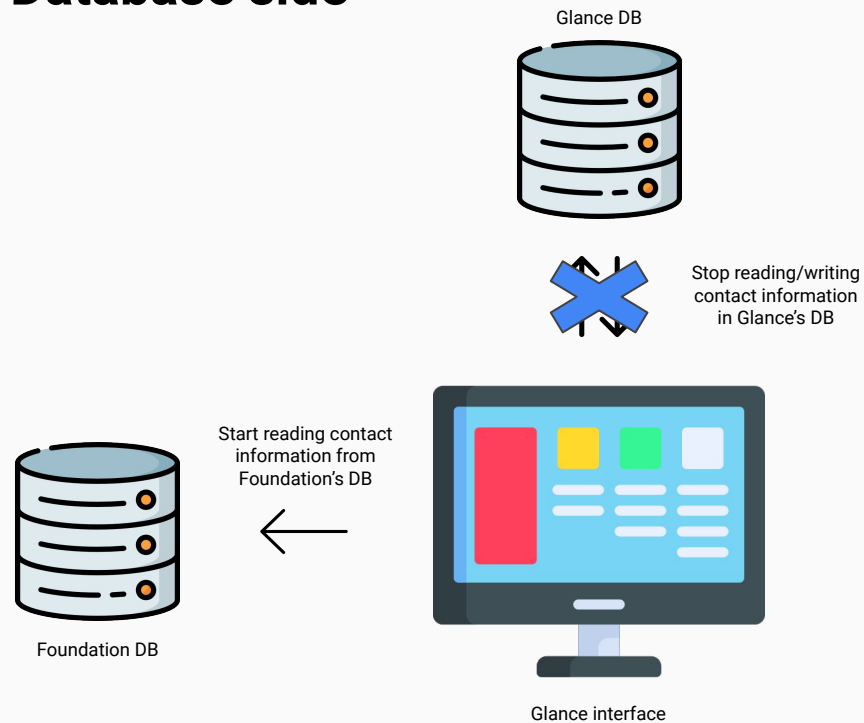
Code reflects DB modelling



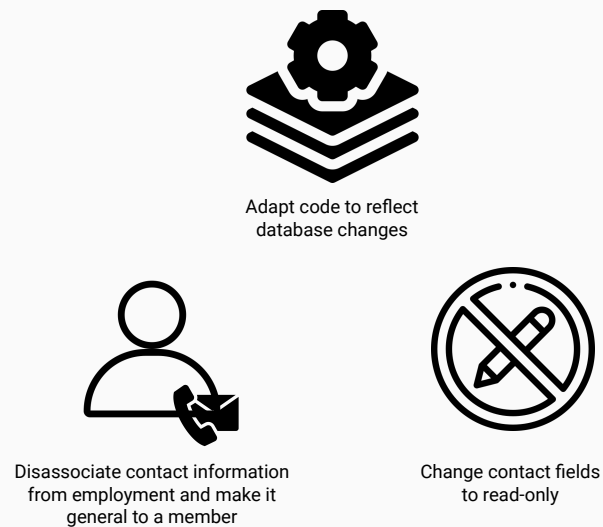
Correlation between contact data and employment allows history to be kept

Reading contact information straight from Foundation

Database side



Software side

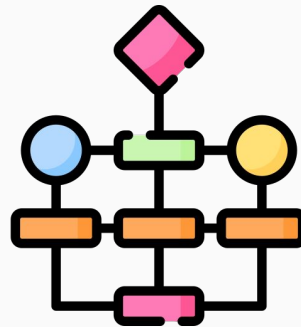


Synchronizing employment end dates

Two factors to take into account:

- CERN statuses¹ and management responsibility
 - ATLAS Secretariat: EXTN and PART
 - Users Office: USER, PJAS, COAS...
- Duration of contract: CERN and ATLAS have different rules (CERN contracts cannot last longer than 5 years).

Different algorithms had to be established for each scenario.



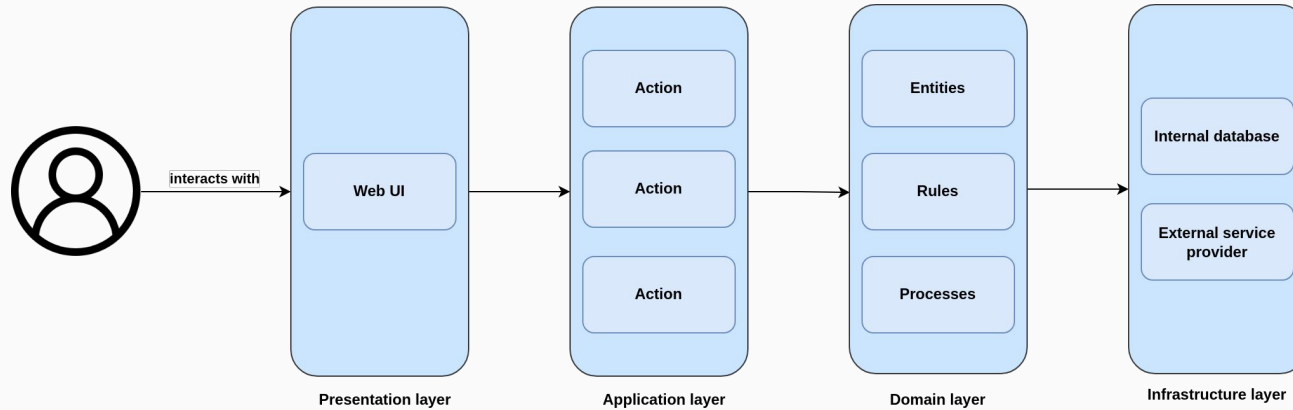
¹A CERN status is a classification used by the organization to indicate an individual's relationship with it. It includes categories such as staff members, fellows, technical and summer students, and external personnel.

SQL procedure used to push end date data to Foundation

```
BEGIN;  
API_FENCE.SET_PARTICIPATION_END_DATE(  
  (in_participant_person_id) ⇒ 123456,  
  (in_experiment_name) ⇒ 'ATLAS',  
  (in_institute_code) ⇒ '0123',  
  (in_date_from) ⇒ to_date('2023.01.01', 'yyyy.mm.dd'),  
  (in_date_to) ⇒ to_date('2024.12.31', 'yyyy.mm.dd')  
);  
END;
```

Next steps: Software-side implementation

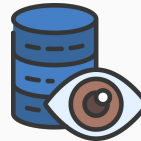
Establishing a Domain-Driven-Design layered architecture



Tools and technologies used



SQL procedures
(pushing to external DB)



Database views
(pulling from external DB)



PHP (backend)

Thank you!
Any questions?

Contact

gabriel.aleks@cern.ch