

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

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



Management of CERN personnel data - Foundation

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*: 26.11.2021 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:

Modify Delete



Centralized database used throughout CERN



Contains personal details, employment history, performance evaluations etc



Data propagates to other systems, but **access is limited to Human Resources**

Management of CERN (ATLAS) personnel data - ATLAS Glance

System with its own
database used to manage
ATLAS specific data



Employment data, such as
dates, affiliation, profession etc



Used by ATLAS members for
data visualization/updating




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
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	Affiliation	Institute and Head institute	On Leave Dates	-
End Date	2023-06-30	Comments	-		
Profession	Engineering student	Exceptional atlas-current-physicists egroup			
Institute	Universidade Federal do Rio De Janeiro, COPPE/EE/IF	Start Date	-		
Funding Agency	Brazil	End Date	-		
Email	gabriel.aleks@nano.ufrj.br				
CERN Office	3150/R-016				
CERN Phone	123				
CERN Mobile	46278				

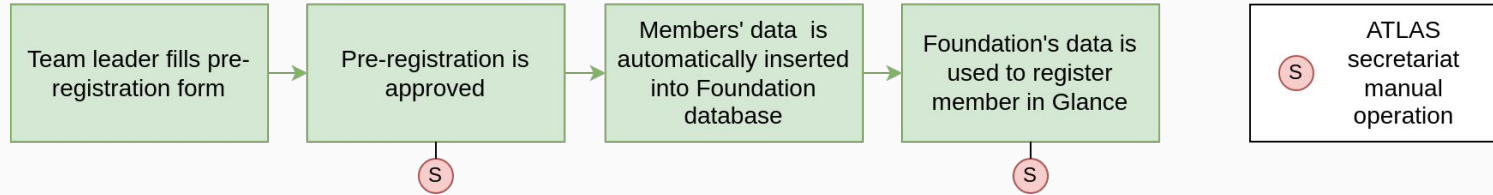
actions:

- * create new employment

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

Current workflow for different employment-related processes

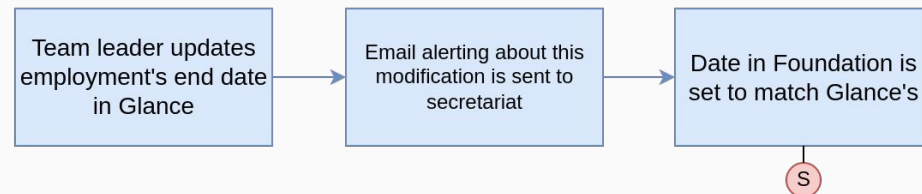
Registering a new member



Updating contact data (office, mobile or phone)



Updating employment end date

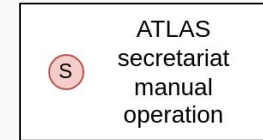
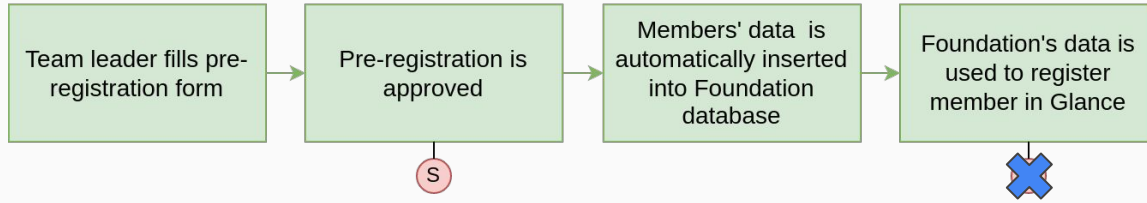


Problems on how ATLAS employments are managed today:

- 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

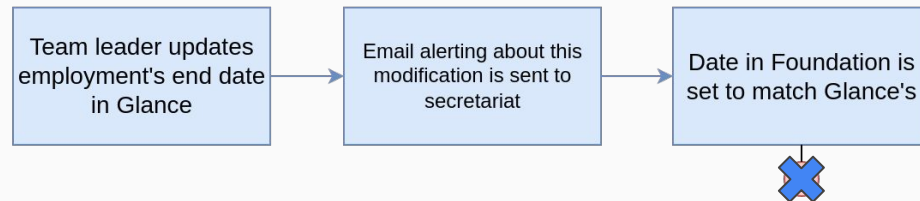
Registering a new member



Updating contact data (office, mobile or phone)



Updating employment end date

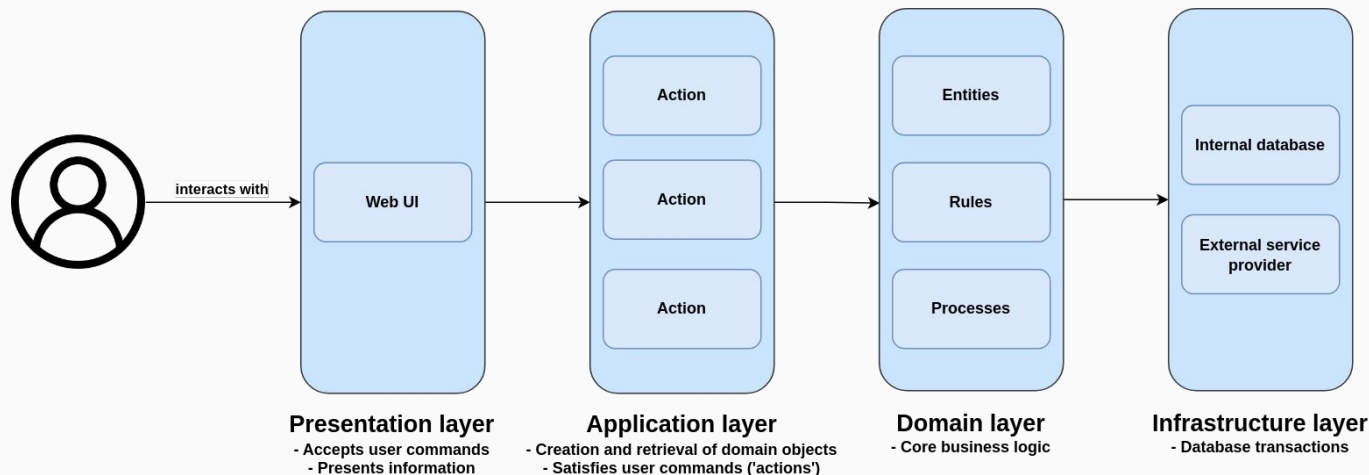


How to enhance processes:

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

Tackling the software-side implementation

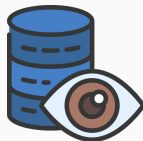
Establishing a Domain-Driven-Design layered architecture



Tools and technologies used



SQL procedures
(pushing to
external DB)



Database views
(pulling from
external DB)



PHP
(backend)



PHPUnit
(framework for test coverage)

Registering someone in ATLAS: how it's done today

Please sign EDH/PREG () for



Edh System
To

 You forwarded this message on 31/03/2023 12:31.

Dear


You are requested to approve the document "Pre-Registration Form:" (expiry date 17.04.2023 08:00)

You may consult the document here:

<https://edh.cern.ch/Document/>

Best regards,
EDH.

1. Secretariat receives email alerting about new pre-registration document.
2. Document is reviewed and approved.

Newcomer Personal Information	
Preferred language *	
Have you had a previous affiliation with CERN? *	
Title *	
Gender *	
Marital status *	
First name (as shown on ID card or passport) *	
Last name (as shown on ID card or passport) *	
Middle name (as shown on ID card or passport) *	
Maiden name *	
Country of nationality *	
Second country of nationality *	
Country of birth *	
Town of birth *	
Date of birth *	
E-mail *	
Remarks *	
Please confirm the ID/passport attached to the EDH toolbar to send this EDH document	
Passport confirmed *	Yes
 A new person ID will be created	

Registering someone in ATLAS: how it's done today

Person

Name or ID: Tel:

CERN id: 0, Date of Birth: Nationality: Status: PART, Org-Unit: EXT, Sex:

From Date*: To Date*:

Experiment*: Institute*:

Is in grey book? ☐ No ☒ Phone: Fax:

Oracle HR Message: Comments:

Participation to an Experiment history

Participation to an Experiment Information History

From Date:	To Date:
Is in Grey Book: No	
Experiment: ATLAS - ATLAS	Institute:
Phone:	Fax:
Message:	Comments:
Previous HR Messages:	




3. Member's data enters Foundation.
4. Secretariat registers members to Glance.

ATLAS Membership search for members & institutes...

ATLAS > Membership > Members > Profile

ATLAS member since 2023-03-31



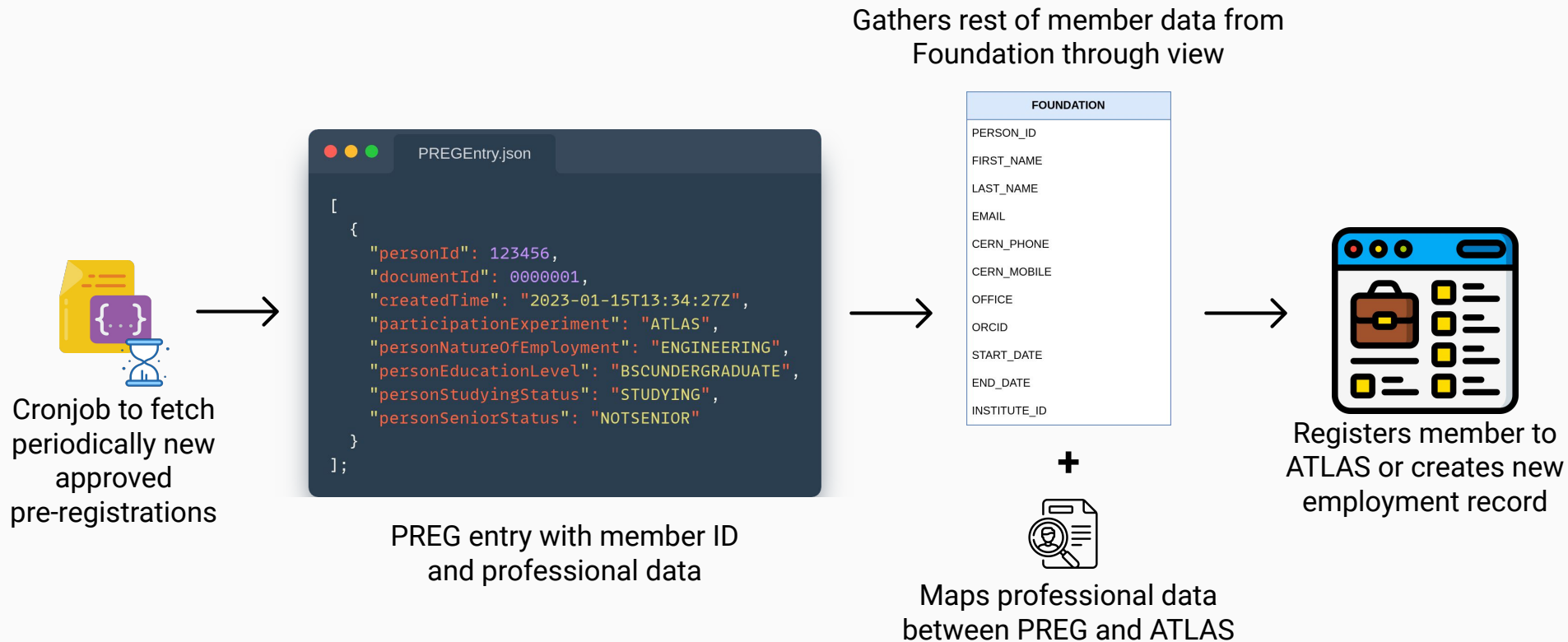
Basic Info | Employments | Qualification | Analysis | Appointments | Talks | Theses | OTP | SCAB | Grants

First Name:
Last Name:

Institute:
CERN Office: -
CERN Phone: -

First Name (LaTeX):
F. N. Initials (LaTeX):
Last Name (LaTeX):

Automating the registration of new ATLAS member



Automating the registration of new ATLAS member


Cronjob to fetch
periodically new
pre-registrations

```
[
  {
    "person": "person",
    "document": "document",
    "created": "created",
    "participated": "participated",
    "person": "person",
    "person": "person",
    "person": "person",
    "person": "person"
  }
];
```

```
membership/
├── cronjob/
│   └── RegisterMembersFromPREG.php
├── source/
│   └── Member/
│       ├── Application/
│       │   ├── CreateNewEmployment/
│       │   ├── RegisterNewMember/
│       │   └── ...
│       ├── Domain/
│       │   ├── Employment.php
│       │   ├── EmploymentRepositoryInterface.php
│       │   ├── Member.php
│       │   ├── MemberRepositoryInterface.php
│       │   └── ...
│       └── Infrastructure/
│           └── Persistence/
│               ├── SqlEmploymentsRepository.php
│               └── SqlMemberRepository.php
```

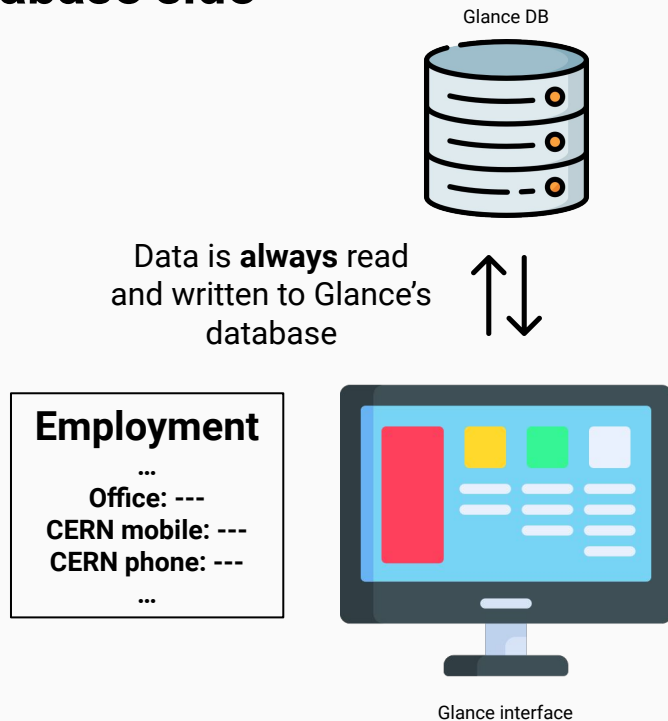
from



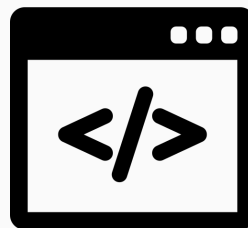
Registers member to
ATLAS or creates new
employment record

Contact information: how it's done today

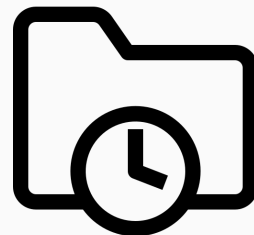
Database side



Software side



Code reflects DB modelling



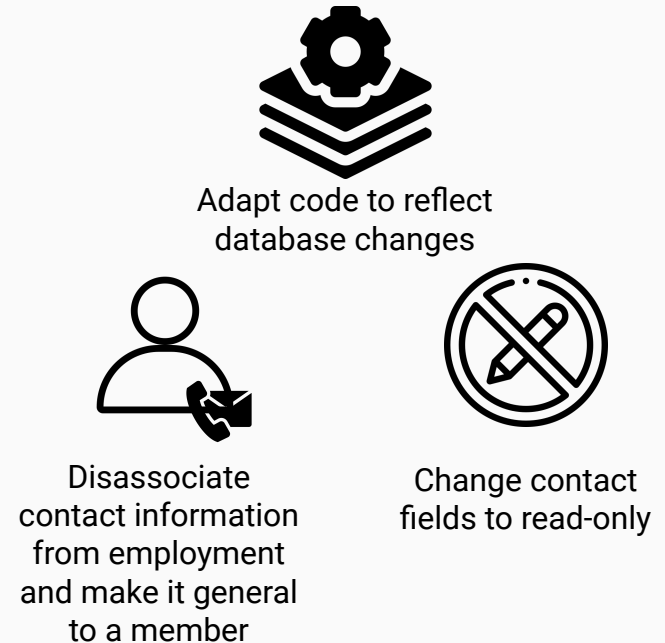
Correlation between contact data and employment allows history to be kept

Reading contact information straight from Foundation

Database side



Software side



Update made in Glance



Dear Institute Representative,

You are receiving this email as a notification that the ATLAS database record of [Franklin, Francisco, Frances](#) has been modified by [Thomas C. Arnold](#).

end date 2023-01-01 2023-01-01

Kind regards,
ATLAS Secretariat



Value propagated to Foundation (by Secretariat)

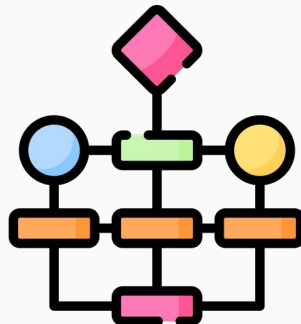
Synchronizing employment end dates

We can improve this process by eliminating the manual synchronization to Foundation.

Two factors must be taken into account:

- CERN statuses¹ and management responsibility
 - ATLAS Secretariat: EXTN and PART | Glance **can** update
 - Users Office: USER, PJAS, COAS... | Glance **can't** update
- 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.

Synchronizing employment end dates - pushing data to Foundation

SQL procedure used to push end date data to Foundation

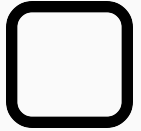
```
BEGIN;  
API_FENCE.SET_PARTICIPATION_END_DATE(  
  (in_participant_person_id) ⇒ 123456,  
  (in_experiment_name) ⇒ 'ATLAS',  
  (in_institute_code) ⇒ '0123',  
  (in_date_from) ⇒ to_date('2023.01.01', 'yyyy.mm.dd'),  
  (in_date_to) ⇒ to_date('2024.12.31', 'yyyy.mm.dd')  
);  
END;
```



Automating new members registration



Setting single source of truth for contact information



Synchronizing end date updates

Thank you!

Any questions?

Other  presentations @ CHEP 2023:

[The ALICE Glance Service Work system](#)
Jomar Junior de Souza Pereira | 08/05, 15h | Track 8

[The ALICE Glance Membership System](#)
Jomar Junior de Souza Pereira | 09/05, 15h30 | Poster 13

[Iterative and incremental development of the ATLAS
Publication Tracking system](#)
Ana Clara Loureiro Cruz | 09/05, 14h | Track 5

[Glance Search Interface](#)
Carlos Henrique Ferreira Brito Filho | 09/05, 14h30 | Track 5

[The migration to a standardized architecture for developing
systems on the Glance project](#)
Carlos Henrique Ferreira Brito Filho | 09/05, 14h45 | Track 5

Contact

gabriel.aleks@cern.ch