

ITERATIVE DEVELOPMENT OF THE ATLAS PUBLICATION TRACKING SYSTEM

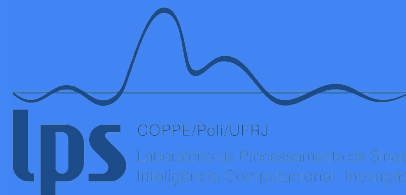
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on behalf of the ATLAS collaboration



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The ATLAS experiment

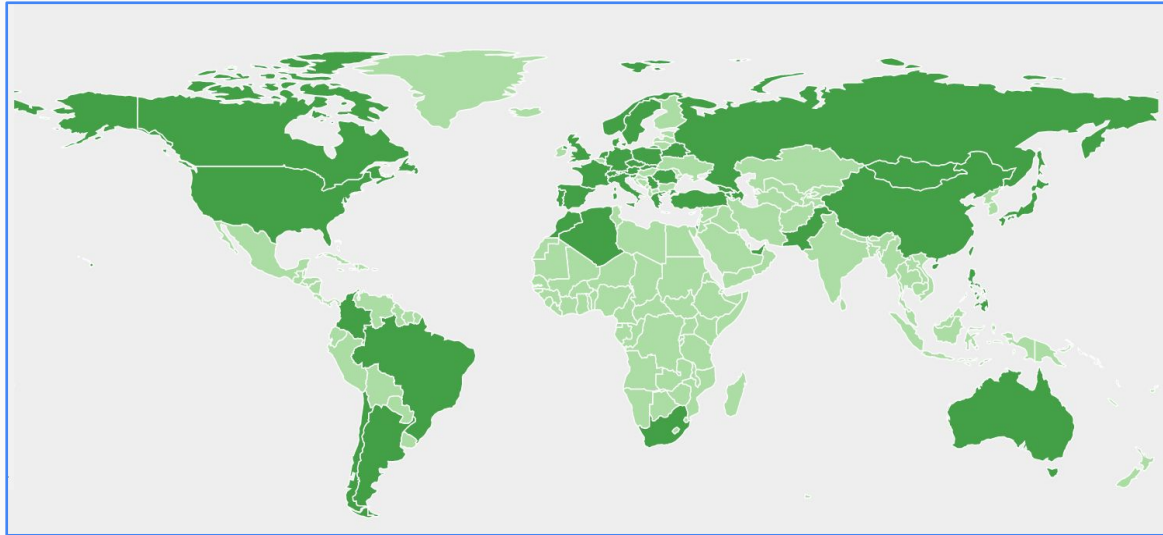
The Glance Team

The Analysis System

~ 6,000
Active members

~ 300
Institutes around the Globe

> 100
Papers published per year



Collaboration Map. The darker colors represent the countries with institutes affiliated to ATLAS

The ATLAS experiment

The Glance Team

The Analysis System



Goal

Provide software interfaces that support effective management of data



Team

12 Developers
3 Different Institutes



Scope

3 experiments: ATLAS, ALICand LHCb



Projects

In ATLAS, the Glance team provides interfaces to manage members, employments, appointments, papers' submission, speakers selection, etc.



Glance

The ATLAS experiment

The Glance Team

The Analysis System

Main Goals:

- ✓ Ensure Publications' deadlines
- ✓ Ensure communication between the involved groups
- ✓ Ensure the continuity of workflows

The screenshot shows the ATLAS Analysis System interface. At the top, there is a search bar with the text "search for publications...". Below the search bar, there is a navigation menu with "ATLAS" and "Analysis" options. The main content area is titled "Welcome to ATLAS Analysis" and contains several sections:

- Phase 0**: Search, Submit New Analysis/Phase 0, Request Editorial Board, Emails' Editor, Clone Analysis/Phase 0, Search for Triggers, List of Triggers Used.
- Papers**: Search, Submit New Paper, Request Editorial Board, Emails' Editor, Submit a Draft in CDS.
- CONF notes**: Search, Submit New CONF note, Request Editorial Board, Emails' Editor.
- PUB notes**: Search, Submit New PUB note, Emails' Editor.
- Plot**: Search, Submit New PLOT, Emails' Editor.
- Documentation**: Go to Analysis Documentation.

At the bottom of the interface, there is a footer with the CERN logo and the text "Accelerating science", and a button labeled "report an issue".

Analysis System interface.

The ATLAS experiment

The Glance Team

The Analysis System

Main Goals:

- ✓ Ensure Publications' deadlines
- ✓ Ensure communication between the involved groups
- ✓ Ensure the continuity of workflows

Problems:

- ✓ Code base outdated -> difficult to implement new features
- ✓ Rigid workflow
- ✓ Duplication of data for different types of Publications

The screenshot shows the ATLAS Analysis System interface. At the top, there's an orange header with the ATLAS Analysis logo and a search bar. Below the header, there's a navigation bar with 'ATLAS' and 'Analysis' dropdowns. The main content area is titled 'Welcome to ATLAS Analysis' and features several menu items: Phase 0, Papers, CONF notes, PUB notes, Plot, and Documentation. Each menu item has a list of sub-options. The footer contains the CERN logo and 'Accelerating science', along with 'The GLANCE Project' and a 'report an issue' button.

Analysis System interface.

The Evolution of the Analysis System

Current Analysis System

Code base outdated

Difficult to implement new features

Rigid Workflow

Does not meet all the users' needs

Duplication of Data

The users have to synchronize manually



ATLAS Publication Tracking System

Code optimization

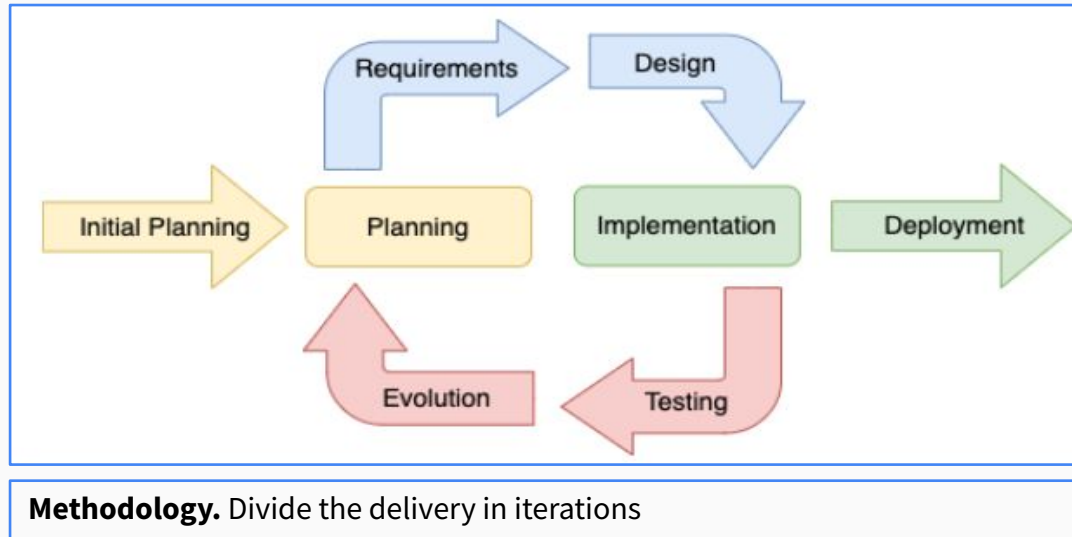
Focus on automated tests



Remodel the database

Makes it easier to manage workflow changes and avoid the duplication of data

How to implement core changes at a system that has such important role at the Publications management?



First Iteration

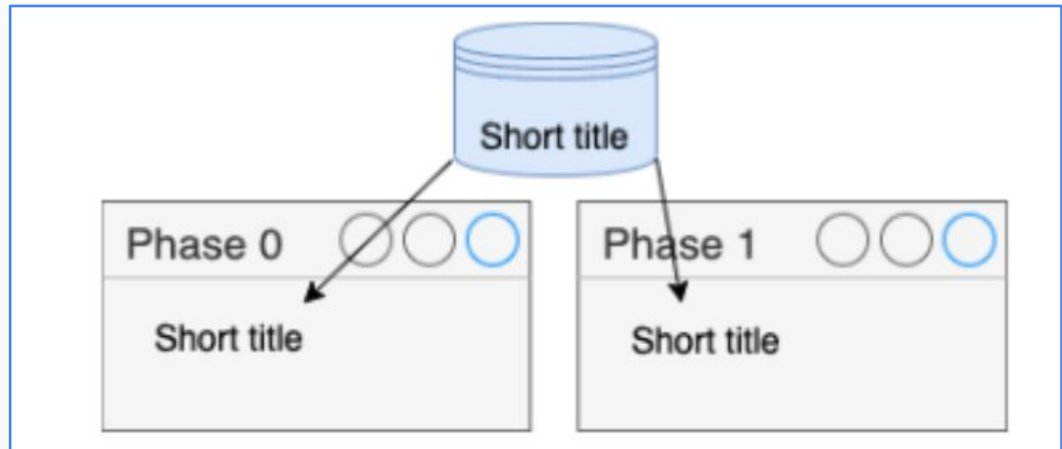
Database changes

Code changes

Automated tests

New modeling of the database

- ✓ Creation of a separate schema
- ✓ Implementation of data inheritance
- ✓ History implementation



Metadata inheritance implementation.

First Iteration

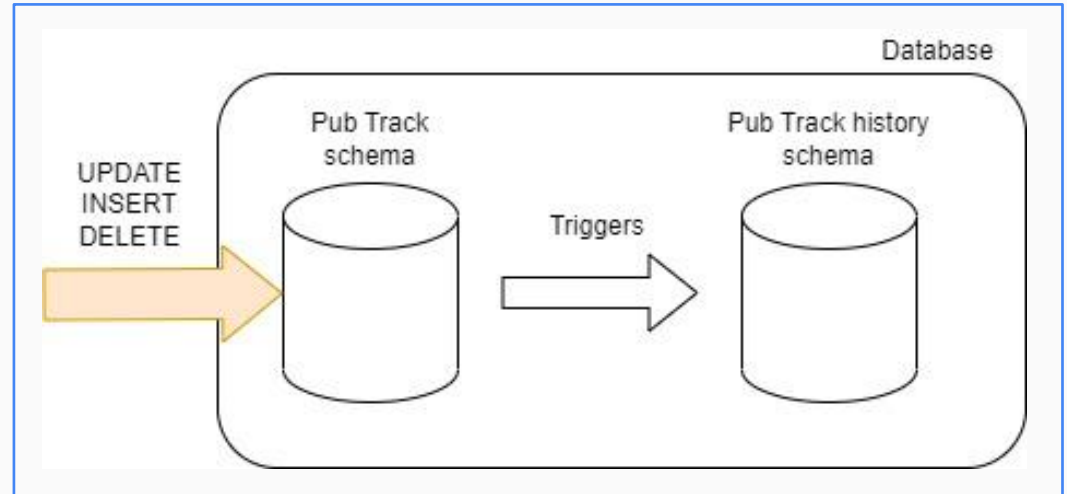
Database changes

Code changes

Automated tests

New modeling of the database

- ✓ Creation of a separate schema
- ✓ Implementation of data inheritance
- ✓ History implementation



History implementation

First Iteration

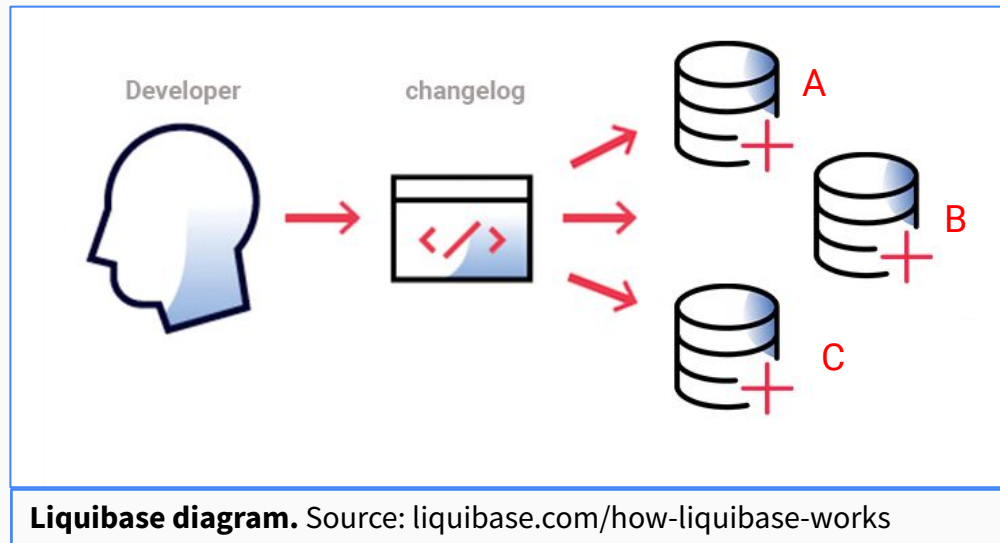
Database changes

Code changes

Automated tests

Liquibase implementation

- ✓ Allows tracking the changes to the database
- ✓ Easily goes to a specific state of the database



First Iteration

Database changes

Code changes

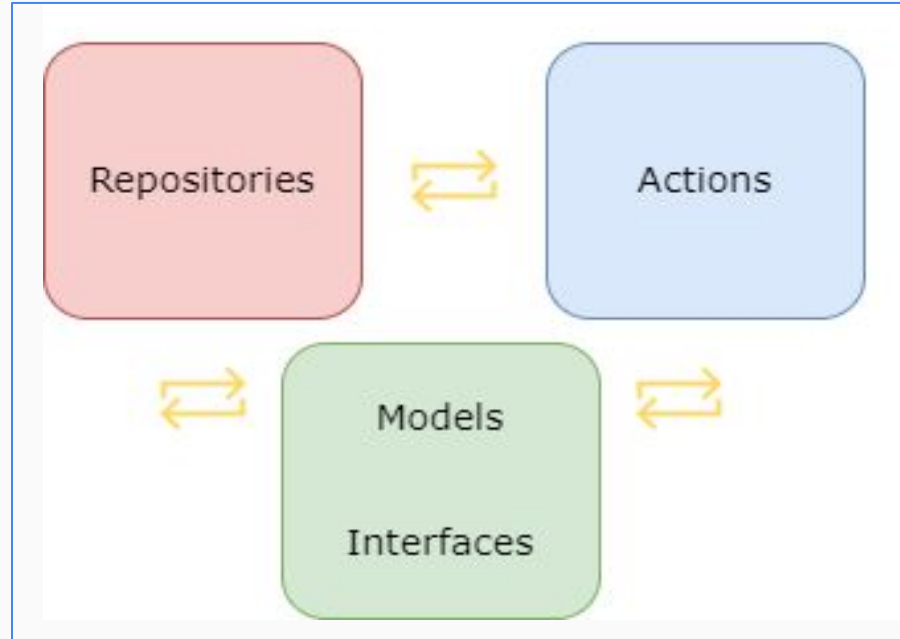
Automated tests

What?

- ✓ Separate **Domain**, **Application** and **Infrastructure** layers on the Back-end

Why?

- ✓ Improve testability
- ✓ Improve readability
- ✓ Improve performance
- ✓ Simplify maintenance



Back-end structure diagram using Domain Driven Design.

First Iteration

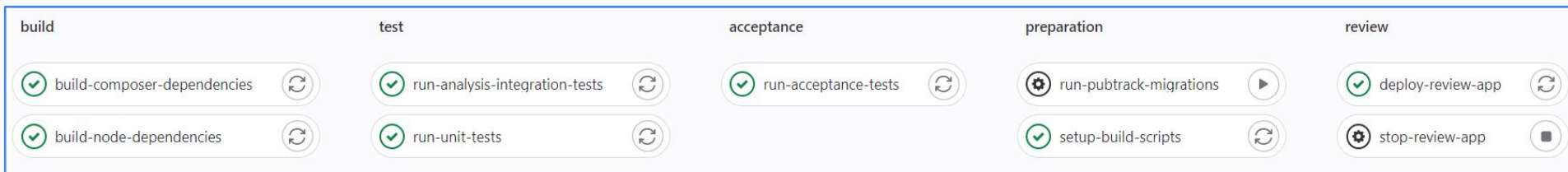
Database changes

Code changes

Automated tests

Importance

- ✓ Quality control of the system functionality
- ✓ Confidence in Deployments
- ✓ Document the use cases and the domain structure



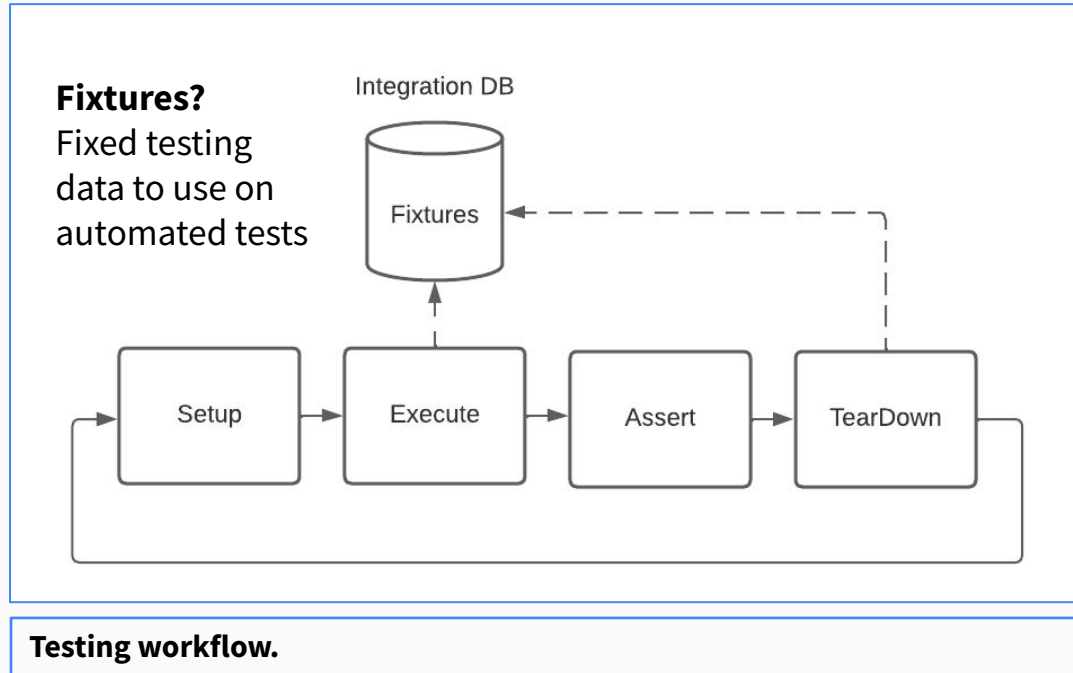
ATLAS Glance Gitlab Pipeline.

First Iteration

Database changes







Code changes

Automated tests



PHPUnit

Next Iterations

-  Expansion of the API Endpoints
-  Flexibilization of the Workflow
-  Authentication through Keycloak instead of Shibboleth
-  Integration with new CERN Authorization Service
-  Gitlab integration enhancements
-  Broader code refactoring and database remodeling

Final considerations

- ✓ This is a long term Project
- ✓ The delivery in “packages” allows us to focus on smaller projects and prioritize according to the necessity of the users.

THANK YOU! OBRIGADA!

Contact

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