The ROOT Grid plugins
a status update

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(J)AliEn components
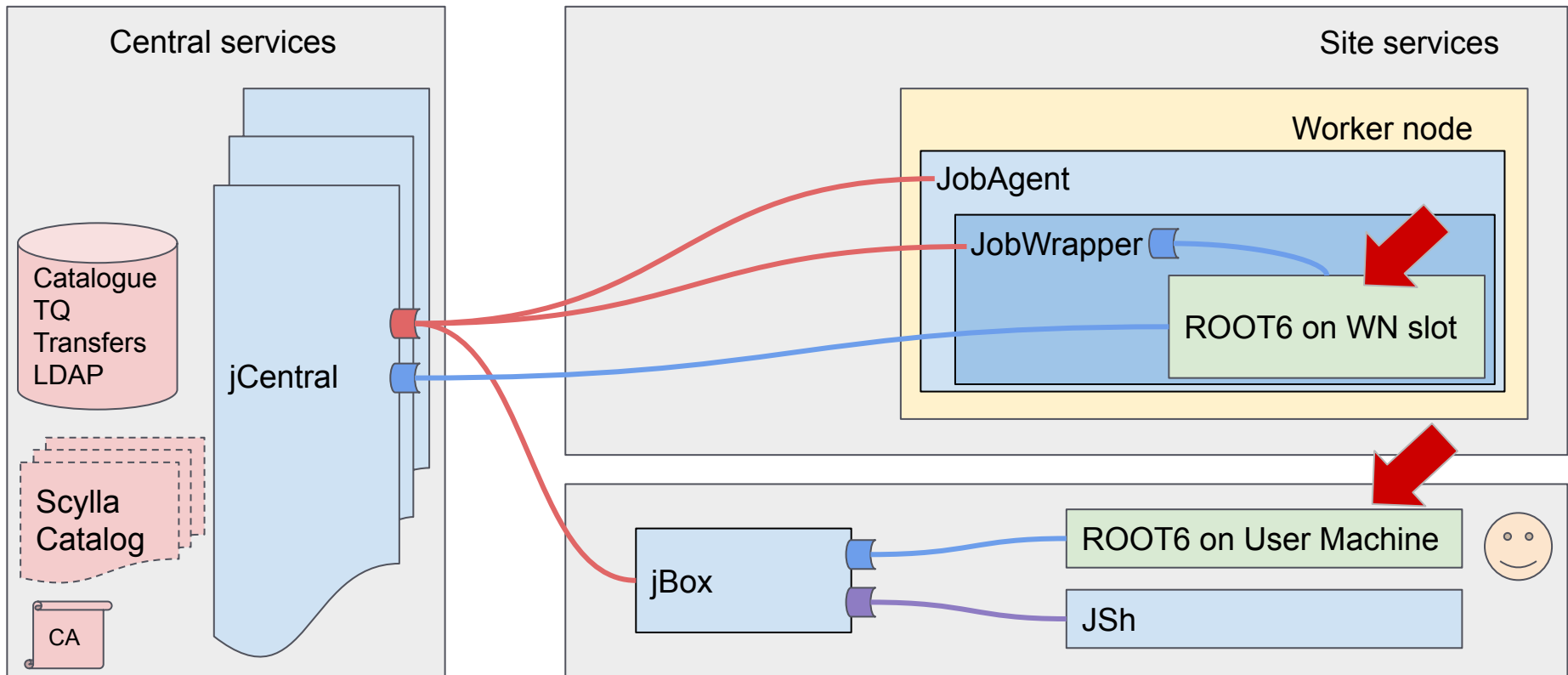
ROOT Grid plugins

- **What is JAlien-ROOT?**
  - A ROOT Grid plugin, the `TJAlien`
  - Implements `TGrid`, `TFile`, `TGridCollection`...
  - It will eventually replace the existing ROOT Grid plugin, the `TAlien`
- **How to use it?**
  - Start aliroot shell
  - `root[0] TGrid::Connect("alien://");`
  - `root[1] gGrid->Ls();`
- **Try it out yourself!**
  - `$ aliBuild build AliPhysics --defaults jalien`

Grid jobs with JAliEn based AliPhysics

Phases of migration from AliEn to JAliEn:

- **Using the JAliEn API and TJAlien**
- Use the new JobAgent
- Replace VoBox software
- *(Move to Scylla backend)*
- *…*

The plan for JAliEn-ROOT integration

1. The AliRoot and AliPhysics preparations

2. Extracting AliEn-ROOT-Legacy

3. Runtime dependencies in AliRoot

4. JAliEn based AliPhysics build
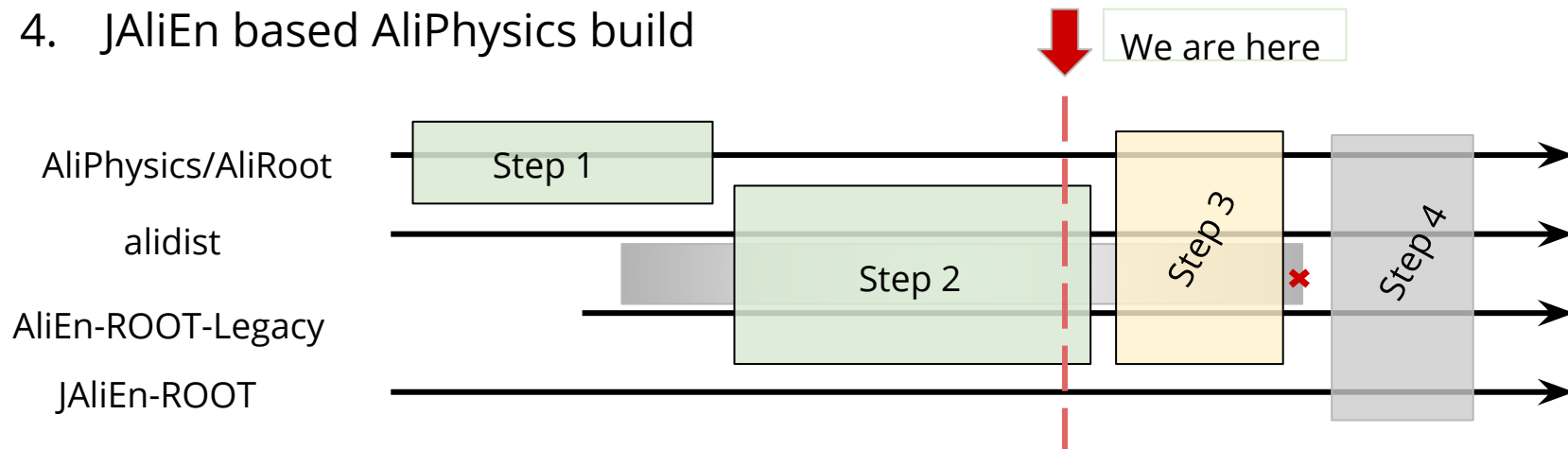
COMPLETED

UNDER CONSTRUCTION

The plan for JAliEn-ROOT Integration

1. The AliRoot and AliPhysics preparations
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3. Runtime dependencies in AliRoot and AliPhysics
4. JAliEn based AliPhysics build

We are here

AliPhysics/AliRoot

Step 1

alidist

Step 2

Step 3

Step 4

AliEn-ROOT-Legacy

JAliEn-ROOT

News and updates

Step 1: AliRoot/AliPhysics preparations

- **Removing compile time dependencies**
    - Mostly `TAlienCollection`, `TAlienJDL` and `TAlien`
    - Runtime dependencies still there, work in progress
- **Build scripts adapted for interchangeable ROOT Grid plugins**
    - We have a clean ROOT build
    - And we can swap between `TAlien` and `TJAlien`
- **Very big pull requests**
    - Modified ~100 files
    - Mostly simple changes, but still had to be done manually and carefully
    - Went according to plan and (almost) unnoticed
    - Opened 15/01/2019 and merged 11/02/2019
    - Included in AliRoot/AliPhysics v5-09-46

Step 2: Extracting AliEn-ROOT-Legacy

- The good old TAlien plug-in, just in a separate package
- Code moved to https://gitlab.cern.ch/jalien/alien-root-legacy
- Now using the same plug-in for ROOT5 and ROOT6
    - The versions had diverged
    - Histories merged, now using the same version everywhere
    - **The important patches now available in ROOT6, too**
- Good news: It's completely under our control
- Faster updates for *JAliEn-ROOT* and *AliEn-ROOT-Legacy*   \o/
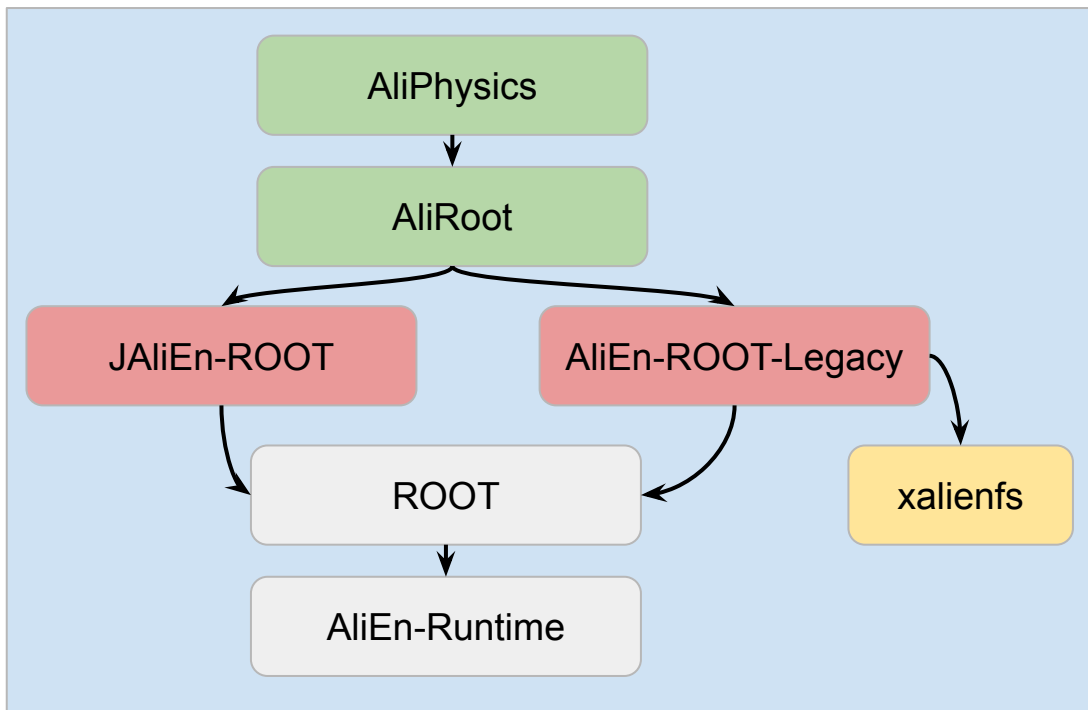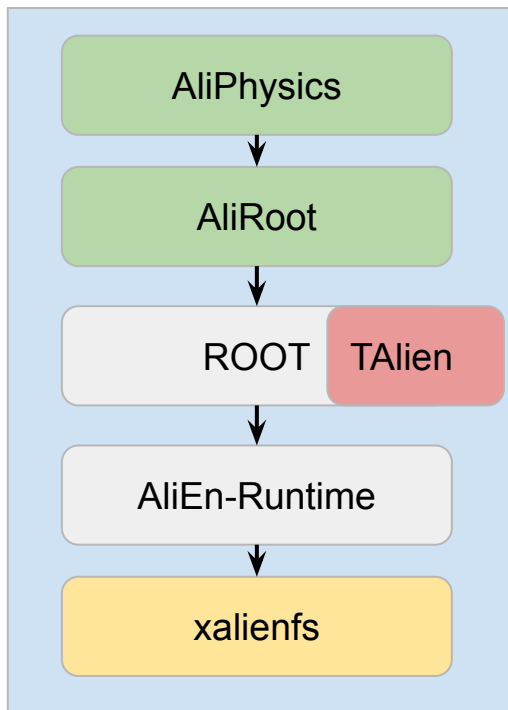
Step 2: Extracting AliEn-ROOT-Legacy

IMPORTANT CHANGES IN ALIDIST (merged on 27/03/2019)

- Added the a **new recipe AliEn-ROOT-Legacy**
- The xalienfs is now dependency of AliEn-ROOT-Legacy
- AliRoot gets a new dependency: the AliEn-ROOT-Legacy or JAliEn-ROOT
- AliEn-Runtime is targeted to be the common ground for both Grid plug-ins
- **ROOT is built without alien** and this means that
  - `root --has-alien` says "no", which is intended and ok

<div align="center">

IMPORTANT: **alien-token-init not loaded with ROOT!**

The alien utils now loaded as dependency of AliRoot (and AliPhysics).

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Step 2: Extracting AliEn-ROOT-Legacy

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Recent hotfixes (last ~7 days)

- *MERGED*: Fixed failing build/linking on the Mac
- *MERGED*: Fixed AliRoot dependencies for --defaults user-root6
- *READY*: Fixed xalienfs environment, it was causing problems on CVMFS
- *WIP*: Fixed the shared libraries on the Mac
    - A quick fix provided on the mailing list
    - A proper solution is being implemented
    - MacOS support will be improved in the future

Step 2: Extracting AliEn-ROOT-Legacy

- Next AliRoot release will use AliEn-ROOT-Legacy
  - This is the same AliEn Grid plug-in as before, just a different setup
  - Most important commits already merged into alidist master

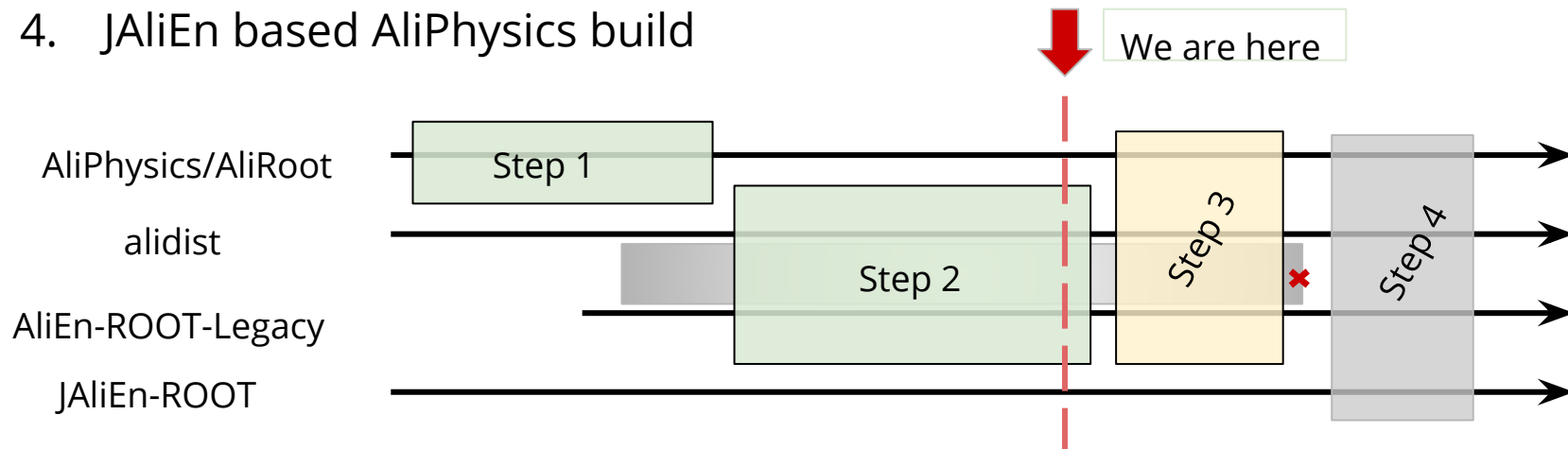- JAliEn based AliRoot builds will be announced later

Next steps

The plan for JAliEn-ROOT Integration

1. The AliRoot and AliPhysics preparations
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AliPhysics/AliRoot — Step 1

alidist

Step 2

AliEn-ROOT-Legacy — Step 3

JAliEn-ROOT — Step 4

Step 3: AliRoot/AliPhysics runtime deps

- **Remove runtime dependencies on AliEn-ROOT-Legacy**
    - Use `gGrid->Command("find")` instead of `gSystem->Exec("alien_find")`
    - Remove the remaining dependencies on `TAlienFile` and `TAlienCollection`
- **Other tasks**
    - Improve compatibility between AliEn and JAliEn commands
    - Prepare replacement for xalienfs (`alien_find`, `alien_cp`...)
- **Why?**
    - To prepare the grounds for smooth transition to JAliEn-ROOT
    - Make AliPhysics work with both plug-ins
    - It's just a matter of tightening up code in AliRoot and AliPhysics
   - Helps us redefine our interfaces and make future transitions easier

Step 4: JAliEn based AliPhysics build

WORKING ON ALIPHYSICS BECAUSE

- Gives us a great opportunity to test JAliEn in a real-world scenario
- We can catch problems early and be ready for Run 3
- Gives us a better starting point for integration with O2
- Benefits from updated stack and new infrastructure
    - XRootD 4
    - JBox level caching
    - New Scylla based file catalogue?

Summary
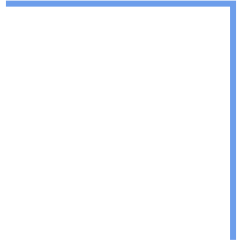
JAliEn-ROOT integration with AliPhysics

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AliEn-ROOT-Legacy general status

- New package created, operation went as expected
- We will see the new setup in the next AliRoot release
- Some issues affecting MacOS and CVMFS have just been fixed
- The same plug-in version for ROOT5 and ROOT6
- Continues to live in maintenance mode

JAliEn-ROOT general status

- No obvious showstoppers at the moment
- We keep discovering minor issues
- Current activities are focused on AliPhysics side, not on TJAlien side
- New code for run 3 can already start testing TJAlien
- We will soon restart efforts for benchmark Grid jobs with both plug-ins
- Time to improve our testing infrastructure
    - MacOS builds
    - Parallel tests with TAlien and TJAlien

Thank you!

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