



Hyperloop - Accelerating Analysis

Nicolas Poffley (CERN)

10.11.25

- **Introduction & key concepts**
- 'My Analyses', wagons & datasets
- Enabling a wagon to start a test
- Trains – automatic composition, debugging & long trains
- Key things to know

What is it?












- Analysis train system, allowing for cooperative large-scale analysis
- Concept: Individual workflows ('wagons') are combined into a 'train' to run over data together
- Analysis jobs processed using the **GRID** and **Analysis Facilities**
- Fully integrated with **O²** → direct task configuration



Train support

- Operators from different institutes available 24 hours per day Monday – Friday

correlations

Wagon 	HY_hyperloop...	hyperloop_de...
Correlations	 	
Correlations_MC		
Correlations_Run3 		

axisVertex

Fixed Width

Bins

7



Min

-7

Max

7

axisVertexEfficiency

Fixed Width

Bins

10



Min

-10

Max



10

cfgAssociatedCharge

0

cfgCutEta

0.8

- Detailed [documentation](#)
- Dedicated [mattermost channel](#) for requesting trains or support
- Integrated tours to guide you through on-the-go

click on: 

×

Welcome to Hyperloop!

Welcome to Hyperloop. If you haven't been here before, please follow this tour to get started.

Next (1/18)

×

Here is a wagon. You may click on it to open the **wagon configuration** page. There is another tour inside.

Next (4/11)

×

Train Run

This is the Train Run page. Here you can see the settings for the train, the wagons forming the train, test results, submitted jobs, the final output, and more.

Next (1/14)

Train run 122095

General

Derived Data

Test

Submitted jobs

Grid Statistics

Wagon resources

Merged Output

Clone

Request long train

Package tag

Dataset

Operator

Test status

Target

Train status

Train created

Train submitting

All jobs submitted

Train finished

Train duration

Needed resources

Job status

Per-run merging

Final merging submitted

Final-merging summary

O2Physics::daily-20230921-0200-1

LHC15o_benchmark

alihyperloop

Done (output)

Grid - Single core

Done

21 September 2023 at 16:01:02 CEST

21 September 2023 at 16:08:24 CEST

21 September 2023 at 16:08:48 CEST

24 September 2023 at 10:22:30 CEST

2d 18h

3d 20h (wall time), 2.8 GB (output size)

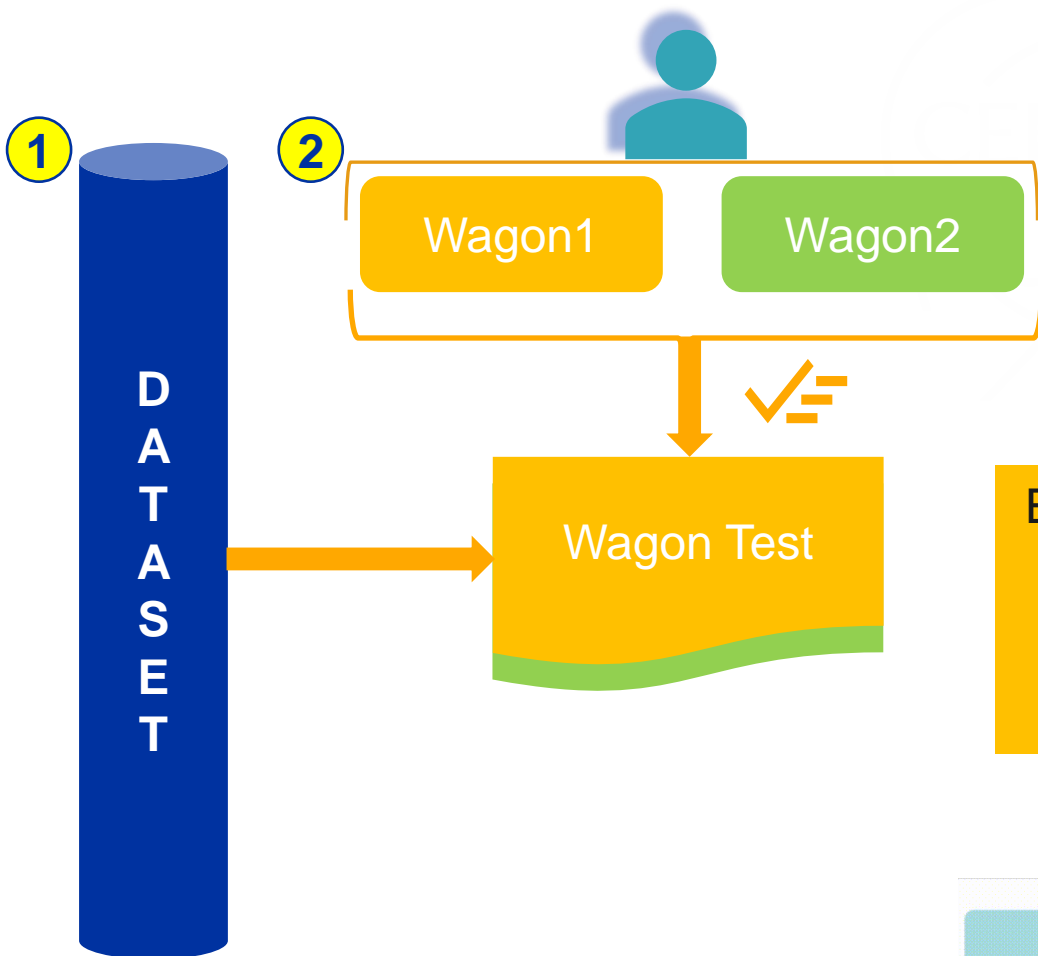
Total: 85, Done: 71, Active: 0, Wait: 0, Error: 14

Done: 10, Running: 0, Pending: 1, Skipped: 0, Failed: 0

24 September 2023 at 09:54:36 CEST by vkovalen

Done: 1, Running: 0, Pending: 0, Failed: 0

Key concept

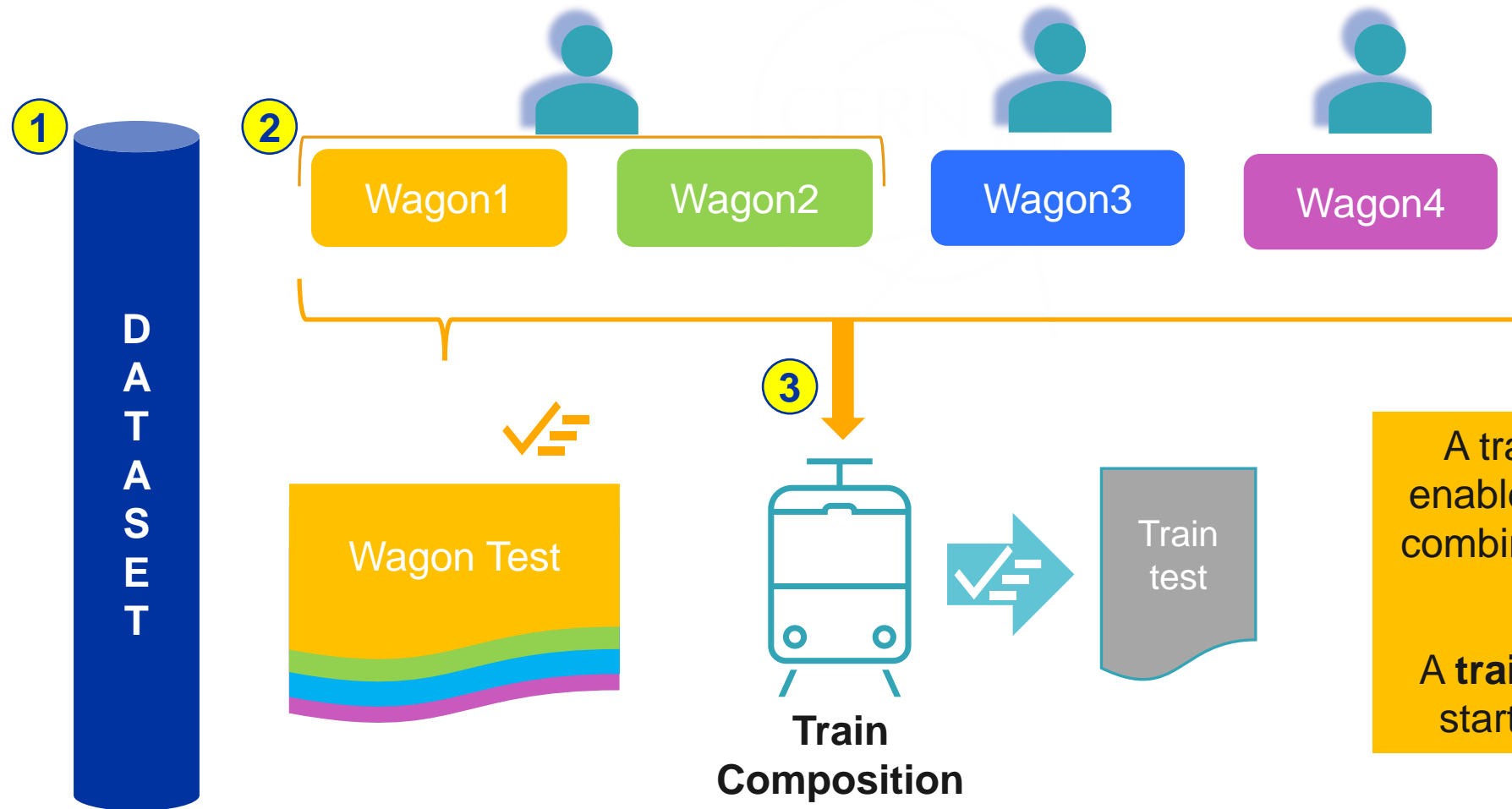


Enable your O^2 analysis workflows, known as wagons, on a dataset to trigger a **wagon test**.

Tests ensure that your workflows are valid and aren't too resource intensive.



Key concept

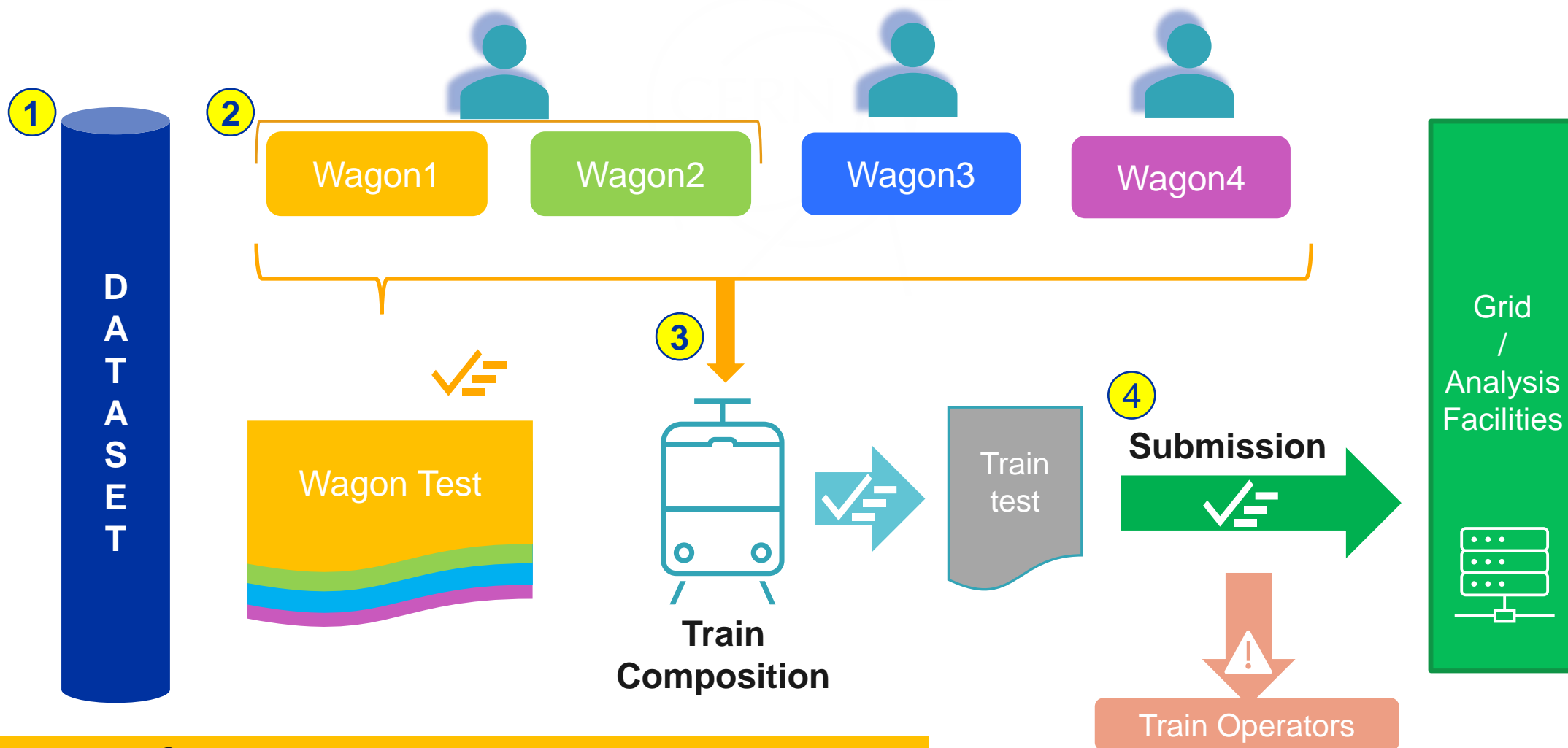


A train is composed from enabled wagons. Trains may combine multiple wagons into one train.

A **train test** is automatically started after composition.

Individual O^2 analysis workflows - known as wagons - are combined into trains to run over the data together

Key concept



Individual O^2 analysis workflows - known as wagons - are combined into trains to run over the data together

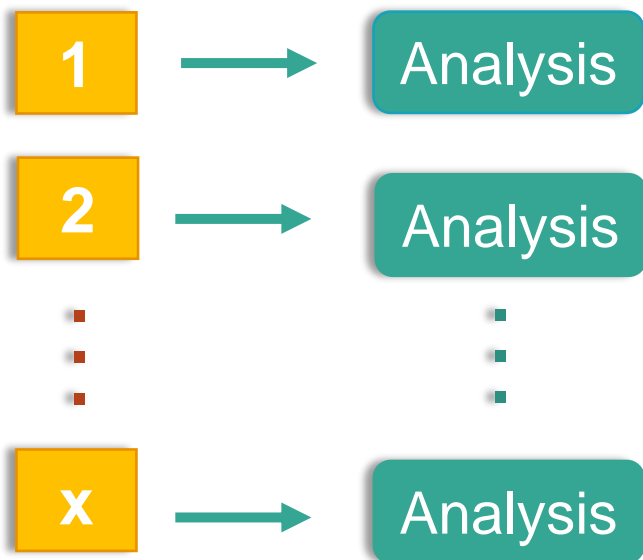


Four types of trains can run on Hyperloop

1. Analysis trains
2. Slim derived data trains
3. Standard derived data trains
4. Linked derived data trains

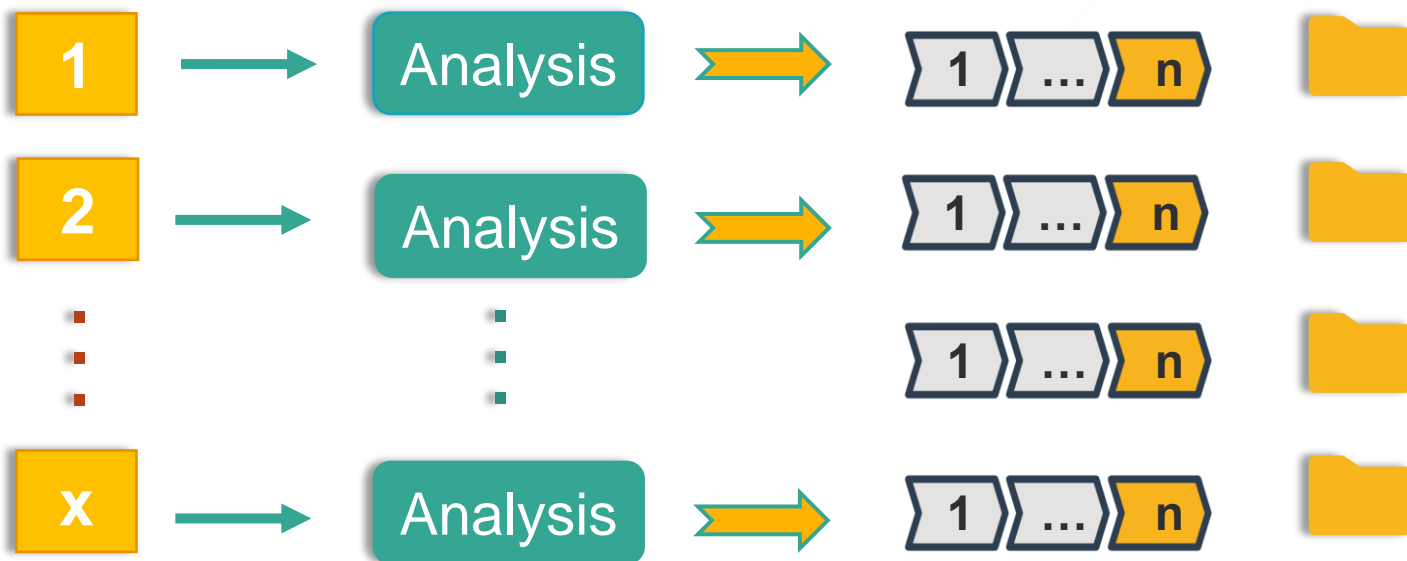
Let's see the differences between these train types

Runs Masterjobs



Each run from the dataset is given a **masterjob**

Runs Masterjobs Per-run Merging

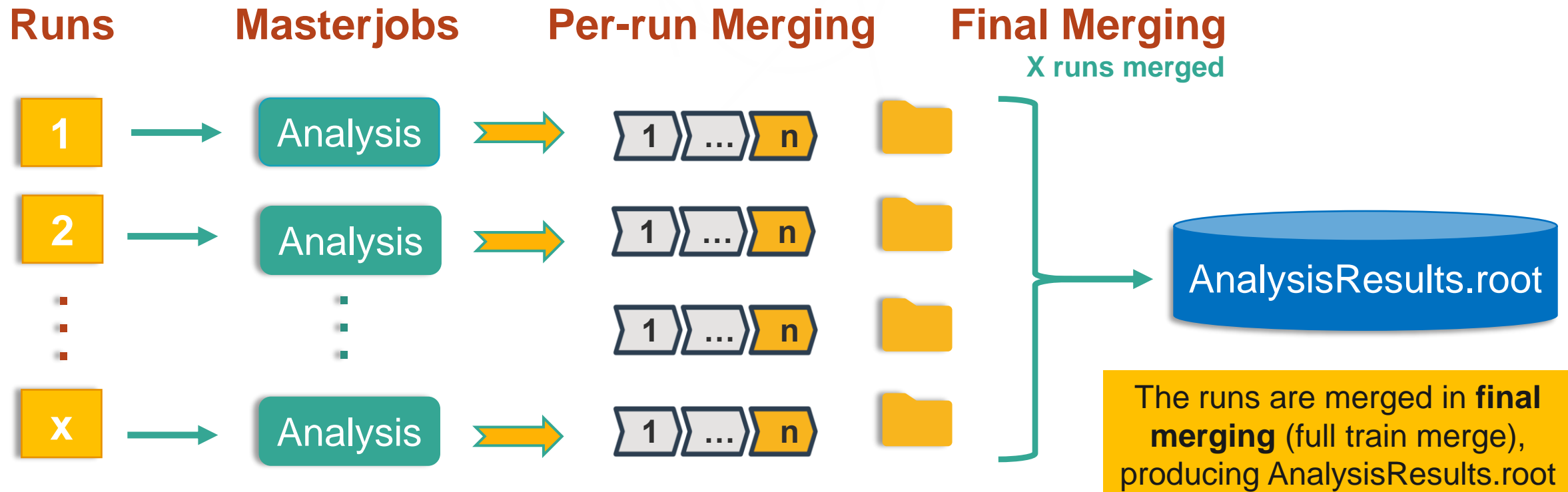


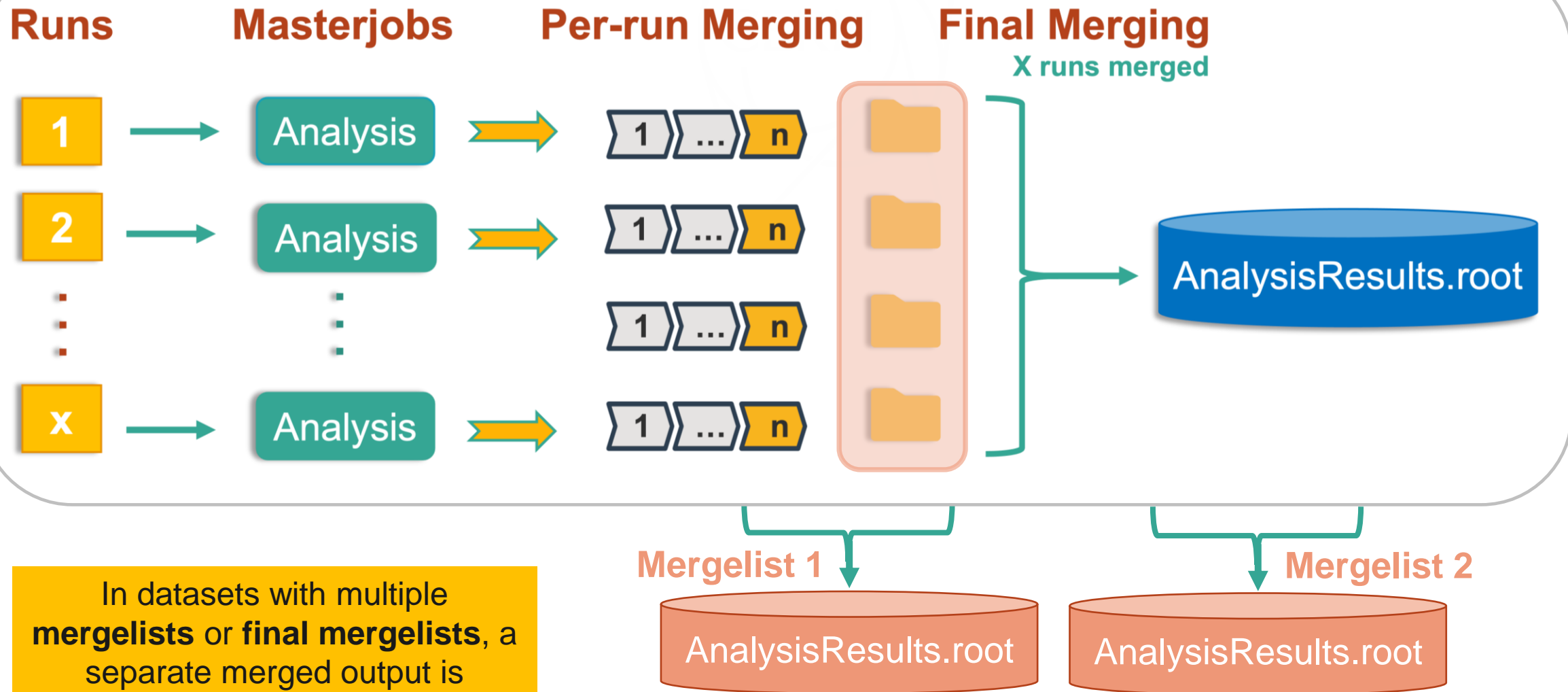
Each run from the dataset is given a **masterjob**

Masterjobs contain **subjobs**

Subjobs are merged in per-run merging

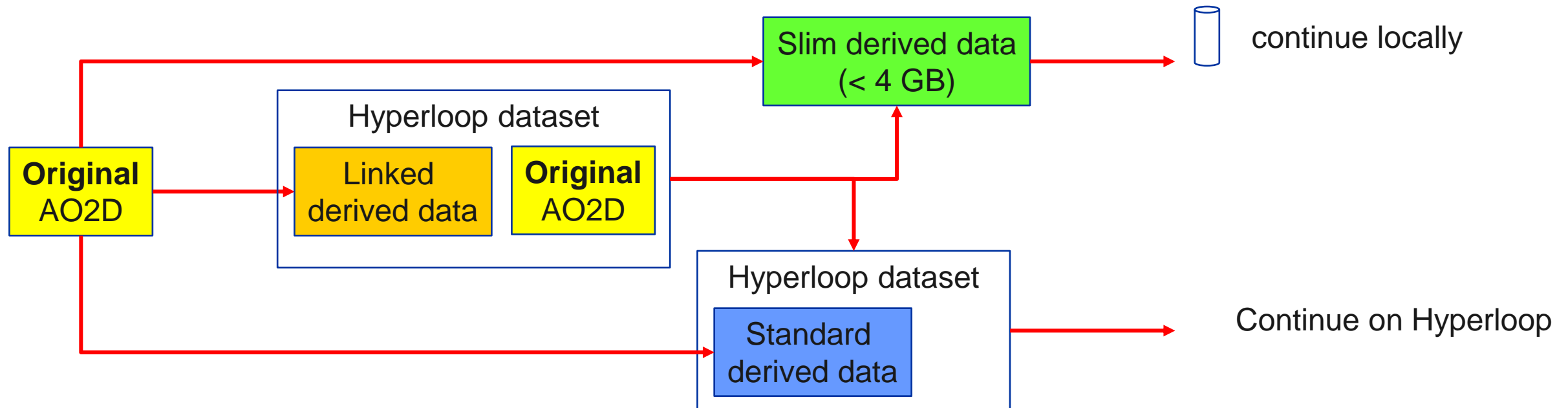
You may access the individual results of each run

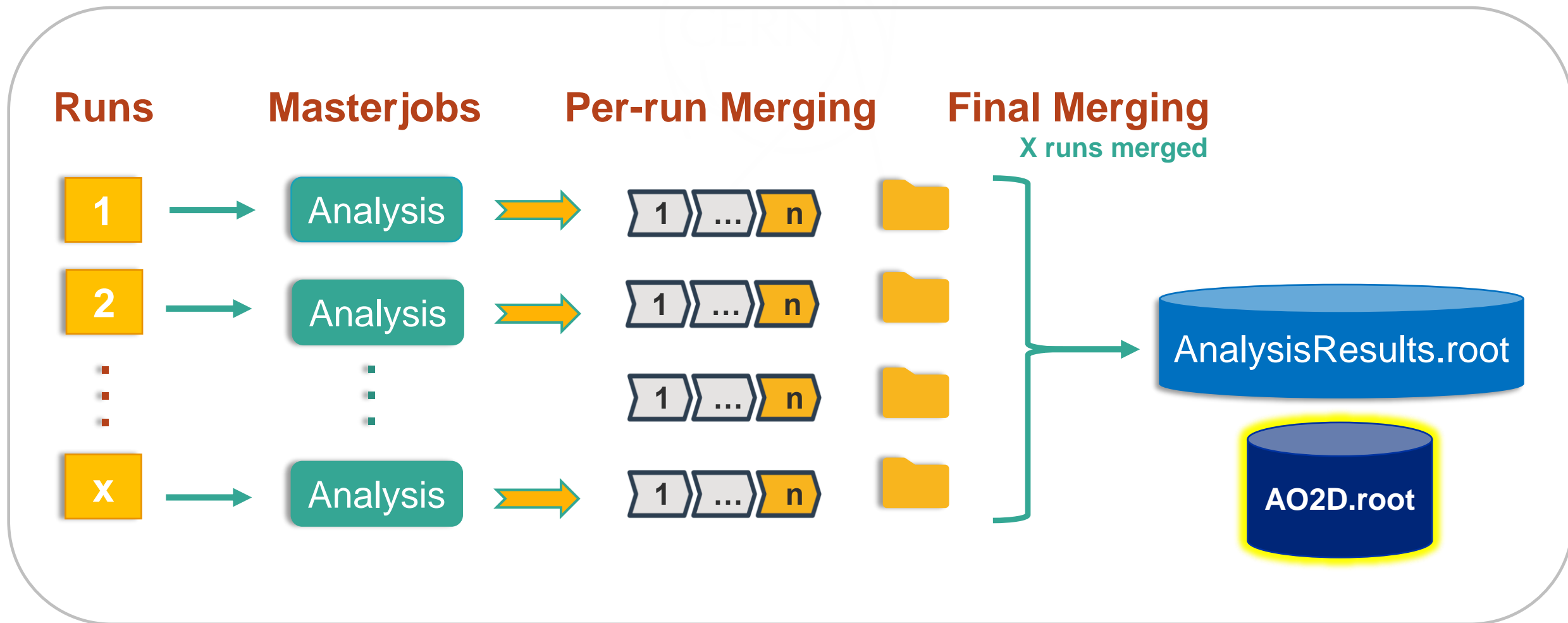




In datasets with multiple **mergelists** or **final mergelists**, a separate merged output is provided for each

- Reconstruction output is not meant for final analysis. (Too much input = the AO2D will be too large!)
- Most analyses need to produce derived data (“trees / tuples”)
 - Why? If analysis ran over AO2D, e.g. for Pb-Pb, we could have only 135 trains/month



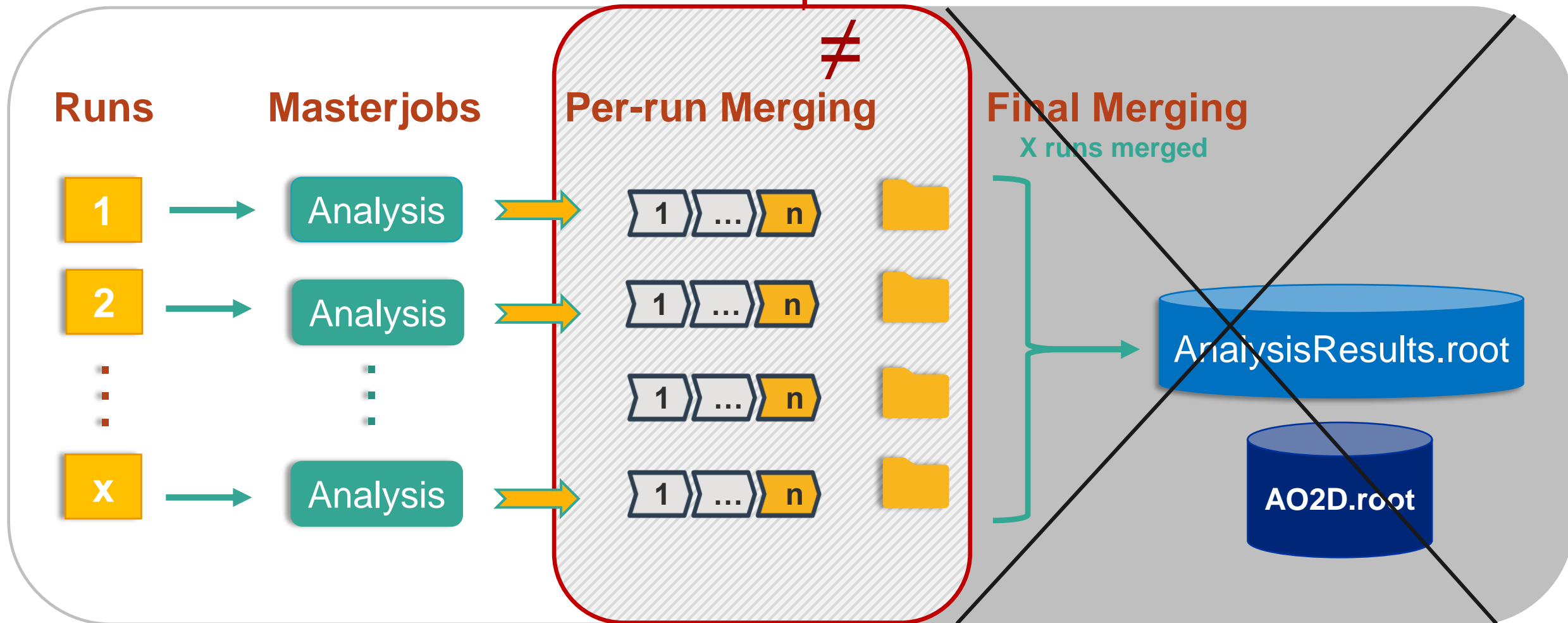


Slim derived trains provide an AO2D.root to be used locally. **Only possible when output < 4GB.**

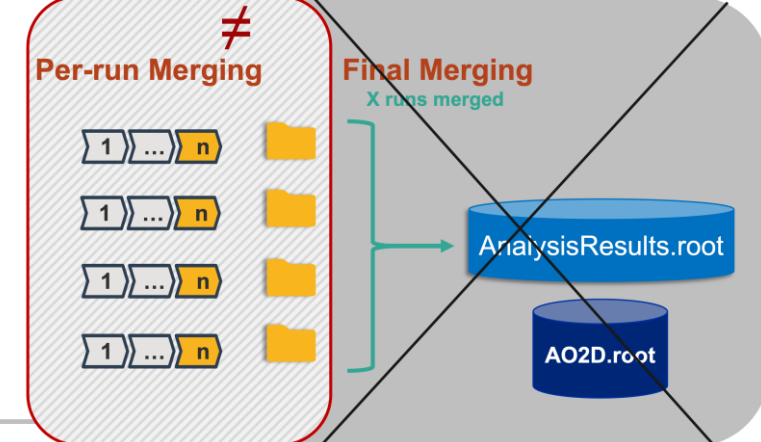
Derived Data Train



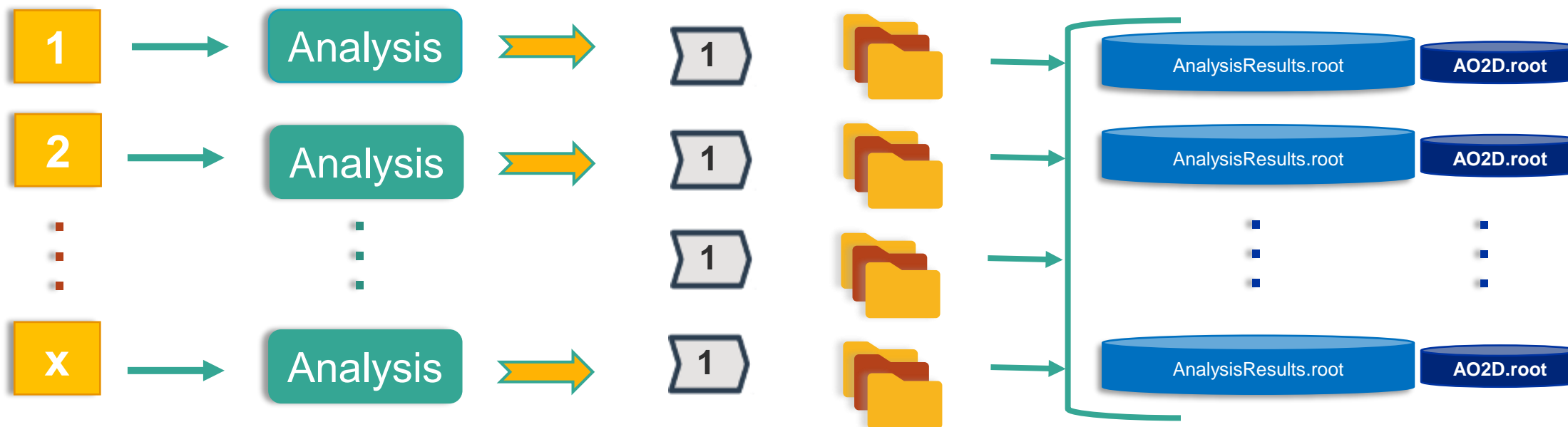
Significant differences!



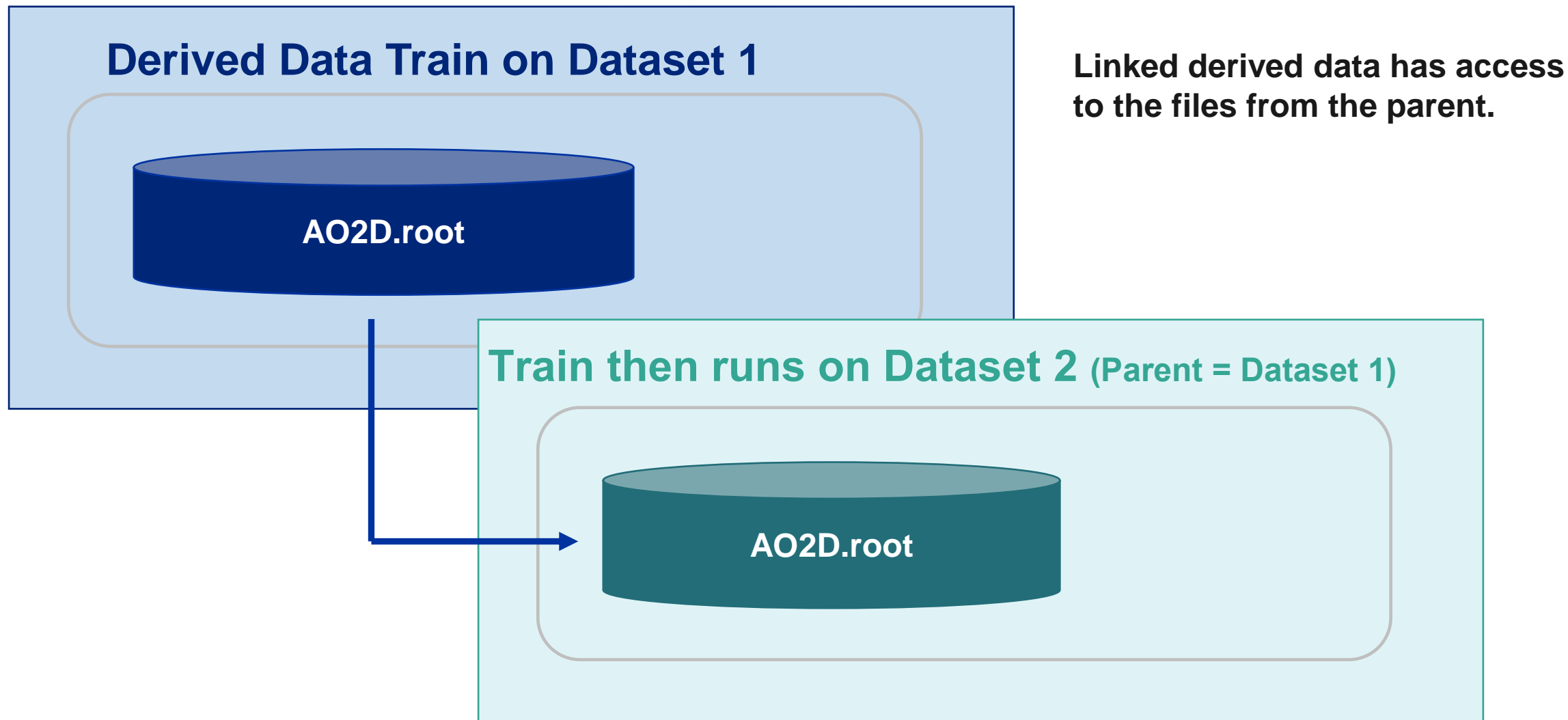
To be used as input in future train runs.



Runs **Masterjobs** **Per-run Merging (1 level of merging per run)**



Linked Derived Data Train



So, how do we use Hyperloop?

- Introduction & key concepts
- **'My Analyses', wagons & datasets**
- Enabling a wagon to start a test
- Trains – automatic composition, debugging & long trains
- Key things to know



My Analyses

My Analyses

All Analyses

Dashboard

AliHyperloop

Train Submission

Train Runs

Datasets

DPG Runlists

?

Click to start tour

HF O2 developments for ALICE3 pp Open HF 2.0 T

Analyzers: apalasci,dthomas,fcoulamar,fgrosa,ginnocen,jseo,ldellost,pchrist,skundu,strogolo,vkucera

JIRA : PWGHF-284

Package: O2Physics::nightly-20220117-1

or newer tags

Future tag based on pull request

Search wagons by name...

Datasets and Settings

Wagon	LHC21d9_...	LHC21d9_...	LHC21d9i...	LHC21d9f...	LHC21d9...	LHC21d9h...	LHC21d9...	Last run
alice3-trackextension	×	×	×	×	×	×	×	18434
hf-candidate-creator-2prong-openhf	×	×	×	×	×	✓	×	18434
hf-candidate-creator-3prong-openhf	×	×	×	×	×	×	×	18147
hf-candidate-creator-lb	×	×	×	×	×	×	×	15031
hf-candidate-creator-xicc	×	×	×	×	×	×	×	18147
hf-candidate-selector-bPlusToD0Pi	×	×	×	×	×	×	×	18434
hf-candidate-selector-d0	×	×	×	×	×	×	×	17068
hf-candidate-selector-d0-OLD	×	×	×	×	×	×	×	11365
hf-candidate-selector-dplus	×	×	×	×	×	×	×	
hf-candidate-selector-lb	×	×	×	×	×	×	×	15031
hf-candidate-selector-lc	×	×	×	×	×	×	×	15031
hf-candidate-selector-xic	×	×	×	×	×	×	×	18147
hf-candidate-selector-xicc	×	×	×	×	×	×	×	18147

- Displays all the analyses you are part of
- Analyses are defined in JIRA for the respective PWG, along with the users that will be part of them
- Several analyzers can share an analysis
- Datasets are enabled per analysis

Instantaneous wagon test when enabling a wagon

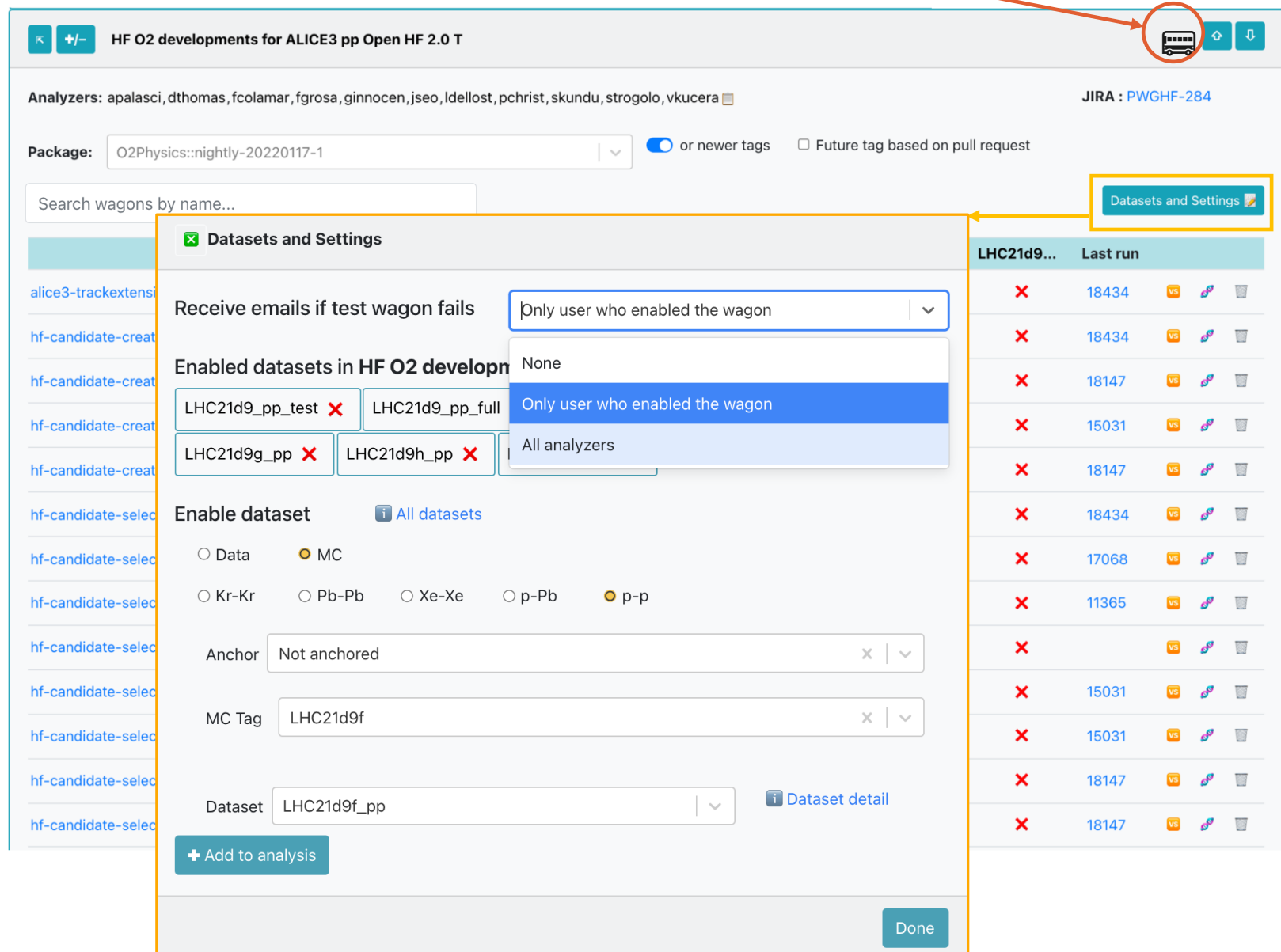


- ### Instantaneous wagon test when enabling a wagon

Nicolas Poffley

- Displays all the analyses you are part of
- Analyses are defined in JIRA for the respective PWG, along with the users that will be part of them
- Several analyzers can share an analysis
- Datasets are enabled per analysis**

Instantaneous wagon test when enabling a wagon



The screenshot shows the 'My Analyses' interface with a modal titled 'Datasets and Settings' open. The modal contains the following sections:

- Receive emails if test wagon fails:** A dropdown menu with options: 'Only user who enabled the wagon', 'None', 'Only user who enabled the wagon', and 'All analyzers'.
- Enabled datasets in HF O2 developn:** A list of datasets with checkboxes: 'LHC21d9_pp_test', 'LHC21d9_pp_full', 'LHC21d9g_pp', and 'LHC21d9h_pp'.
- Enable dataset:** Radio buttons for 'Data' and 'MC' (selected), and a section for collision systems: 'Kr-Kr', 'Pb-Pb', 'Xe-Xe', 'p-Pb', and 'p-p' (selected).
- Anchor:** A dropdown menu with 'Not anchored' selected.
- MC Tag:** A dropdown menu with 'LHC21d9f' selected.
- Dataset:** A dropdown menu with 'LHC21d9f_pp' selected.
- Buttons:** '+ Add to analysis' and 'Done'.

In the background, a table lists analyses with columns 'LHC21d9...', 'Last run', and 'Status'. The table shows several analyses with a red 'X' in the status column, indicating they are not running.

Wagons are defined from O² analysis workflows

You may:

- Add/remove wagons
- Enable/disable wagon
- Clone/compare wagons

My Analyses
All Analyses
Dashboard
AliHyperloop
Train Submission
Train Runs
Datasets
DPG Runlists
?

O2 Development

Analyzers: aalkin,eulisse,jgrosseo
JIRA : OHSA-2

Package: O2Physics::nightly-20211118-1
or newer tags
Future tag based on pull request

Search wagons by name...
Datasets and Settings

Wagon	LHC15o_test	LHC15o_de...	LHC21d9m...	LHC21d9n_...	Last run	
alice3-centrality	×	×	×	×	13705	
alice3-trackextension	×	×	×	×	13705	
CFFilter_WriterTest	✓	×	×	×		
Correlations	✓	×	×	×		
CorrelationsFilteredOnTheFly	✓	×	×	×		
CorrelationsOnDerivedData	×	×	×	×		
hf-candidate-creator-3prong-openhf	×	×	×	×	13705	
hf-candidate-selector-lc	×	×	×	×	13705	
hf-task-lc	×	×	×	×	13705	
hf-track-index-skims-creator-2-3-prong-openhf	×	×	×	×	13705	
HistogramsFull	✓	×	×	×	12328	
SpectraTPCTiny	✓	×	×	×		
TrackExtension	×	×	×	×		

+ Add new wagon
or clone wagon from other analysis)

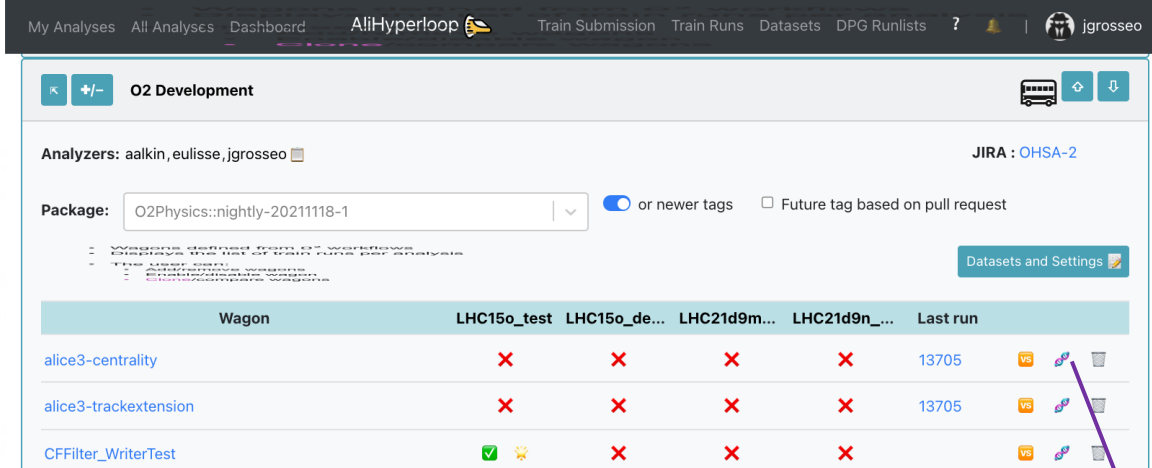
Train Runs

Train	Wagons	Dataset	Package tag	Status
13705	alice3-centrality, alice3-trackextension + 4 others	LHC21d9m_full	O2Physics::nightly-20211014-1	Done
13232	alice3-centrality, alice3-trackextension + 4 others	LHC21d9m_full	O2Physics::nightly-20211007-1	Closed
13216	alice3-centrality, alice3-trackextension + 4 others	LHC21d9n_PbPb	O2Physics::nightly-20211007-1	Closed
12328	HistogramsFull	LHC15o_dev	O2Physics::nightly-20210928-1	Done

Wagons defined from O² analysis workflows

You may:

- Add/remove wagons
- Enable/disable wagon
- Clone/compare wagons



My Analyses All Analyses Dashboard AliHyperloop Train Submission Train Runs Datasets DPG Runlists ? jgrosseo

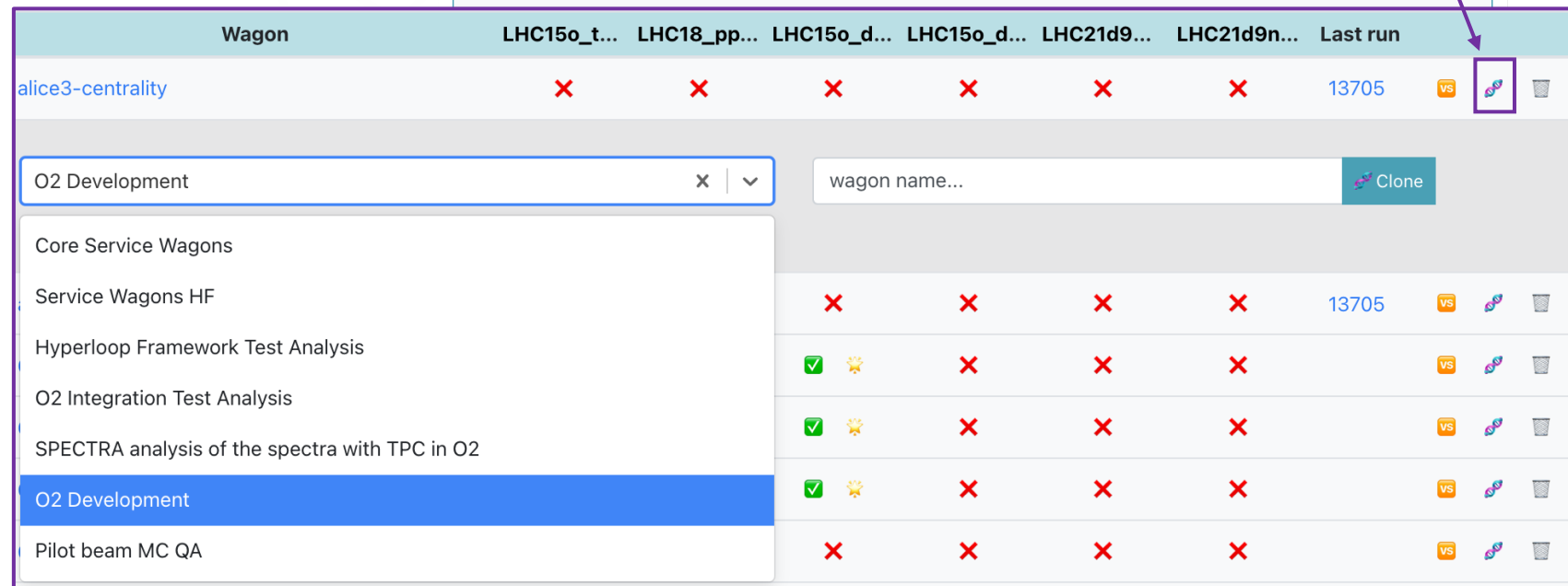
O2 Development

Analyzers: aalkin,eulisse,jgrosseo JIRA : OHSA-2

Package: O2Physics::nightly-20211118-1 or newer tags Future tag based on pull request

Datasets and Settings

Wagon	LHC15o_test	LHC15o_de...	LHC21d9m...	LHC21d9n...	Last run
alice3-centrality	×	×	×	×	13705
alice3-trackextension	×	×	×	×	13705
CFFilter_WriterTest	✓	×	×	×	



Wagon	LHC15o_t...	LHC18_pp...	LHC15o_d...	LHC15o_d...	LHC21d9...	LHC21d9n...	Last run
alice3-centrality	×	×	×	×	×	×	13705

O2 Development

Core Service Wagons

Service Wagons HF

Hyperloop Framework Test Analysis

O2 Integration Test Analysis

SPECTRA analysis of the spectra with TPC in O2

O2 Development

Pilot beam MC QA

wagon name... Clone

	×	×	×	×	×	×	13705
✓	×	×	×	×	×	×	
✓	×	×	×	×	×	×	
✓	×	×	×	×	×	×	
×	×	×	×	×	×	×	

- Wagons defined from O² analysis workflows
- Displays the list of train runs per analysis
- You may:
 - Add/remove wagons
 - Enable/disable wagon
 - Clone/**compare** wagons

My Analyses All Analyses Dashboard AliHyperloop Train Submission Train Runs Datasets DPG Runlists ?

O2 Development

Analyzers: aalkin,eulisse,jgrosseo JIRA : OHS-A-2

Package: O2Physics::nightly-20211118-1 or newer tags ☐ Future tag based on pull request

Search wagons by name...

Datasets and Settings

Wagon	LHC15o_test	LHC15o_de...	LHC21d9m...	LHC21d9n_...	Last run
alice3-centrality	×	×	×	×	13705
alice3-trackextension	×	×	×	×	13705

Core Service Wagons / TrackExtension_Run3

Wagon	LHC15o_test	LHC18_pp_...	LHC15o_dev	LHC15o_de...	LHC21d9m...	LHC21d9n_...	Last run
alice3-centrality	×	×	×	×	×	×	13705
alice3-trackextension	×	×	×	×	×	×	13705

O2 Development / alice3-trackextension vs Core Service Wagons / TrackExtension_Run3

Wagon settings Configuration Derived data

Name: alice3-trackextension TrackExtension_Run3

Workflow: o2-analysis-alice3-trackextension o2-analysis-trackextension

Dependencies: TrackExtension_Run3 TimestampCreator

Wagons Dataset Package tag Status

Wagons	Dataset	Package tag	Status
alice3-centrality, alice3-trackextension + 4 others	LHC21d9m_full	O2Physics::nightly-20211014-1	Done
alice3-centrality, alice3-trackextension + 4 others	LHC21d9m_full	O2Physics::nightly-20211007-1	Closed
alice3-centrality, alice3-trackextension + 4 others	LHC21d9n_PbPb	O2Physics::nightly-20211007-1	Closed
histogramsFull	LHC15o_dev	O2Physics::nightly-20210928-1	Done

Create a wagon



- Go to **My Analyses** page
- Click **Add new wagon** within your analysis
- This will open a pop-up window:
 - Enter your new wagon name
 - Choose the package tag
 - Select your workflow name
 - Click Save to create your new wagon



O2 Development

Analyzers: aalkin,eulisse,jgrosseo JIRA : OHSA-2

Package: O2Physics::nightly-20211118-1 or newer tags Future tag based on pull request

Datasets and Settings

Wagon	LHC15o_test	LHC15o_de...	LHC21d9m...	LHC21d9n...	Last run
alice3-centrality	×	×	×	×	13705
alice3-trackextension	×	×	×	×	13705
CFFilter_WriterTest	✓	×	×	×	
Correlations	✓	×	×	×	
CorrelationsFilteredOnTheFly	✓	×	×	×	
CorrelationsOnDerivedData	×	×	×	×	
hf-candidate-creator-3prong-openhf	×	×	×	×	13705
hf-candidate-selector-lc	×	×	×	×	13705
hf-task-lc	×	×	×	×	13705
hf-track-index-skims-creator-2-3-prong-openhf	×	×	×	×	13705
HistogramsFull	✓	×	×	×	12328
SpectraTPCTiny	✓	×	×	×	
TrackExtension	×	×	×	×	

+ Add new wagon or clone wagon from other analysis

Train Runs

Train	Wagons	Dataset	Package tag	Status
13705	alice3-centrality, alice3-trackextension + 4 others	LHC21d9m_full	O2Physics::nightly-20211014-1	Done
13232	alice3-centrality, alice3-trackextension + 4 others	LHC21d9m_full	O2Physics::nightly-20211007-1	Closed
13216	alice3-centrality, alice3-trackextension + 4 others	LHC21d9n_PbPb	O2Physics::nightly-20211007-1	Closed
12328	HistogramsFull	LHC15o_dev	O2Physics::nightly-20210928-1	Done

Add new wagon in Hyperloop Framework Test Analysis

Name: WagonName ✓

Package: VO_ALICE@O2Physics::nightly-20221011-1

Work flow name: VO_ALICE@O2Physics::nightly-20221011-1

VO_ALICE@O2Physics::daily-20221010-1400-1

VO_ALICE@O2Physics::nightly-20221010-1

VO_ALICE@O2Physics::daily-20221010-1000-1

VO_ALICE@O2Physics::nightly-20221009-1

VO_ALICE@O2Physics::nightly-20221008-1

VO_ALICE@O2Physics::nightly-20221007-1

Save

Add new wagon in Hyperloop Framework Test Analysis

Name: WagonName ✓

Package: VO_ALICE@O2Physics::nightly-20221011-1

Work flow name: o2-analysis-tutorial-

o2-analysis-tutorial-jet-task-skim-provider

o2-analysis-tutorial-jetspectra-task-skim-analyser

o2-analysis-tutorial-jet-analysis

o2-analysis-tutorial-configurable-objects

o2-analysis-tutorial-tpcspectra-task-skim-analyser


o2-analysis-tutorial-efficiency-per-run

o2-analysis-tutorial-mc-histograms


Save

Click to start the tour

Documentation

CFFilter


Wagon settings
Configuration 1
Derived data 2
Test Statistics

Latest change by **kgrosseo** at 05/10/22, 16:46 CEST


Name
CFFilter

Work flow name
o2-analysis-cf-filter-correlations

Dependencies
Core Service Wagons/TrackSelection x Core Service Wagons/EventSelection x
Core Service Wagons/Multiplicity x Core Service Wagons/Centrality x

When enabling a wagon, there is no need to enable its dependencies. This is done automatically on train submission.

Save

You can edit a wagon by clicking on it in *My Analyses* page.

- Analyzers who are part of the analysis can add/edit/enable a wagon
- Add dependencies from service wagons or wagons from the same analysis
- Can open the detailed **wagon changelog** in a new tab (allows detailed comparison of wagon configuration for different timestamps)



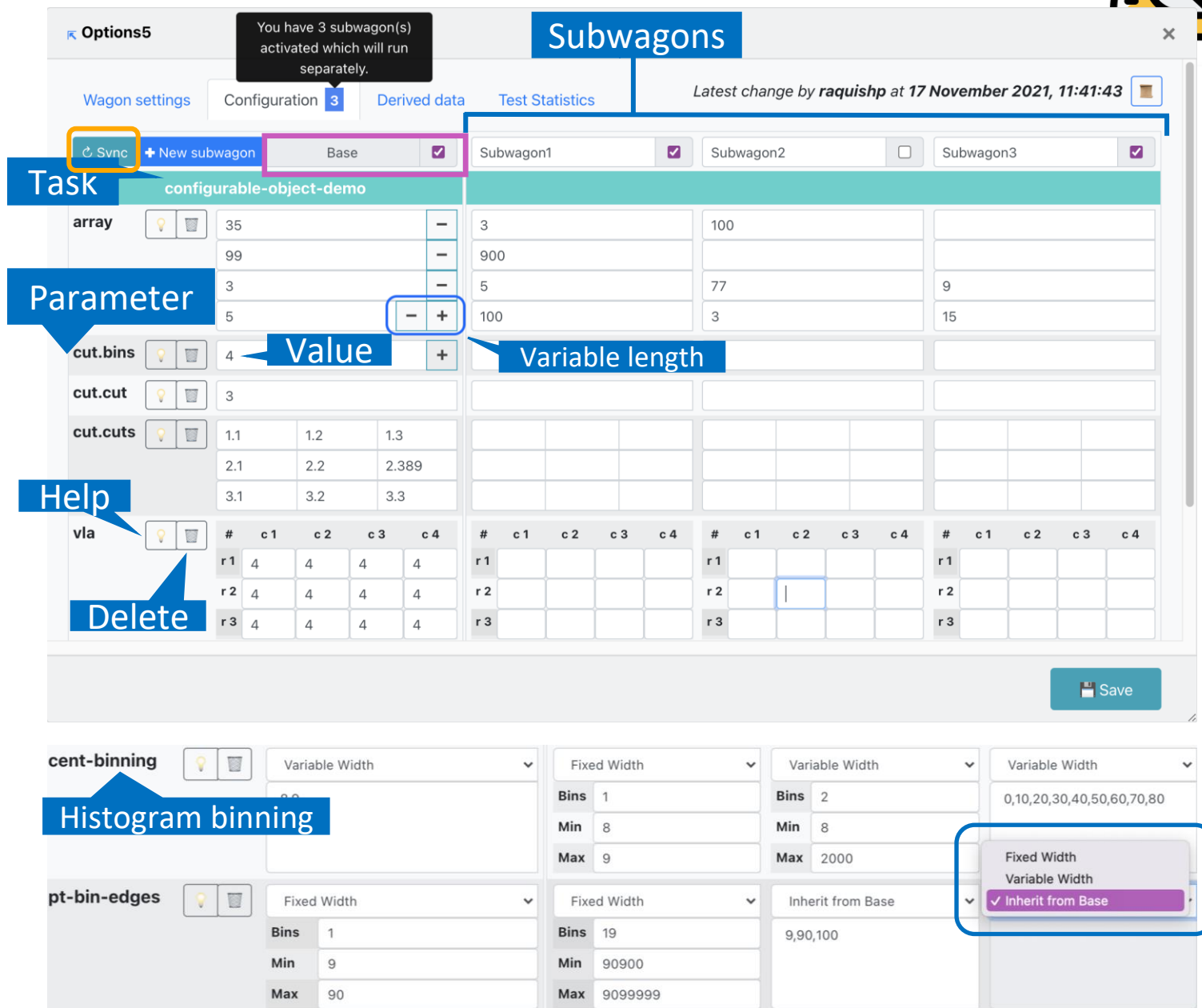
- Direct link to a read-only view in a new tab:
<https://alimonitor.cern.ch/hyperloop/view-wagon/55>
- Useful for sending to colleagues or to the mattermost channel for help



- Available for wagons, datasets and DPG runlists, this always leads to the history page of the current element

Edit wagon

- Task configuration fully integrated. Wagon configuration corresponding to the workflow is available in **Base**
- Supports a variety of parameter types defined in task as Configurable including arrays, matrices, labelled matrices and histogram binning
- If you need to run the same workflow, but modify one (or more) of the parameter's value, you can use a subwagon instead of creating a new wagon
- The configuration of a subwagon will be kept the same as the *Base* and will overwrite only the parameters that you provide.
- Sync** to update the base and subwagon configuration with the latest version of the workflow



Options5 You have 3 subwagon(s) activated which will run separately.

Subwagons Latest change by *raquishp* at 17 November 2021, 11:41:43

Wagon settings Configuration **3** Derived data Test Statistics

Task configurable-object-demo

Parameter

Value

Variable length

Help

Delete

cent-binning

Histogram binning

pt-bin-edges

Save

Fixed Width

Variable Width

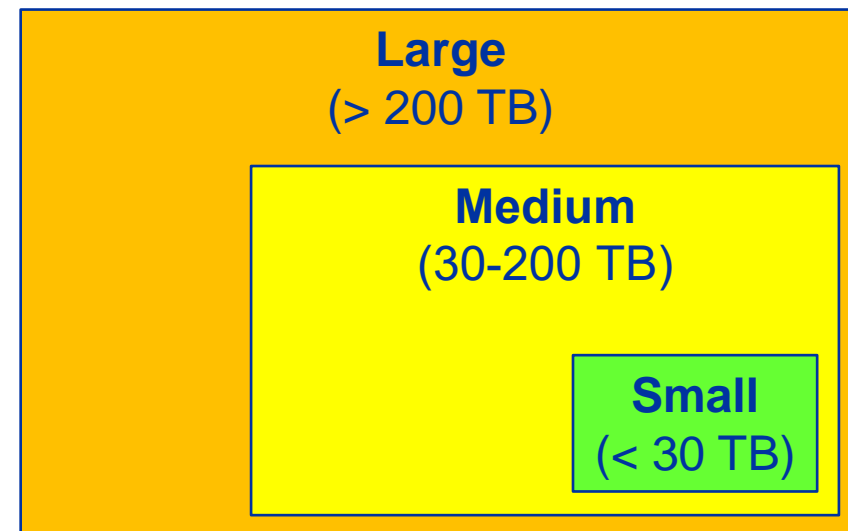
Inherit from Base

Datasets in Hyperloop

- From the 'datasets' page you can see all datasets in Hyperloop
 - Open one to see the configuration!

Train Submission Train Runs Trains with issues **Datasets** DPG Runlists

- Available datasets:
 - Run 2: Converted data and general-purpose MC
 - Run 3: DATA, MC, MCGEN (MC on the fly)
- Tiered structure of datasets with automatic composition schedules
 - Automatic composition: **small** & **medium**
 - **large**, requires run on small/medium first and PWG approval
 - PB (Physics Board) approval if too slow (see [this slide](#))



- **General**
 - JIRA ticket
 - Dataset sampling (for QC datasets only which are not for analysis)
- **Analysis Facility staging**
 - All datasets can run on the GRID
 - But datasets with heavy usage are staged to the analysis facilities, to run there instead

LHC22_pass7_skimmed (DATA)

<https://its.cern.ch/jira/browse/O2-5040> [Edit dataset](#)

Skimmed datasets over all available 2022 pp periods (High IR).

General [Learn more](#)

Activated: <input checked="" type="checkbox"/>	Dataset sampling: <input checked="" type="checkbox"/>	JIRA ticket: O2-5040
Runs selected: 199	Dataset size: 190.3 TB	Expiry date: None

Analysis Facility Staging [Learn more](#)

File Pattern:

Staged to:

Automatic Train Composition [Learn more](#)

Automatic train composition: Scheduled Maximal CPU time in days: 2190 Maximal trains per analysis per week: 6

Composition schedule (CET):

Composition targets:

'Short' datasets

- Large datasets (> 200 TB) cannot be directly used. They are linked to 'short' datasets (subsets) which must first be run on as validation.

Short Datasets:

Dataset view – Automatic composition



- Automatic composition schedules are found in each dataset

Automatic Train Composition [Learn more](#)

Automatic train composition: Scheduled Maximal CPU time in days: 365 Maximal trains per analysis per week: 14

Composition schedule (CET):

Monday - 02:00	Monday - 14:00	Tuesday - 02:00	Tuesday - 14:00	Wednesday - 02:00	Wednesday - 14:00
Thursday - 02:00	Thursday - 14:00	Friday - 02:00	Friday - 14:00	Saturday - 02:00	Saturday - 14:00
Sunday - 02:00	Sunday - 14:00				

Composition targets:

Grid - Single core	Grid - 8 core
--------------------	---------------

- At the scheduled times, Hyperloop gathers all eligible enabled wagons and compose them into a train.
- Wagons will not be considered for automatic composition if:
 - They have **derived data** output which is not slim
 - The wagon test finished with a warning



Derived data wagon composition can be requested as such:

★ O2 Hyperloop Operation ▾ 418 Operators are available 24/5 (Mon-Fri) | Weekend su...

F

16:27

Dear operators, could you launch the wagon `pp_singletrackselector_nh` on the dataset `LHC22o_pass7_minBias_small`? I would need Derived Data. Thank you!

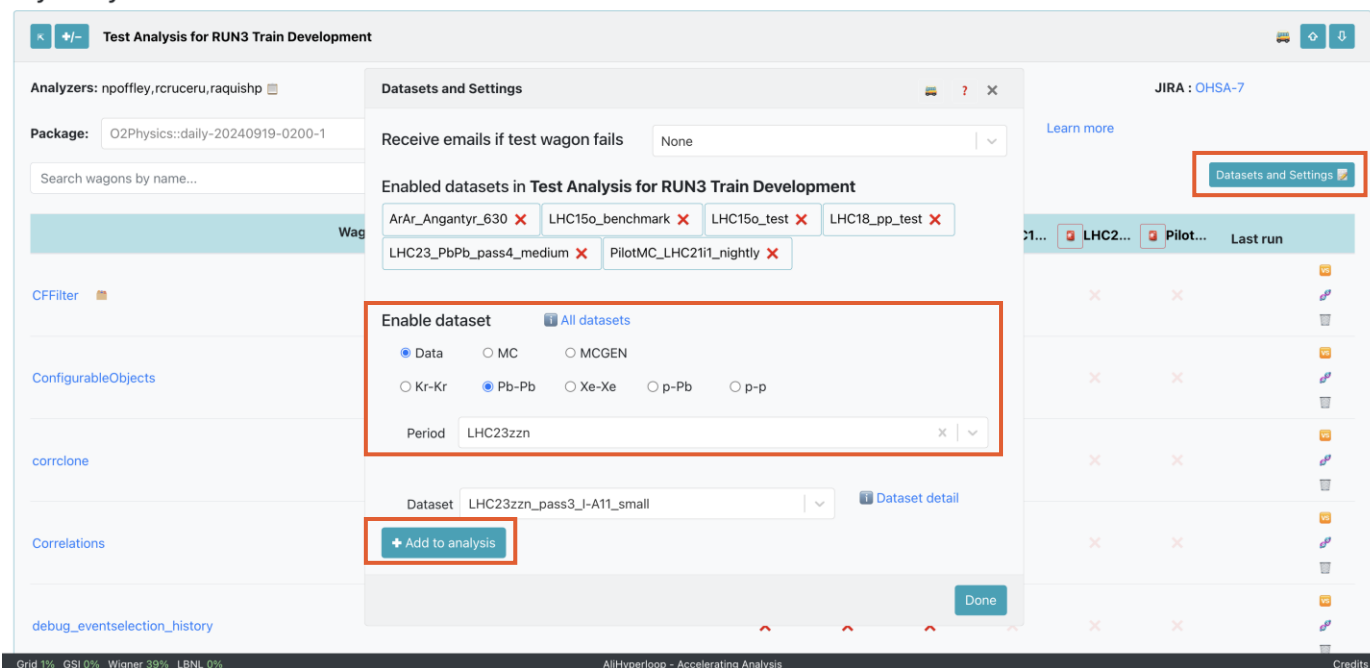
 1
  1

Add a dataset to your Analysis



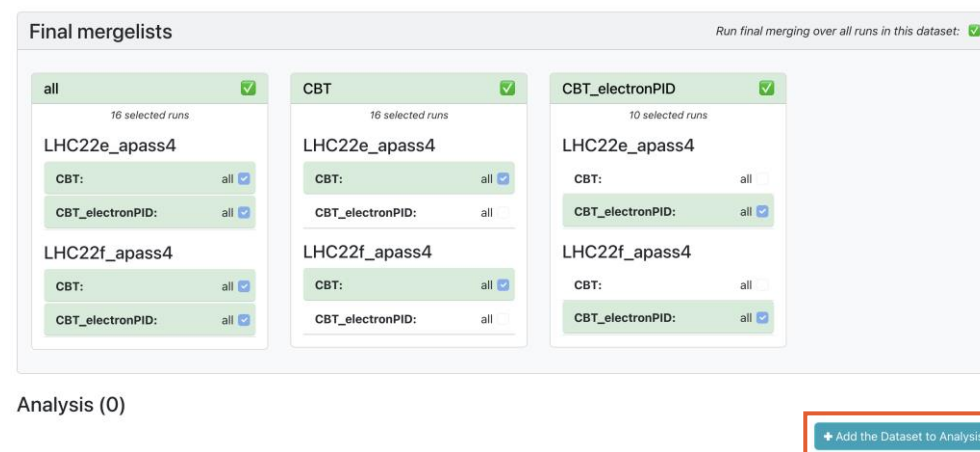
- Click on '**Datasets and Settings**' in **My Analyses**
- Use the filtering options to find the dataset
- Click '**Add to analysis**'

My Analyses



The screenshot shows the 'My Analyses' interface. The 'Datasets and Settings' modal is open for the analysis 'Test Analysis for RUN3 Train Development'. The modal has a 'Search wagons by name...' field and a list of enabled datasets: ArAr_Angantyr_630, LHC15o_benchmark, LHC15o_test, LHC18_pp_test, LHC23_PbPb_pass4_medium, and PilotMC_LHC21i1_nightly. Below this, the 'Enable dataset' section is highlighted with a red box. It shows options for 'Data' (selected), 'MC', 'MCGEN', 'Kr-Kr', 'Pb-Pb' (selected), 'Xe-Xe', 'p-Pb', and 'p-p'. The 'Period' is set to 'LHC23zzn'. The 'Dataset' dropdown is set to 'LHC23zzn_pass3_I-A11_small'. A red box highlights the '+ Add to analysis' button. The 'Done' button is at the bottom right.

- Or open a dataset and click here:



The screenshot shows the 'Final mergelists' interface. It displays three columns of dataset selection options for 'all', 'CBT', and 'CBT_electronPID'. Each column has a 'Run final merging over all runs in this dataset:' checkbox. The 'all' column shows 16 selected runs for LHC22e_apass4 and LHC22f_apass4. The 'CBT' column shows 16 selected runs for LHC22e_apass4 and LHC22f_apass4. The 'CBT_electronPID' column shows 10 selected runs for LHC22e_apass4 and LHC22f_apass4. A red box highlights the '+ Add the Dataset to Analysis' button at the bottom right.

- Introduction & key concepts
- 'My Analyses', wagons & datasets
- **Enabling a wagon to start a test**
- Trains – automatic composition, debugging & long trains
- Key things to know

Choose a package tag

- Choose a tag from the **dropdown** and the wagon will be tested only with that specific tag
- Enabling the '**or newer tags**' switch will allow the wagon to be included in a train run using the selected tag **or a newer tag** (Group more wagons together in a train -> resource efficient)

My Analyses
All Analyses
Dashboard
AliHyperloop
Train Submission
Train Runs
Datasets
DPG Runlists
?

My Analyses

HF O2 developments for ALICE3 pp Open HF 2.0 T

Analyzers: apalasci,dthomas,fcolaramar,fgrosa,ginnocen,jseo,ldellost,pchrist,skundu,strogolo,vkcucera
JIRA : PWGHF-284

Package: O2Physics::daily-20241013-0200-1
or newer tags
Future tag based on pull request

Search v

	9i...	LHC21d9f...	LHC21d9...	LHC21d9h...	LHC21d9...	Last run
alice3-trac	×	×	×	×	18434	vs
hf-candida	×	×	✓	×	18434	vs
hf-candida	×	×	×	×	18147	vs
hf-candida	×	×	×	×	15031	vs
hf-candidate-creator-xicc	×	×	×	×	18147	vs
hf-candidate-selector-bPlusToD0Pi	×	×	×	×	18434	vs
hf-candidate-selector-d0	×	×	×	×	17068	vs
hf-candidate-selector-d0-OLD	×	×	×	×	11365	vs
hf-candidate-selector-dplus	×	×	×	×		vs
hf-candidate-selector-lb	×	×	×	×	15031	vs
hf-candidate-selector-lc	×	×	×	×	15031	vs
hf-candidate-selector-xic	×	×	×	×	18147	vs
hf-candidate-selector-xicc	×	×	×	×	18147	vs

Choose a package tag

- Choose a tag from the **dropdown** and the wagon will be tested only with that specific tag
- Enabling the '**or newer tags**' switch will allow the wagon to be included in a train run using the selected tag **or a newer tag** (Group more wagons together in a train -> resource efficient)
- Future tag based on PR :**
 - The wagon is queued for a test to start once the pull request is included in a tag
 - Once the PR is part of the tag, the wagon can use that tag or a future tag

My Analyses

HF O2 developments for ALICE3 pp Open HF 2.0 T

Analyzers: apalasci,dthomas,fcoulamar,fgrosa,ginnocen,jseo,ldellost,pchrist,skundu,strogolo,vkucera

JIRA : PWGHF-284

Package: Select pull request...

Search

#1344 / PWGHF: mass fitter for d2h

#1343 / catch also tracks of particles of other MC collisions

#1342 / TOF PID: dev process to speed up CPU

#1341 / Updates of DGBCCandProducer

#1340 / new corrections were added

#1339 / DPG: update efficiency task

#1338 / flag propagated tracks

☒ Future tag based on pull request [Learn more](#)

Datasets and Settings


	21d9...	LHC21d9h...	LHC21d9...	Last run
alice3-tr...	×	×	×	18434
hf-candid...	×	✓	×	18434
hf-candid...	×	×	×	18147
hf-candid...	×	×	×	15031
hf-candidate-creator-xicc	×	×	×	18147
hf-candidate-selector-bPlusToD0Pi	×	×	×	18434
hf-candidate-selector-d0	×	×	×	17068
hf-candidate-selector-d0-OLD	×	×	×	11365
hf-candidate-selector-dplus	×	×	×	
hf-candidate-selector-lb	×	×	×	15031
hf-candidate-selector-lc	×	×	×	15031
hf-candidate-selector-xic	×	×	×	18147
hf-candidate-selector-xicc	×	×	×	18147

Enable the wagon to start a wagon test



Wagon Test 266790

General

Package tag [O2Physics::daily-20240919-0200-1](#)
Dataset [LHC15o_dev](#)
Enabled by npoffley
Test status Ongoing ⌚ [\(output\)](#) [Remote GUI](#) 
Start Time 19 September 2024 at 13:29:15 CEST

Wagons [HistogramsFull](#)
[tracksExtraConverter](#)

- Enable the wagon on a dataset by clicking on **x** in **My Analyses**
- When the wagon test starts, click on the ⌚ to open the wagon test page
- View the test output by clicking on [\(output\)](#)

Wagon tests

- Wagons may finish successfully ✨, finish with warnings ⚠️, or fail 💣.
- Successful ✨ wagons are automatically queued for submission if the dataset has an automatic composition schedule.

Package tag	O2Physics::daily-20251109-0000-1
Dataset	LHC22o_pass7_minBias_small
Enabled by	npoffley
Test status	Done ✨ (output) (browse) Speedscope 📊
Start Time	09 November 2025 at 21:02:51 CET
End Time	09 November 2025 at 21:08:20 CET
Scheduled Composition	10 November 2025 at 06:00:00 CET ⌚

This wagon will be composed into a train at the shown time if you have not exceeded the train slots per week quota and it has not already been composed.

- **Derived data** wagons as well as wagons running on **large datasets** are not automatically submitted.

Wagon tests - warnings



- Wagons with warnings will not be automatically submitted.
- Some wagons with warnings can be submitted with operator intervention.
- Others cannot be submitted at all.
- If unsure, ask the operators for assistance!



2 Warnings


Start: 09 July 2024 at 17:00:30 CEST
End: 09 July 2024 at 17:06:23 CEST
Package: O2Physics::daily-20240708-0200-1

- Memory consumption too large to run.
- Derived output too large for slim train (16481 MB)

Test output has been cleaned

Wagon tests – failed wagons

If the wagon test failed, click [\(output\)](#) -> stdout.log to see what went wrong.

[Test 266280](#)


General

Test

Package tag

Dataset

Enabled by

Test status


Start Time

End Time

O2Physics::daily-20240904-0200-1

hyperloop_development_dataset

npoffley

Failed  [\(output\)](#)

18 September 2024 at 13:59:55 CEST

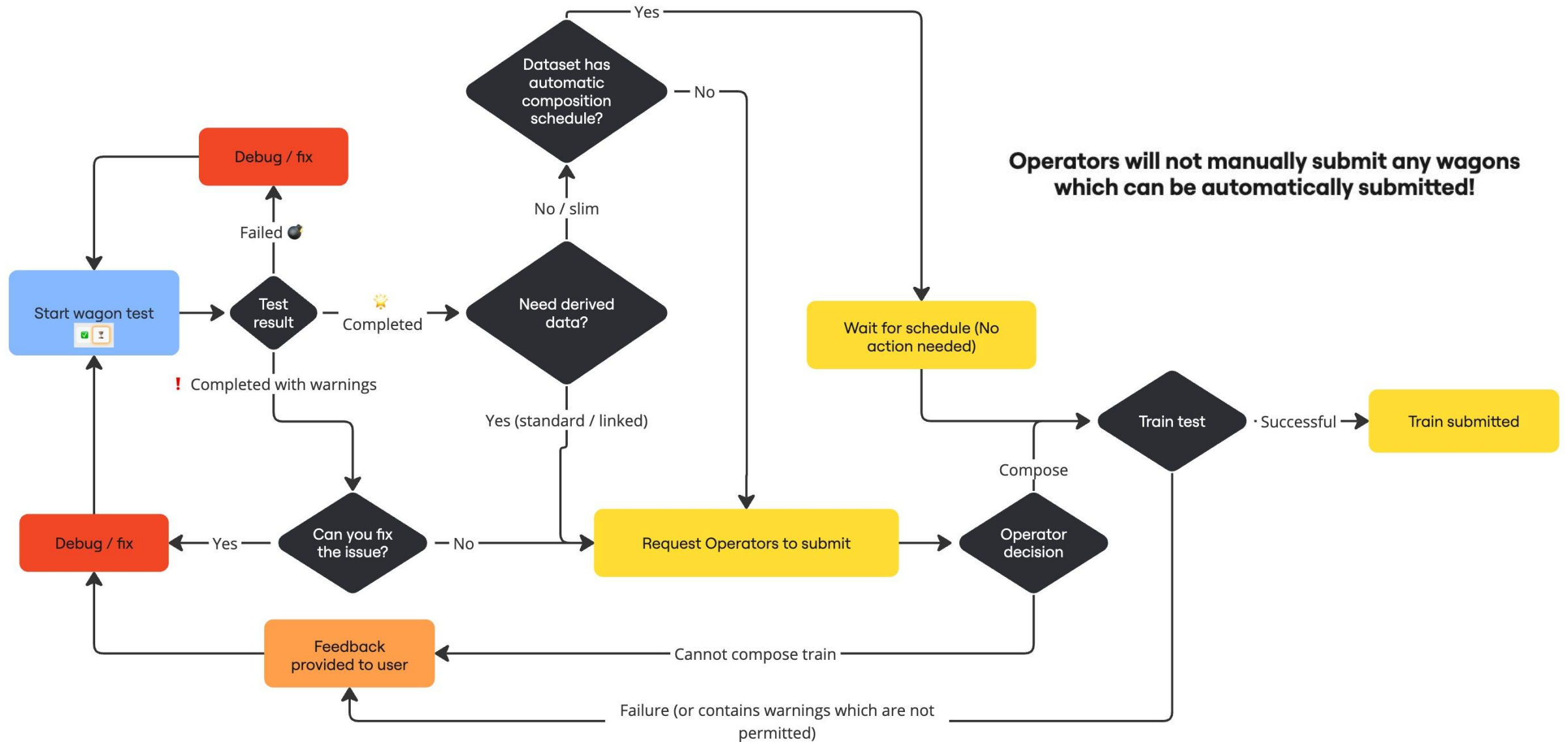
18 September 2024 at 14:00:13 CEST

Filename
configuration.json
download.log
dpl-config.json
env.sh
full_config.json
input_data.txt
performanceMetrics.json
profile.linux-perf.txt
status.json
stderr.log
stdout.log
wn.xml

```
[331854:internal-dpl-aod-reader]: [14:00:10] [ERROR] Exception while running: Couldn't get TTree "DF_2235406567711662/02track" from "/home/alitrain/train-workdir/testdata/LFN/alice/data/2022/LHC22f/520471/apass4/1450/o2_ctf_run0520471_orbit0644189358_tf0000000301_epn069/002/A02D.root". Please check https://aliceo2group.github.io/analysis-framework/docs/troubleshooting/#tree-not-found for more information.. Rethrowing.
[331854:internal-dpl-aod-reader]: [14:00:10] [STATE] Exiting FairMQ state machine
[331854:internal-dpl-aod-reader]: [14:00:10] [FATAL] Unhandled o2::framework::runtime_error reached the top of main of o2-analysis-tutorial-histograms, device shutting down. Reason: Couldn't get TTree "DF_2235406567711662/02track" from "/home/alitrain/train-workdir/testdata/LFN/alice/data/2022/LHC22f/520471/apass4/1450/o2_ctf_run0520471_orbit0644189358_tf0000000301_epn069/002/A02D.root". Please check https://aliceo2group.github.io/analysis-framework/docs/troubleshooting/#tree-not-found for more information.
```

- Introduction & key concepts
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- **Trains – automatic composition, debugging & long trains**
- Key things to know

Train composition flow chart



Train Runs ☒ Show last 3 months [Ongoing trains](#) [Trains with issues](#)

Clear all filters

Compare

Open

Train	Wagons	Operator	Package	Dataset	Composed	Train status	Test
38000 - 38301	Search 9 records...	Search 9	Search 9 records...	Search 9 records...	07/10/22, 21:42 CEST Off	Done	All
<input checked="" type="checkbox"/> 38301	CFFilter,Centrality_Run2,EventSele...	jgrosseo	O2Physics::nightly-20221011-1	LHC15o_benchmark	11/10/22, 09:04 CEST	Done	
<input checked="" type="checkbox"/> 38226	UPCCandidateProducer,EventSele...	scostanz	O2Physics::nightly-20221008-1	LHC22m_pass1_subset	10/10/22, 18:16 CEST	Done	
<input type="checkbox"/> 38225	UPCCandidateProducer,EventSele...	scostanz	O2Physics::nightly-20221008-1	LHC22m_pass1_subset	10/10/22, 18:16 CEST	Done	
<input type="checkbox"/> 38193	CF...	cf...				ne	
<input type="checkbox"/> 38192	CF...	cf...				ne	
<input type="checkbox"/> 38158	CF...	cf...				ne	
<input type="checkbox"/> 38153	CF...	cf...				ne	
<input type="checkbox"/> 38009	CF...	cf...				ne	
<input type="checkbox"/> 38001	Fer...	fer...				ne	

Train run 38301

General

Derived Data

Test

Submitted jobs

Grid Statistics

Wagon resources

Clone

Request long train

Package tag

Dataset

Operator

Test status

Target

Train status

Train created

Train submitting

All jobs

submitted

Train finished

Train duration

Needed

resources

Job status

Per-run

merging

O2Physics::nightly-20221011-1

LHC15o_benchmark

jgrosseo

Done (output) (browse) Speedscope

Grid - Single core

10 October 2022 at 18:16:33 CEST

10 October 2022 at 18:21:50 CEST

10 October 2022 at 18:22:06 CEST

11 October 2022 at 01:13:42 CEST

6h 51m

252d 3h (wall time), 28.0 GB (output size)

Total: 4724, Done: 4378, Active: 0, Wait: 0, Error: 346

Done: 5, Running: 0, Pending: 0, Skipped: 0, Failed: 0

Delete

Settings

slow train ☐ derived data ☒ automatic submission ☐

Wagons

CFFilter (jgrosseo)

Comment

Train composed and submitted as requested by the user (derived data) - SC

Train run 38226

General

Derived Data

Test

Submitted jobs

Grid Statistics

Wagon resources

Clone

Request long train

Package tag

Dataset

Operator

Test status

Target

Train status

Train created

Train submitting

All jobs

submitted

Train finished

Train duration

Needed

resources

Job status

Per-run

merging

O2Physics::nightly-20221008-1

LHC22m_pass1_subset

scostanz

Done (output) (browse) Speedscope

Grid - Single core

10 October 2022 at 18:16:33 CEST

10 October 2022 at 18:21:50 CEST

10 October 2022 at 18:22:06 CEST

11 October 2022 at 01:13:42 CEST

6h 51m

252d 3h (wall time), 28.0 GB (output size)

Total: 4724, Done: 4378, Active: 0, Wait: 0, Error: 346

Done: 5, Running: 0, Pending: 0, Skipped: 0, Failed: 0

Delete

Settings

slow train ☐ derived data ☒ automatic submission ☐

Wagons

UPCCandidateProducer (nburnaso)

EventSelection_Run3_pp

Multiplicity_Run3_pp

PIDTOFBaseRun3

PIDTOFFullRun3

PIDTPCFull

TimestampCreator

TrackPropagation


Comment

Train composed and submitted as requested by the user (derived data) - SC

- Displays all the trains
- To compare two trains, select them in the Compare column and click *Compare*. This will open a new tab displaying the differences between the two trains

Train run view – General



Train run 132324  [Click to start the tour](#)

General | Derived Data | Test | Submitted jobs | Grid Statistics | Wagon resources | Merged Output | Clone

Train type

Settings: ☐ slow train ☒ slim derived data ☒ automatic submission

Link to respective JIRA ticket for analysis

Click here to open the JIRA ticket associated with this wagon

Wagons

User wagons

- EventSelection_Run2_pPb PWGDQ-89
- Im-muon-table-maker-ions-run2 PWGDQ-89
- Im-muon-table-reader-ions-run2 (vkovalen) PWGDQ-89
- bcConverter
- CollisionConverter
- FwdTrackExtension
- TimestampCreator
- tracksExtraConverter
- ZDCConverter


Service wagon dependencies

Comment

Package tag O2Physics::daily-20231104-0100-1

Dataset LHC16r_pass2_CENT_wSDD

Operator vkovalen

Test status Done  [\(output\)](#) [\(browse\)](#) [Speedscope](#)

Target Grid - Single core

Train status Done

Train created 04 November 2023 at 17:41:05 CET

Train submitting 04 November 2023 at 17:46:59 CET by alihyperloop

All jobs submitted 04 November 2023 at 17:48:15 CET

Train finished 04 November 2023 at 21:05:30 CET

Train duration 3h 17m

Needed resources 1d 17h (wall time), 521.1 MB (output size)

Job status Total: 225, Done: 206, Active: 0, Wait: 0, Error: 19

Per-run merging Done: 45, Running: 0, Pending: 1, Skipped: 0, Failed: 0

Final merging submitted 04 November 2023 at 20:55:23 CET by vkovalen

Final-merging summary Done: 1, Running: 0, Pending: 0, Failed: 0

- Direct links to dataset and wagons **at the timestamp of the train (preserved state – changes after train run ignored)**
- Duration and needed resources

- Job status, per-run merging and final-merging summary
- Direct links to test **output** and **AnalysisResults.root**

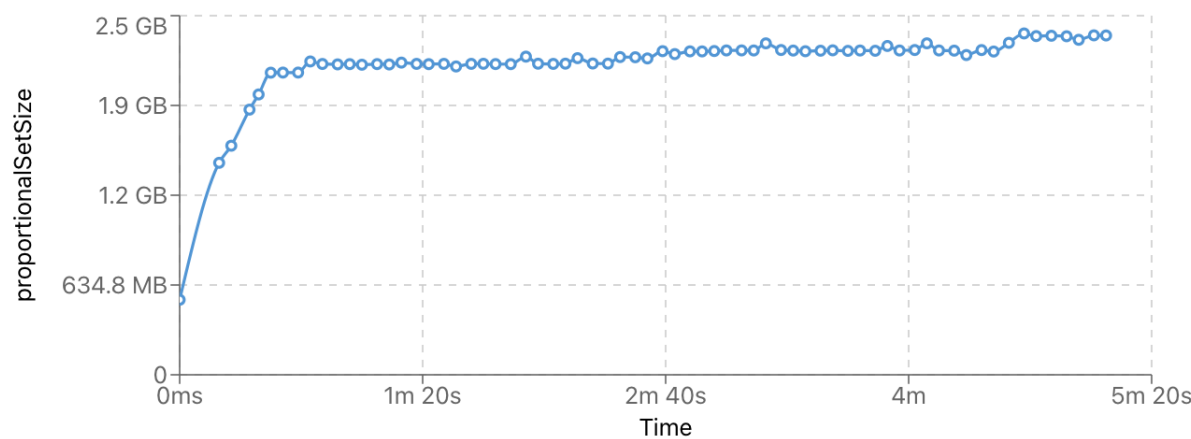
Train run view – Train test



Train Run 267170

[General](#)
[Derived data](#)
[Test](#)
[Submitted jobs](#)
[Grid statistics](#)
[Merged output](#)
[Clone](#)

[Full Test](#)
[Per Wagon](#)
[Graphs](#)



- Shows statistics of the train test, similar to the wagon test
- View **graphs** and **per wagon** statistics
- **Expected resources** of the full train run
- **Estimated kgCO2eq emissions** of the full train run
- **Weekly slots used** by the train from the dataset quota

Number of input files	3
Input size	8.3 GB
Output size	63.0 KB
Output size (AO2D only)	15.4 KB
Reduction factor	562572
PSS Memory	Max: 2.4 GB Avg: 2.2 GB Slope: 1.1 MB/s
Private Memory	Max: 1.9 GB Avg: 1.8 GB Slope: -38.0 KB/s
Timing	CPU: 3m 59s Wall: 5m 10s
Throughput	27.3 MB/s
Expected resources	11d 14h 48.7 MB
Estimated emissions	2 kgCO2eq
Weekly slots used	Non-prompt cascades with strangeness tracking: 1

Train run view – Train test



View statistics per wagon

View graphs on different statistics per wagon

Train Run 267170

General Derived data Test Submitted jobs Grid statistics Merged output Clone

Full Test Per Wagon Graphs

Search 15 records...

Wagon		PSS Memory	Private Memory	CPU Time
Reader	Max Avg Slope	700.0 MB 610.8 MB 136.4 KB/s	558.9 MB 446.9 MB -234.3 KB/s	1m 14s (30%)
CorrectedFT0	Max Avg Slope	23.7 MB 21.8 MB 14.4 KB/s	18.9 MB 18.8 MB 635.7 B/s	2s (1%)
EventSelection_Run3_pp	Max Avg Slope	318.7 MB 273.6 MB 319.8 KB/s	241.3 MB 232.9 MB 167.0 KB/s	19s (8%)
mcCollisionConverter	Max Avg Slope	19.9 MB 18.5 MB 9.0 KB/s	16.6 MB 16.5 MB 389.9 B/s	1s (0%)
Multiplicity_Run3_pp	Max Avg Slope	181.4 MB 157.0 MB 162.1 KB/s	134.4 MB 130.1 MB 66.1 KB/s	7s (3%)
new-non-prompt-cascade-mc	Max Avg Slope	227.7 MB 203.5 MB 142.7 KB/s	178.8 MB 176.5 MB 45.8 KB/s	6s (2%)




Train run view – Submitted jobs





Copy the entire list of output directories (regardless of the active filters)











- List of masterjobs
- Use the **Search box** to search for *PIDs*, *Run number* and *Output directories*
- Download **job json configuration**
- **Stack trace**

Train run 75957 

General Derived Data Test Submitted jobs Grid Statistics Clone

IO Statistics **Stack trace** Copy all output directories 

 Clear all filters

PID 	Run no.	Output directory	Total	Done	Active	Wait	Error	Merging
<input type="text" value="Search 55"/>	<input type="text" value="Search €"/>	<input type="text" value="Search 55 records..."/>						<input type="text" value="All"/> 
2840340648	282441 	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168887/AOD	2	2	0	0	0	Done
2840340484	282440 	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168886	1	1	0	0	0	Skipped
2840340310	282439 	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168885	1	1	0	0	0	Skipped
2840340158	282437 	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168884	1	1	0	0	0	Skipped
		Click here to download the job json configuration. /alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168883	1	1	0	0	0	Skipped
2840339795	282411 	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168882	1	1	0	0	0	Skipped
2840339653	282402 	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168881	1	1	0	0	0	Skipped
2840339481	282399 	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168880	1	1	0	0	0	Skipped
2840339293	282398 	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168879	1	1	0	0	0	Skipped

• Stack trace

Collects the errors from failed jobs and groups them by error message.

Train run 273205

General Test Submitted jobs Grid statistics Performance comparison Wagon resources Merged output Clone

IO Statistics Stack trace Copy all output directories

Reset all filters

PID	Run no.	Output directory	Throughput (core)	Total	Done	Active	Wait	Error	Merging
3177084643	246392	/alice/cern.ch/user/a/alihyperloop/jobs/0076/hy_769557	6.5 MB/s	14	14	0	0	0	Done
3177084635	246391	/alice/cern.ch/user/a/alihyperloop/jobs/0076/hy_769556	7.1 MB/s	7	7	0	0	0	Done
3177084605	245068	/alice/cern.ch/user/a/alihyperloop/jobs/0076/hy_769555	7.2 MB/s	3	3	0	0	0	Done

ALICE

»

12 9 3 3 2 1 1 1 1 1 1 1 1 1 1

<signal handler call removed>

```

[***:internal-dpl-aod-reader]: [***:***][ERROR] Exception caught: Couldn't open file "****"
[***:internal-dpl-aod-reader]: Executable is /cvmfs/alice.cern.ch/el7-x86_64/Packages/O2Physics/nightly-20230418-1/bin/o2-analysis-timestamp
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/O2Physics/nightly-20230418-1/lib/libO2Framework.so: ?? ??:0
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/O2Physics/nightly-20230418-1/lib/libO2Framework.so: o2::framework::DataProcessingDevice::doRun(o2::framework::ServiceRegistryRef)
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/O2Physics/nightly-20230418-1/lib/libO2Framework.so: o2::framework::DataProcessingDevice::Run()
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/FairMQ/v1.4.56-21/lib/libFairMQ.so.1.4: fair::mq::Device::RunWrapper()
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/FairMQ/v1.4.56-21/lib/libFairMQStateMachine.so.1.4: boost::detail::function::void_function_obj_invoker1<std::function<void (fair::mq::State)>, void, fair::mq::Device::RunWrapper()>>()
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/FairMQ/v1.4.56-21/lib/libFairMQStateMachine.so.1.4: boost::signals2::detail::signal_impl<void (fair::mq::State), boost::signals2::optional_last_value<void>,
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/FairMQ/v1.4.56-21/lib/libFairMQStateMachine.so.1.4: fair::mq::fsm::Machine::ProcessWork()
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/FairMQ/v1.4.56-21/lib/libFairMQStateMachine.so.1.4: fair::mq::StateMachine::ProcessWork()
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/FairMQ/v1.4.56-21/lib/libFairMQ.so.1.4: fair::mq::DeviceRunner::Run()
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/O2Physics/nightly-20230418-1/lib/libO2Framework.so: doChild(int, char**, o2::framework::ServiceRegistry*, o2::framework::RunningWorkflowInfo const&, o2::framework:
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/O2Physics/nightly-20230418-1/lib/libO2Framework.so: runStateMachine(std::vector<o2::framework::DataProcessorSpec, std::allocator<o2::framework::DataProcessorSpec>
[***:internal-dpl-aod-reader]: /cvmfs/alice.cern.ch/el7-x86_64/Packages/O2Physics/nightly-20230418-1/lib/libO2Framework.so: doMain(int, char**, std::vector<o2::framework::DataProcessorSpec, std::allocator<o2::framework::DataProcessorSp
[***:internal-dpl-aod-reader]: o2-analysis-timestamp() [0x429797]: std::vector<o2::framework::ChannelConfigurationPolicy, std::allocator<o2::framework::ChannelConfigurationPolicy> >::~vector() at stl_vector.h:730
[***:internal-dpl-aod-reader]: o2-analysis-timestamp() [0x4229a7]: main at runDataProcessing.h:243
[***:internal-dpl-aod-reader]: /lib64/libc.so.6: ?? ??:0
[***:internal-dpl-aod-reader]: o2-analysis-timestamp() [0x422a5e]: _start at ????:?
  
```

(extracted from stdout.log)

3 jobs:


- Masterjob 2839676098
- 2839680720 (ALICE:UPB:LCG)
- Masterjob 2839676538
- 2839685979 (ALICE:SARA:LCG)
- 2839686025 (ALICE:SARA:LCG)

• Per-run merge

- This shows the status of every per-run merging job.
- Merging only after all jobs are finished
- *Only occurs if > 50% of jobs succeeded*

Train run view – Derived data



Train run 75957

?

General
Derived Data
Test
Submitted jobs
Grid Statistics
Clone

Max DF size: 100000000
Max derived file size: 0

Wagon	Binding	Description
DQ-TPCPID-trkEff-maker-run2	ReducedEvents	REDUCEDEVENT
DQ-TPCPID-trkEff-maker-run2	ReducedTracks	REDUCEDTRACK
DQ-TPCPID-trkEff-maker-run2	ReducedEventsExtended	REEXTENDED
DQ-TPCPID-trkEff-maker-run2	ReducedEventsVtxCov	REVTXCOV

- Displays the activated derived data output (all the output enabled in the wagons of the train)

- Summarizes job performance
- See a summary of how many jobs failed, and what error codes they failed with

Plots:

- Files/Job
- CPU time/Job
- Wall time/Job



Train run view - Merged Output

- For analysis and slim derived data trains only
- Merged outputs generated for the full train, plus every individual mergelist and final mergelist. The mergelists are defined in the *dataset*
- Runs may be excluded from the final merge if the per-run merges did not complete.

Train run 67011

General Test Submitted jobs Grid Statistics Wagon resources Merged Output Clone

AnalysisResults.root

	PID	Status	Output directory	Runs
Full train merge	2818434043	Done	/alice/cern.ch/user/a/alihyperloop/outputs/67011/7087 (browse)	25 out of 28
LHC22r_apass2 all/low_rate	2815066400	Done	/alice/cern.ch/user/a/alihyperloop/outputs/67011/7086 (browse)	2 out of 2
LHC22r_apass2 all/all	2818434041	Done	/alice/cern.ch/user/a/alihyperloop/outputs/67011/7085 (browse)	25 out of 28

529066,529067,529077,529078,529084,529088,529116,529117,529128,529129,529208,529209,529210,529237,529242,529248,529252,529270,529306,529310,529317,529320,529324,529338,529341

Productions (1) Learn more

+ Production

LHC22r_apass2 (LHC22r - apass2 of LHC22r on CPU - 13.6 TeV pp, O2-3464)

all: 529066 529067 529077 529078 529084

Run exclude list

Comma separated list of runs

Mergelists

+ Mergelist

all

low_rate

all

low_rate

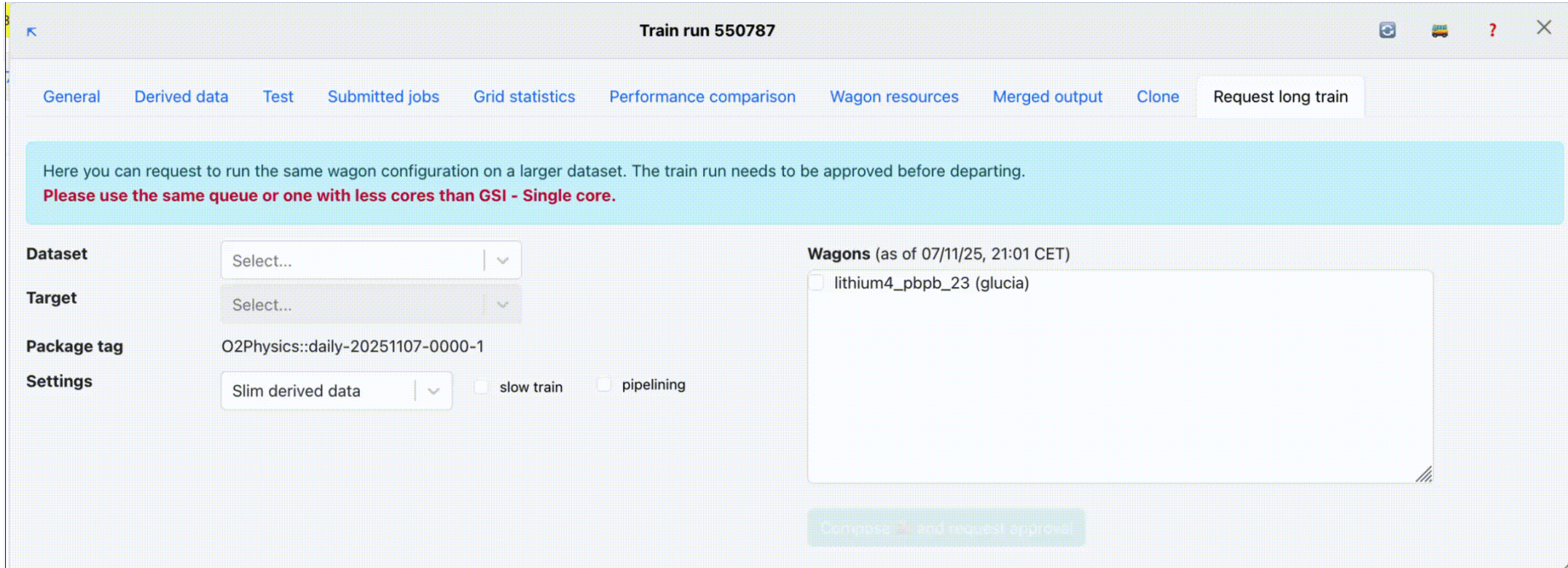
Comma separated list of runs

529066,529067

Long train request



- From the completed train on the **short** dataset, click on the 'Request long train' tab



The screenshot shows a web interface for 'Train run 550787'. At the top, there are tabs: General, Derived data, Test, Submitted jobs, Grid statistics, Performance comparison, Wagon resources, Merged output, Clone, and Request long train. The 'Request long train' tab is active. Below the tabs, a light blue box contains the text: 'Here you can request to run the same wagon configuration on a larger dataset. The train run needs to be approved before departing. Please use the same queue or one with less cores than GSI - Single core.' Below this, there are several input fields: 'Dataset' (a dropdown menu with 'Select...' and a downward arrow), 'Target' (a dropdown menu with 'Select...' and a downward arrow), 'Package tag' (a text input field containing 'O2Physics::daily-20251107-0000-1'), and 'Settings' (a dropdown menu with 'Slim derived data' and a downward arrow, followed by two checkboxes: 'slow train' and 'pipelining'). To the right of these fields, there is a section titled 'Wagons (as of 07/11/25, 21:01 CET)' with a list box containing one item: 'lithium4_pbbp_23 (glucia)'. At the bottom right, there is a green button labeled 'Compose and request approval'.

- Any user who is part of the analysis can request a long train
- You can change from slim to standard derived data (recommended if output is large)
- Approval from the participating analyses PWGs conveners is required in order to submit a long train.**

You may **decompose** your own long train if needed, if a mistake was made.



Once the long train is approved:

- If **Automatic Submission** is enabled and the train test finished *without warning*, the train is submitted.
- **Otherwise**, you may request the submission by the operators on the Operation channel.

Train run 74663

General

Derived Data

Test

Package tag

Dataset

Operator

Test status

Target

Train status

Approved by


Train created


Expected resources

O2Physics::nightly-20230412-1

LHC22m_pass3

jpgrosseo

Done  (output) (browse)

Speedscope 

Grid - Single core

Approval needed

PWG-CF

Approve long train

13 April 2023 at 09:36:37 CEST

279d 13h 1.1 TB

Settings

slow train

☒ standard derived data

☐ automatic submission

Wagons

(as of 12/04/23, 10:34 CEST)

CFFilter_Run3 (jpgrosseo)

EventSelection_Run3_pp

TimestampCreator

TrackPropagation

TrackSelection_Run3

Train status

Approved by

Approved

Operator

PWG-CF

If your train has many failed jobs...

Check Grid statistics for an overview of the error codes

Train Run 245367

[General](#)[Test](#)[Submitted jobs](#)[Grid statistics](#)[Performance comparison](#)[Wagon resources](#)[Merged output](#)[Clone](#)[Request long train](#)

Job Overview

State	Jobs		Files		Input size	Files/job		
	#	%	#	%		min	max	avg
DONE	6970	63	679048	63	1.9 PB	1	100	97
ERROR_A	6	0	596	0	1.7 TB	99	100	99
ERROR_E	1	0	93	0	242.6 GB	93	93	93
ERROR_E (idle)	330	3	31823	3	90.4 TB	3	100	96
ERROR_E (TTL)	4	0	382	0	595.9 GB	92	99	96
ERROR_FW	6	0	280	0	784.4 GB	1	100	47
ERROR_V	3665	33	363541	34	0.9 PB	1	100	99
EXPIRED	1	0	99	0	271.0 GB	99	99	99
Running Time	Min: 45.9s		Max: :11h 48m		Avg: 1h 32m 26.1s		STD: 51m 17.1s	

In this example, 34% of jobs failed with ERROR_V...

Train run - debugging



- Check 'Submitted jobs' tab to find masterjobs with many subjob failures
- Click on a masterjob, then choose a subjob trace and log to see what went wrong.
- For some errors, you'll find the cause in the **trace**. For jobs failing with ERROR_V, check the **log files** for stdout and the **stack trace** to see the errored jobs grouped by error type in the stdout.

Train Run 245367

General Test Submitted jobs Grid statistics Performance comparison Wagon resources Merged output Clone Request long train

IO Statistics **Stack trace** Copy all output directories

PID	Run no.	Output directory	Throughput (/core)	Total	Done	Active	Wait	Error	Merging
Search 86	Search	Search 86 records...	Search 86						All
3129938053	545345	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596526		612	0	0	0	612	
3129931268	544991	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596491		472	0	0	0	472	
3129935264	545210	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596512		462	0	0	0	462	
3129936604	545289	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596518		452	0	0	0	452	
3129936598	545262	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596517		450	0	0	0	450	
3129933370	545086	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596506		438	0	0	0	438	

Masterjob 3157034637 of alihyperloop, status : **DONE** (refresh | JDL | trace | more details | show input data | Gantt)
Hyperloop analysis, /alice/cern.ch/user/a/alihyperloop/jobs/0072/hy_723006, O2Physics::daily-20240918-0200-1
Subjobs: 430

ERROR_V (32 jobs, 7.442%) : resubmit all
Exit code: **1** (Snapshot ?): 9 jobs
3157034644 : trace | log files | resubmit
3157034689 : trace | log files | resubmit
3157034712 : trace | log files | resubmit
3157034719 : trace | log files | resubmit
3157034790 : trace | log files | resubmit
3157034812 : trace | log files | resubmit
3157034813 : trace | log files | resubmit
3157034820 : trace | log files | resubmit
3157034880 : trace | log files | resubmit
Exit code: **21** (O2 exit code != 0 ?): 23 jobs
3157034661 : trace | log files | resubmit
3157034666 : trace | log files | resubmit
3157034681 : trace | log files | resubmit
3157034685 : trace | log files | resubmit
3157034694 : trace | log files | resubmit
3157034780 : trace | log files | resubmit
3157034783 : trace | log files | resubmit
3157034802 : trace | log files | resubmit
3157034831 : trace | log files | resubmit
3157034832 : trace | log files | resubmit
3157034855 : trace | log files | resubmit
3157034866 : trace | log files | resubmit
3157034868 : trace | log files | resubmit
3157034869 : trace | log files | resubmit
3157034916 : trace | log files | resubmit, 3.352 GB PSS, No Swap PSS
3157034917 : trace | log files | resubmit, 3.316 GB PSS, No Swap PSS
3157034932 : trace | log files | resubmit, 3.345 GB PSS, No Swap PSS
3157034942 : trace | log files | resubmit, 3.475 GB PSS, No Swap PSS
3157034949 : trace | log files | resubmit, 208.8 MB PSS, No Swap PSS
3157034957 : trace | log files | resubmit, 3.275 GB PSS, No Swap PSS
3157034985 : trace | log files | resubmit, 3.478 GB PSS, No Swap PSS
3157034986 : trace | log files | resubmit, 3.563 GB PSS, No Swap PSS
3157034998 : trace | log files | resubmit

If you don't understand your error..

- Check <https://aliceo2group.github.io/analysis-framework/docs/troubleshooting/>
- Ask in your working group
- Ask on mattermost

Masterjob 3157034637 of alihyperloop, status : **DONE** (refresh | JDL | trace | more details | show input data | Gantt)
Hyperloop analysis, /alice/cern.ch/user/a/alihyperloop/jobs/0072/hy_723006, O2Physics::daily-20240918-0200-1
Subjobs: 430

ERROR_V (32 jobs, 7.442%) : resubmit all
Exit code: **1** (Snapshot ?): 9 jobs
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3157034813 : trace | log files | resubmit
3157034820 : trace | log files | resubmit
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3157034783 : trace | log files | resubmit
3157034802 : trace | log files | resubmit
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3157034832 : trace | log files | resubmit
3157034855 : trace | log files | resubmit
3157034866 : trace | log files | resubmit
3157034868 : trace | log files | resubmit
3157034869 : trace | log files | resubmit
3157034916 : trace | log files | resubmit, 3.352 GB PSS, No Swap PSS
3157034917 : trace | log files | resubmit, 3.316 GB PSS, No Swap PSS
3157034932 : trace | log files | resubmit, 3.345 GB PSS, No Swap PSS
3157034942 : trace | log files | resubmit, 3.475 GB PSS, No Swap PSS
3157034949 : trace | log files | resubmit, 208.8 MB PSS, No Swap PSS
3157034957 : trace | log files | resubmit, 3.275 GB PSS, No Swap PSS
3157034985 : trace | log files | resubmit, 3.478 GB PSS, No Swap PSS
3157034986 : trace | log files | resubmit, 3.563 GB PSS, No Swap PSS
3157034998 : trace | log files | resubmit

Train Run 245367

General Test Submitted jobs Grid statistics Performance comparison Wagon resources Merged output Clone Request long train

IO Statistics Stack trace Copy all output directories

PID	Run no.	Output directory	Throughput (/core)	Total	Done	Active	Wait	Error	Merging
Search 86	Search	Search 86 records...	Search 86						All
3129938053	545345	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596526		612	0	0	0	612	
3129931268	544991	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596491		472	0	0	0	472	
3129935264	545210	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596512		462	0	0	0	462	
3129936604	545289	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596518		452	0	0	0	452	
3129936591	545262	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596517		450	0	0	0	450	
3129933320	545086	/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596506		438	0	0	0	438	

- Introduction & key concepts
- 'My Analyses', wagons & datasets
- Enabling a wagon to start a test
- Trains – automatic composition, debugging & long trains
- **Key things to know**

Train slots per week



Each dataset has a maximum number of train slots per week for your analysis.

- Currently (subject to change):

- 14 for small datasets (< 30TB)
- 6 for medium datasets (30 TB < x < 200 TB)
- 2 for large datasets (> 200TB)

LHC23zzh_pass4
Automatic train composition enabled. Click to see schedule.

LHC23zzh_pass4

6 trains this week.
Reached maximum of 6 trains per week.

X
X

The quota works on a rolling basis. In each train, in the test tab you can see when it stops counting towards the quota:

The train will stop contributing towards your weekly limit on 14 October 2024 at 13:01:10 CEST.

Estimated emissions
54 kgCO2eq

The number of slots used per analysis for the dataset is calculated using the number of wagons from each analysis, capped by the number of cores the train used. Heavy wagons which need more memory will use two slots instead of one. These wagons are red in the Test – Per wagon tab.

MC Predictions on the OTF: 1

- Trains with many wagons may use > 1 slot. The slots used is never more than the number of cores the train ran with
- Slots are calculated per-analysis. Heavy wagons (which themselves need more memory than available in a single core queue) will use two weekly slots
- Shown in red in the Test – per wagon tab of the train.

Number of input files	1
Input size	2.1 GB
Output size	1.8 MB
PSS Memory	Max: 3.9 GB Avg: 3.7 GB Slope: 879.4 KB/s
Private Memory	Max: 2.8 GB Avg: 2.6 GB Slope: 103.8 KB/s
Timing	CPU: 7m 6s Wall: 10m 42s
Throughput	3.3 MB/s/core
Expected resources	125d 7h
Estimated emissions	18 kgCO2eq
Weekly slots used	b-jet meausremt using heavy flavour tagging in pp collision at 13.6TeV: 2

JetFinder_Charged_04_MCP	Max Avg Slope	240.1 MB 217.6 MB 302.4 KB/s	113.3 MB 107.2 MB 76.1 KB/s	8s (2%)	0	
JetTaggerHf_Charged_04_MC_SV	Max Avg Slope	307.0 MB 277.5 MB 336.2 KB/s	177.7 MB 170.2 MB 14.2 KB/s	4m 15s (58%)	0	
JetTaggerHfQA_Charged_04_MC_SV_weighted			113.3 MB 107.2 MB 76.1 KB/s	5s (1%)	0	
mcCollisionConverter	Max Avg Slope	19.5 MB 19.2 MB 2.7 KB/s	18.4 MB 18.3 MB 397.4 B/s	1s (0%)	0	

This wagon needs more memory than available on a single core queue, therefore it counts as 2 train slots from your weekly running quota for LHC24g4.

Between different wagons

Hyperloop Framework Test Analysis / Correlations vs O2 Development / Correlations

Wagon settings Configuration Derived data

(Ø - inherited from base) base ☒

correlation-hash-task

processAOD

processDerived

correlation-task

axisDeltaEta

axisDeltaPhi
Bins: 72, Min: -1.5707963705062866, Max: 4.71238899230957

Between different trains

Train run 174155 vs 173900

Package tag O2Physics::daily-20240301-0100-1 O2Physics::daily-20240229-0100-1

Dataset LHC23zzfghi_pass2_upc_small

Operator spadhan alihyperloop

Created 01 March 2024 at 10:43:03 CET 29 February 2024 at 23:01:07 CET

Settings ☐ slow train ☒ derived data ☒ automatic submission

Wagons

Train run 174155	Common	Train run 173900
DG-Candidate-Producer_Jpsi	CorrectedFT0	dg-cand-producer-FT0veto
	EventSelection_Run3_PbPb	
	Multiplicity_Run3_PbPb	
	PIDTOFBaseRun3	
	PIDTOFBetaRun3	
	PIDTOFFullRun3	
	PIDTPCBase	
	PIDTPCFull	
	TimestampCreator	
	TrackPropagation	
	TrackSelection_Run3	

Between different moments in time

Options5 at 17 November 2021, 11:40:55 vs at 17 November 2021, 11:41:43

Wagon settings Configuration Derived data




(Ø - inherited from base) base ☒ Sub1 ☒ Subwagon1 ☒ Subwagon2 ☒



configurable-object-demo

array


cut.bins


Full bookkeeping for analysis preservation:
Any wagon and train configuration kept forever

[My Analyses](#) [All Analyses](#) [Dashboard](#) **AliHyperloop**  [Train Submission](#) [Train Runs](#) [Datasets](#) [DPG Runlists](#) [?](#)  10 

 Hyperloop Grid jobs do not start as expected at the moment. Issue related to job restrictions for reconstruction. We are investigating... 



Service Analyses




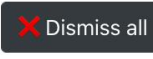
 **Core Service Wagons**

 **Service Wagons HF**

General news / issues concerning the system appear on top of the page and can be dismissed


Look out for new deployments

 New deployment done. Please reload the page to get the latest features. 

- Displayed in the *My Analyses* page and in the *Notifications* page (accessed by clicking  in the menu bar).
- Not all notifications require action, there can also be updates and warnings
- You can click the  button to remove a notification.
- Click on  to remove all notifications **in the given analysis**
- To remove all the notifications **for all your analyses**, go to the Notifications page, and click the .

You have 1 notification(s) !

 Dismiss

Info: The configuration of the service wagon [PIDTOFGeneralPurpose_Run2](#) was adjusted. This is a dependency of your wagon(s): [SpectraTOFFull](#). The change was made on "2024-09-19 09:33:11 CET" by "njacazio". [Details here.](#) 


Notifications

 Dismiss all

Info: The train run "399 / full" has been added into the "LHC18g4" dataset on "2022-09-27 09:33:59 CET" by "jgrosseo". [Details here.](#) [Documentation here.](#) 

The dataset is included in your analysis:

- [Hyperloop Framework Test Analysis](#)

Info: The train run "Train run 246 / full" has been removed from the "LHC18g4" dataset on "2022-09-27 09:33:53 CET" by "jgrosseo". [Details here.](#) [Documentation here.](#) 

The dataset is included in your analysis:

- [Hyperloop Framework Test Analysis](#)

Notifications – Service wagons



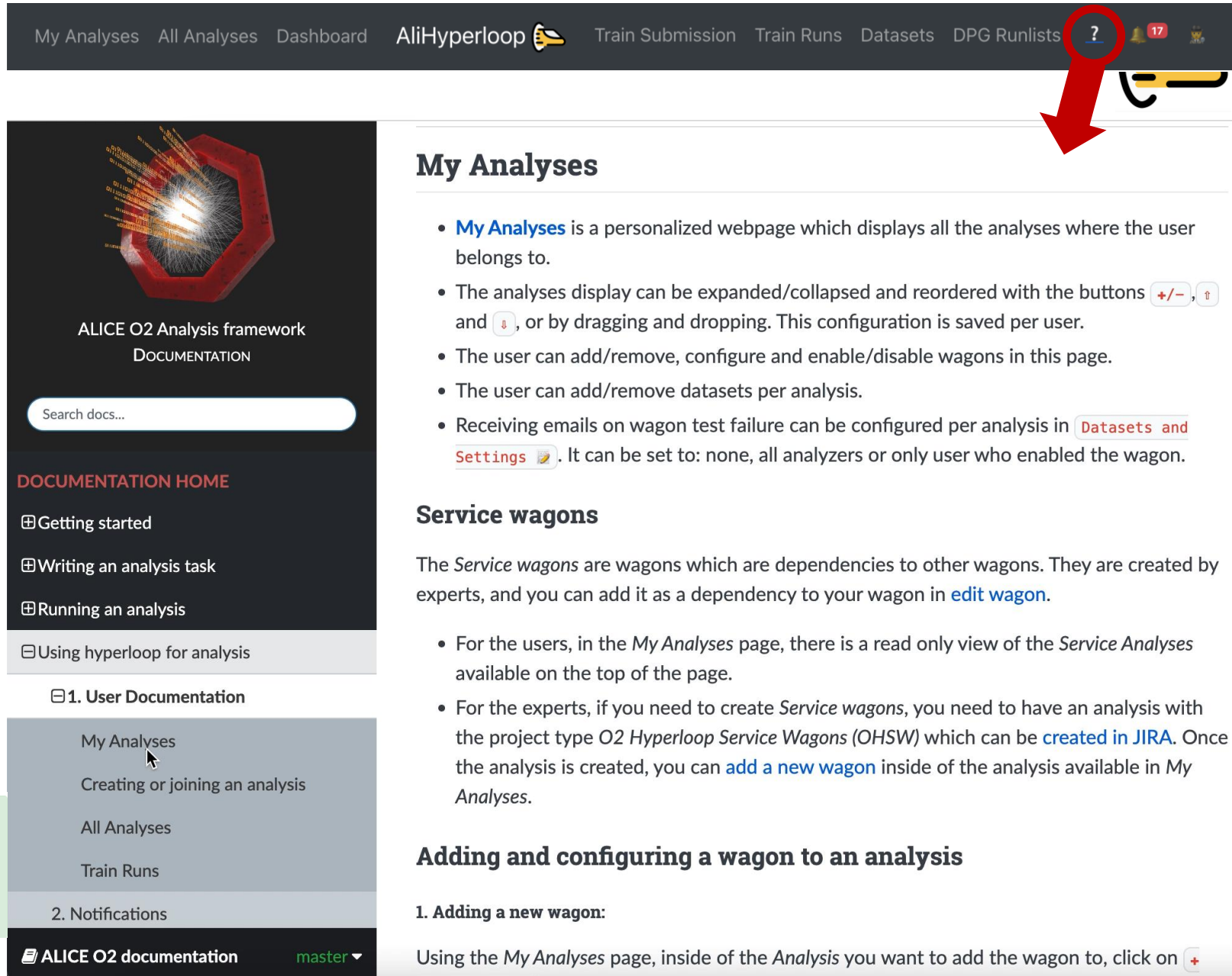
- **When a service wagon is updated:**
 - Wagon tests are reset for enabled wagons which depend on it
 - Users who own wagons which depend on the respective service wagon will receive the following notification, with direct links to:
 - Latest service wagon configuration
 - Dependent wagons' configurations and the analyses they are part of
 - Details of the change in question (wagon changelog)

Info: The configuration of the service wagon [EventSelection](#) was adjusted. This is a dependency of your wagon(s): [correlations_depends_on_centrality_clone](#). The change was made on "2023-10-13 19:29:55 CET" by "rcruceru". [Details here.](#) ✕

This is relevant to your analysis:

- [HF O2 developments for ALICE3 pp Open HF 2.0 T](#)

- Accessed from the Navbar or everywhere across Hyperloop where you see the **?** icon
- Can also be accessed from the notifications



My Analyses

- **My Analyses** is a personalized webpage which displays all the analyses where the user belongs to.
- The analyses display can be expanded/collapsed and reordered with the buttons **+/-**, **↓**, or by dragging and dropping. This configuration is saved per user.
- The user can add/remove, configure and enable/disable wagons in this page.
- The user can add/remove datasets per analysis.
- Receiving emails on wagon test failure can be configured per analysis in **Datasets and Settings**. It can be set to: none, all analyzers or only user who enabled the wagon.

Service wagons

The *Service wagons* are wagons which are dependencies to other wagons. They are created by experts, and you can add it as a dependency to your wagon in [edit wagon](#).

- For the users, in the *My Analyses* page, there is a read only view of the *Service Analyses* available on the top of the page.
- For the experts, if you need to create *Service wagons*, you need to have an analysis with the project type *O2 Hyperloop Service Wagons (OHSW)* which can be [created in JIRA](#). Once the analysis is created, you can [add a new wagon](#) inside of the analysis available in *My Analyses*.

Adding and configuring a wagon to an analysis

1. Adding a new wagon:

Using the *My Analyses* page, inside of the *Analysis* you want to add the wagon to, click on **+**

Info: The train run "36180 /" has been added into the "LHC15o_derived_correlations" dataset on "2022-09-21 22:40:44 CET" by "jgrosseo". [Details here.](#) [Documentation here.](#)

The dataset is included in your analysis:

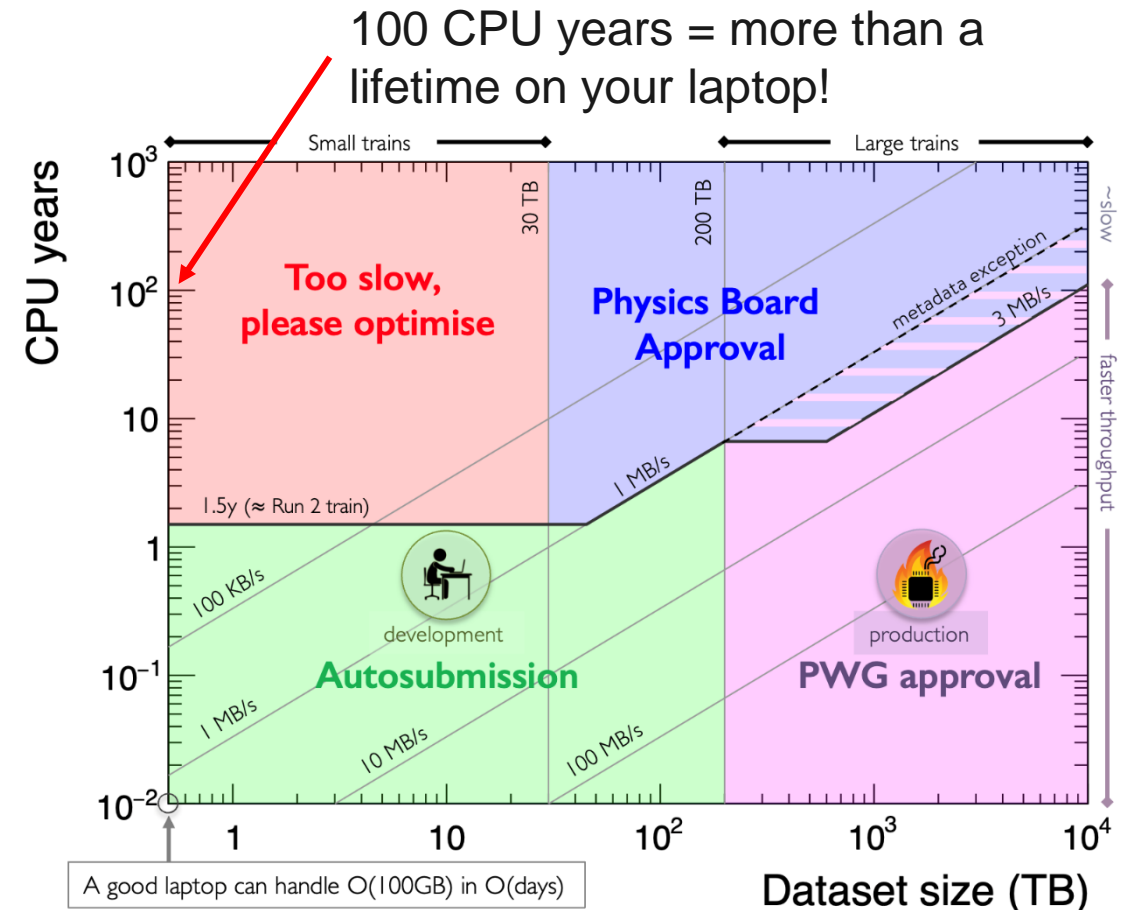
- [Hyperloop Framework Test Analysis](#)

Fair usage policy



- Operators follow guidelines prepared by analysis coordination and approved by physics board (current policy documented [here](#))
 - **Operators cannot grant exceptions, even if justified**
- Aim of guidelines
 - allow efficient analysis by everyone
 - share resources fairly
 - avoid excessive use; identify room for optimization

Dataset size	CPU limit	Trains / week	Automatic schedule
Small datasets			
< 30 TB	1.5 CPU year (550)	14	twice per day
Medium datasets			
< 100 TB	3 CPU years (1095)	6	once a day
< 200 TB	6 CPU years (2190)		twice per week
Large datasets			
< 300 TB	6 CPU years (2190)	2	none (PWG / PB approval)
< 400 TB	6 CPU years (2190)		
< 500 TB	6 CPU years (2190)		



Summary



Summary

Thank you for your attention!

- Use the [My Analyses](#) page to see your analyses, enable datasets, and choose a package tag
- Create / Edit / Delete / Clone / Compare your wagons
- **Enable** your wagons to start **immediate testing**
- Wait for **automatic train composition** (if enabled for the dataset, wagon test is done ✨ and you don't want standard derived data 📁 or linked derived data 📦)
- **Or** request train composition in **O2 Hyperloop Operation**
- Follow up / compare trains in My Analyses or Train runs page
- Checkout your **notifications** (remember not all require action)
- Make use of the **?** button to check the documentation
- When in doubt, hop on the bus! 🚌

USER



MyAnalyses

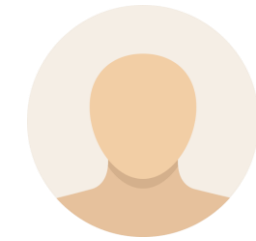
AllAnalyses

Dashboard

Train Support

24/5 Operation

OPERATOR



Train Submission

Train Runs

Datasets

Derived Data

DPG runlists

Trains with issues



Resources

- [User and operator documentation](#)
- [Public note with technical description](#)
- [Current fair usage policy](#)

Backup

Productions

- Lists every production in the dataset
- Link to production details in MonALISA (MC and DATA)
- Productions contain mergelists
 - Mergelists are lists of runs from the production which are merged together in trains
 - Final mergelists contain multiple mergelists in order to merge runs across productions
- Runs marked as **used** / not used
- Mergelists marked as activated / deactivated
- Final Mergelists contain multiple mergelists, to merge runs across productions

Productions (8) [- Collapse All](#)

[+/-](#) LHC23zzg_apass4

Runlist: **all**

Mergelists

☒ all **ALL**  544028 544032

☒ golden_run  544028 544032

[+/-](#) LHC23zzh_apass4

Runlist: **all**

Mergelists

☒ all **ALL**  544095 544116 544121 544123

☒ golden_run  544091 544095 544098 544116

Final mergelists

all ☒

0 selected runs

LHC23zzg_apass4

all: ☒

all ☐

golden_run ☐

LHC23zzh_apass4

all: ☒

all ☐

golden_run ☐

LHC23zzi_apass4

all: ☒

all ☐

golden_run ☐

EMC_good ☒

0 selected runs

LHC23zzg_apass4

all: ☐

all ☐

golden_run ☐

LHC23zzh_apass4

all: ☐

all ☐

golden_run ☐

LHC23zzi_apass4

all: ☒

all ☐

golden_run ☐

golden_run ☒

0 selected runs

LHC23zzg_apass4

all: ☐

all ☐

golden_run ☒

LHC23zzh_apass4

all: ☐

all ☐

golden_run ☒

LHC23zzi_apass4

all: ☐

all ☐

golden_run ☒

My Analyses All Analyses Dashboard AliHyperloop

Train Submission Train Runs Datasets DPG Runlists ? 17

Train Runs

Clear all filters Compare Open

Train Wagons Operator Package Dataset Composed Train status Test

38000 - 38301 Search 9 records... Search 9 Search 9 records... Search 9 records... 07/10/22, 21:42 CEST Off Done All

38301 CFFilter,Centrality_Run2,EventSele... jgrosseo O2Physics::nightly-20221011-1 LHC15o_benchmark 11/10/22, 09:04 CEST Done

38226 UPCCandidateProducer,EventSele... scostanz O2Physics::nightly-20221008-1 LHC22m_pass1_subset 10/10/22, 18:16 CEST Done

38225 UPCCandidateProducer,EventSele... scostanz O2Physics::nightly-20221008-1 LHC22m_pass1_subset 10/10/22, 18:16 CEST Done

38193 cf-Multiplicity cf-Multiplicity 10/10/22, 18:16 CEST Done

38192 cf-Multiplicity cf-Multiplicity 10/10/22, 18:16 CEST Done

38158 CFFilter,Centrality_Run2,EventSele... jgrosseo O2Physics::nightly-20221011-1 LHC15o_benchmark 11/10/22, 09:04 CEST Done

38153 CFFilter,Centrality_Run2,EventSele... jgrosseo O2Physics::nightly-20221011-1 LHC15o_benchmark 11/10/22, 09:04 CEST Done

38009 CFFilter,Centrality_Run2,EventSele... jgrosseo O2Physics::nightly-20221011-1 LHC15o_benchmark 11/10/22, 09:04 CEST Done

38001 Femto_Tables Femto_Tables 10/10/22, 18:16 CEST Done

Train run 174155 vs 173900

Package tag O2Physics::daily-20240301-0100-1 O2Physics::daily-20240229-0100-1

Dataset LHC23zzfghi_pass2_upc_small

Operator spadhan alihyperloop

Created 01 March 2024 at 10:43:03 CET 29 February 2024 at 23:01:07 CET

Settings ☐ slow train ☒ derived data ☒ automatic submission

Wagons

Train run 174155 DG-Candidate-Producer_Jpsi

Common CorrectedFT0 EventSelection_Run3_PbPb Multiplicity_Run3_PbPb PIDTOFBaseRun3 PIDTOFBetaRun3 PIDTOFFullRun3 PIDTPCBase PIDTPCFull TimestampCreator TrackPropagation TrackSelection_Run3

Train run 173900 dg-cand-producer-FT0veto

- Displays all the train runs (by default, last 3 months of activity)
- Use the searching and filtering features to find your trains
- Click on the train number to access the train run details
- To open several train runs views, select all the trains of interest and click Open
- To compare two trains, select them in the Compare column and click *Compare*. This will open a new tab displaying the differences between the two trains