

Hyperloop - Accelerating Analysis

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14.10.2024



About this talk

- For those new to Hyperloop - you will understand the concept and capabilities and the basics of how to use it for your analysis.
- For those who've used it before - You should be able to learn some useful tips and tricks! Hyperloop has some less-known features which can prove useful for you.

Train run 267939 vs 267938

Package tag	O2Physics::daily-20240920-0200-1		
Dataset	LHC23_PbPb_pass4		
Operator	Ibariogl		
Created	23 September 2024 at 09:42:41 CEST		
Settings	23 September 2024 at 09:35:13 CEST		
Wagons	<input type="checkbox"/> slow train <input type="checkbox"/> derived data <input type="checkbox"/> automatic submission		
Train run 267939	Common	Train run 267938	
ep-corrected_A11	Centrality_Run3_PbPb_DoNotCorrectedFT0	nuclei-flow-alternative-producer	
flow-qc_A11	Multiplicity_Run3_PbPb		
nuclei_flow_producer_zvtx_12	PIDTOFBaseRun3		
	qVectorTable		
	TimestampCreator		
	TrackPropagation		
	TrackSelection_Run3		
Test status	Done [test output]	Warning [test output]	
Target	Grid - 2 core	Grid - Single core	
Train status	Submitted	Approved	

Estimated emissions

This is an estimate of the 'CO2 equivalent' which would be produced by running. The estimated 382 kg produced would be greater than flying from Geneva to Copenhagen.

To find out more about these estimates, take a look at the Hyperloop documentation, accessible from the ? button in the page header.

7y 61d
4.1 GB

382 kgCO2eq

Flow of nuclei: 2



Last Week

Avg completion time: **11h 16.74s**

Avg submission time: **20m 2.09s**

Avg running time: **10h 40m**

Number of finished trains: **389**

Number of wagons tests: **2191**



Hyperloop overview

- Analysis train system, allowing for cooperative large-scale analysis
- Jobs are processed using the **GRID** and **Analysis Facilities**
- Fully integrated with **O²**, allowing task configuration
- Individual workflows - known as wagons - are combined into trains
- **Derived data** stored for further processing in subsequent trains
- **Data available:** converted Run 2 data, Run 3 data and MC, Derived data
- Dedicated views for regular **users** and **operators**

Train support

- 24/5 Operation (different timezones)
- Institutes: 1 in Americas, 2 in Europe, 1 in Asia
- Shift-type support during working hours
- Organized feedback sessions

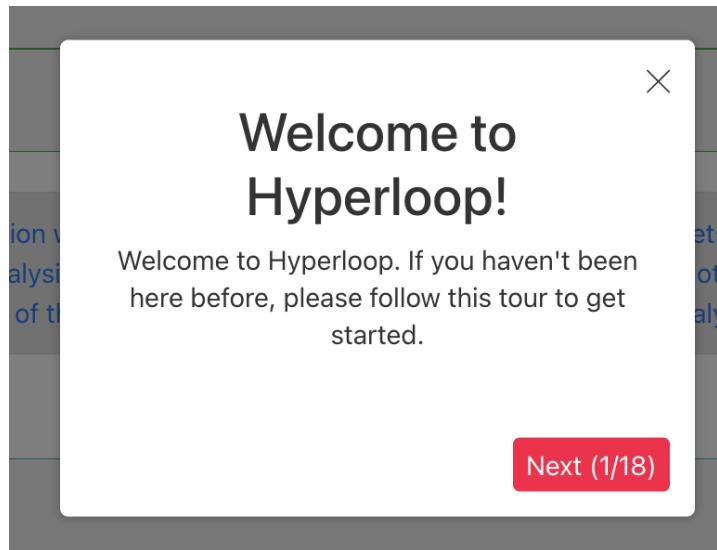
correlations			
Wagon	HY_hyperloop... hyperloop_de...		
Correlations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Correlations_MC			
Correlations_Run3			

axisVertex	Fixed Width	Bins: 7
		Min: -7
		Max: 7
axisVertexEfficiency	Fixed Width	Bins: 10
		Min: -10
		Max: 10
cfgAssociatedCharge	0	
cfgCutEta	0.8	

User Experience and Documentation



- Detailed [documentation](#)
- Dedicated [mattermost channel](#) for requesting trains or support
- Over 30 dedicated tours in different sections of UI
 - Guides you through on-the-go



Train run 122095

General	Derived Data
Test	Submitted jobs
Grid Statistics	
Wagon resources	Merged Output
Clone	Request long train

Settings slow train slim derived data

Package tag: O2Physics::daily-20230921-0200-1
Dataset: LHC15o_benchmark
Operator: alihyperloop
Test status: Done (output) [View details](#) [Speedup](#)
Target: Grid - Single core
Train status: Done
Train created: 21 September 2023 at 16:01:02 CEST
Train submitting: 21 September 2023 at 16:08:24 CEST
All jobs submitted: 21 September 2023 at 16:08:48 CEST
Train finished: 24 September 2023 at 10:22:30 CEST
Train duration: 2d 18h
Needed resources: 3d 20h (wall time), 2.8 GB (output size)
Job status: Total: 85, Done: 71, Active: 0, Wait: 0, Error: 14
Per-run merging: Done: 10, Running: 0, Pending: 1, Skipped: 0, Failed: 0
Final merging submitted: 24 September 2023 at 09:54:36 CEST by vkovalen
Final-merging summary: Done: 1, Running: 0, Pending: 0, Failed: 0

Wagon LHC15o_ben...

CFFilter CFFilter_Run3

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

Next (4/11) [Next](#)

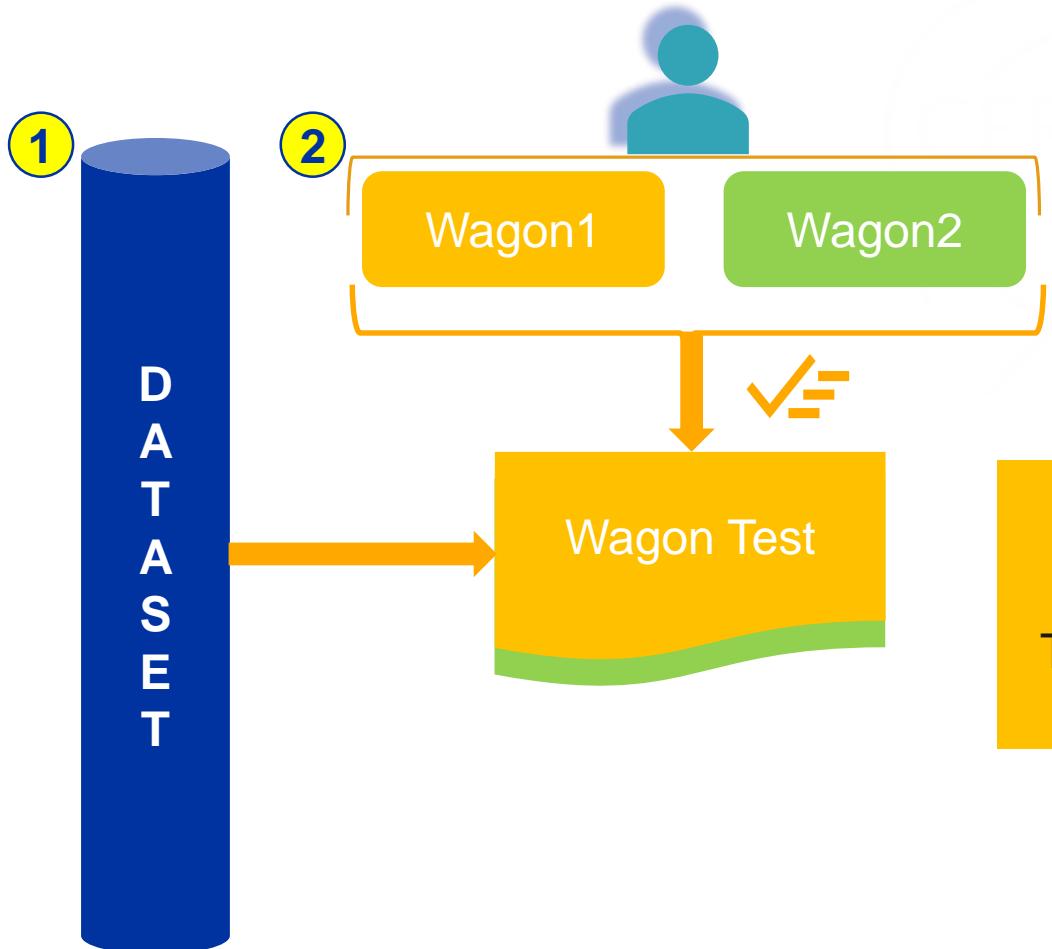
Train Run

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)



Key concept

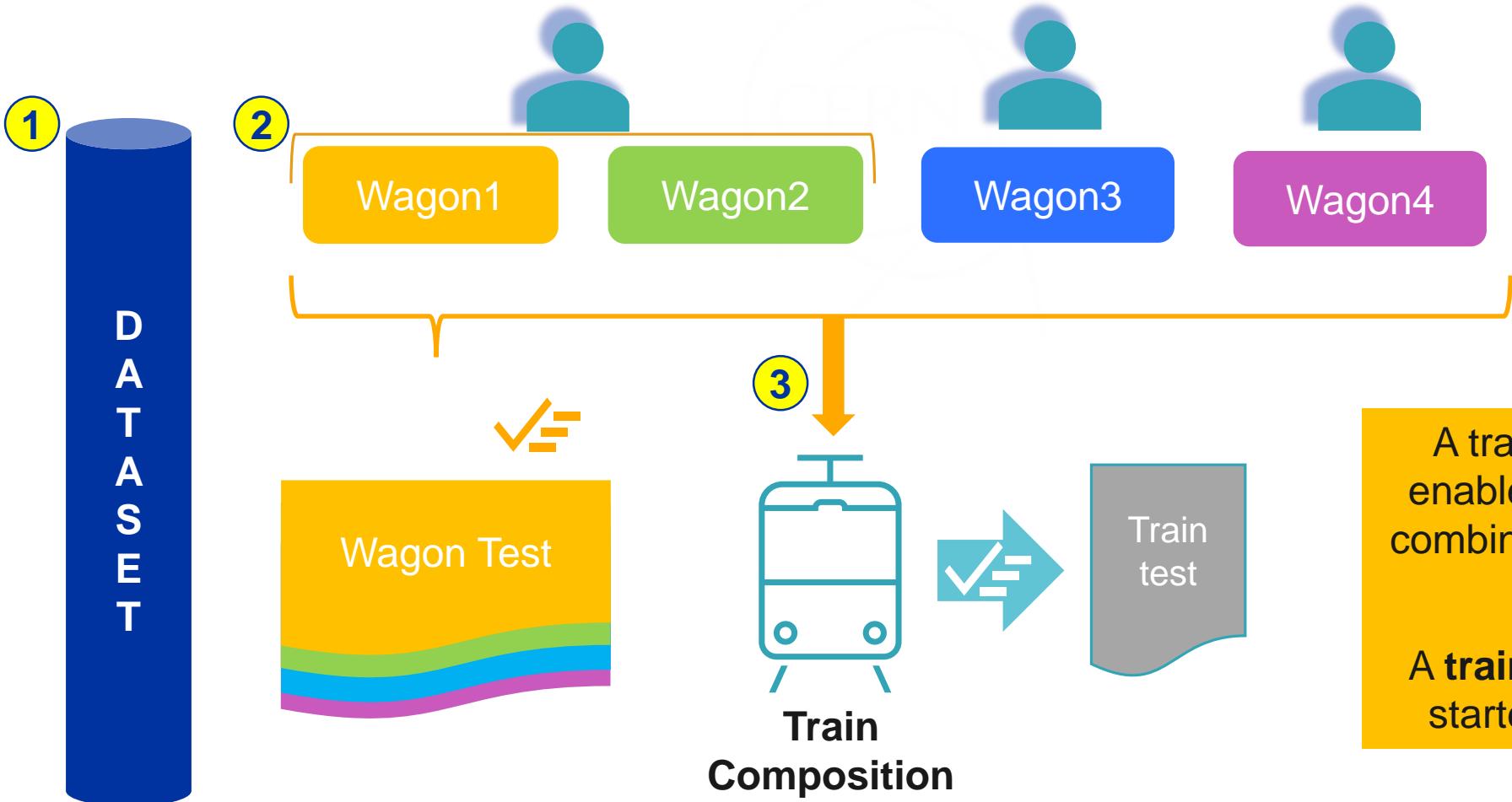


Enable your O^2 workflows, known as wagons, on a dataset to trigger a **wagon test**.

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



Key concept



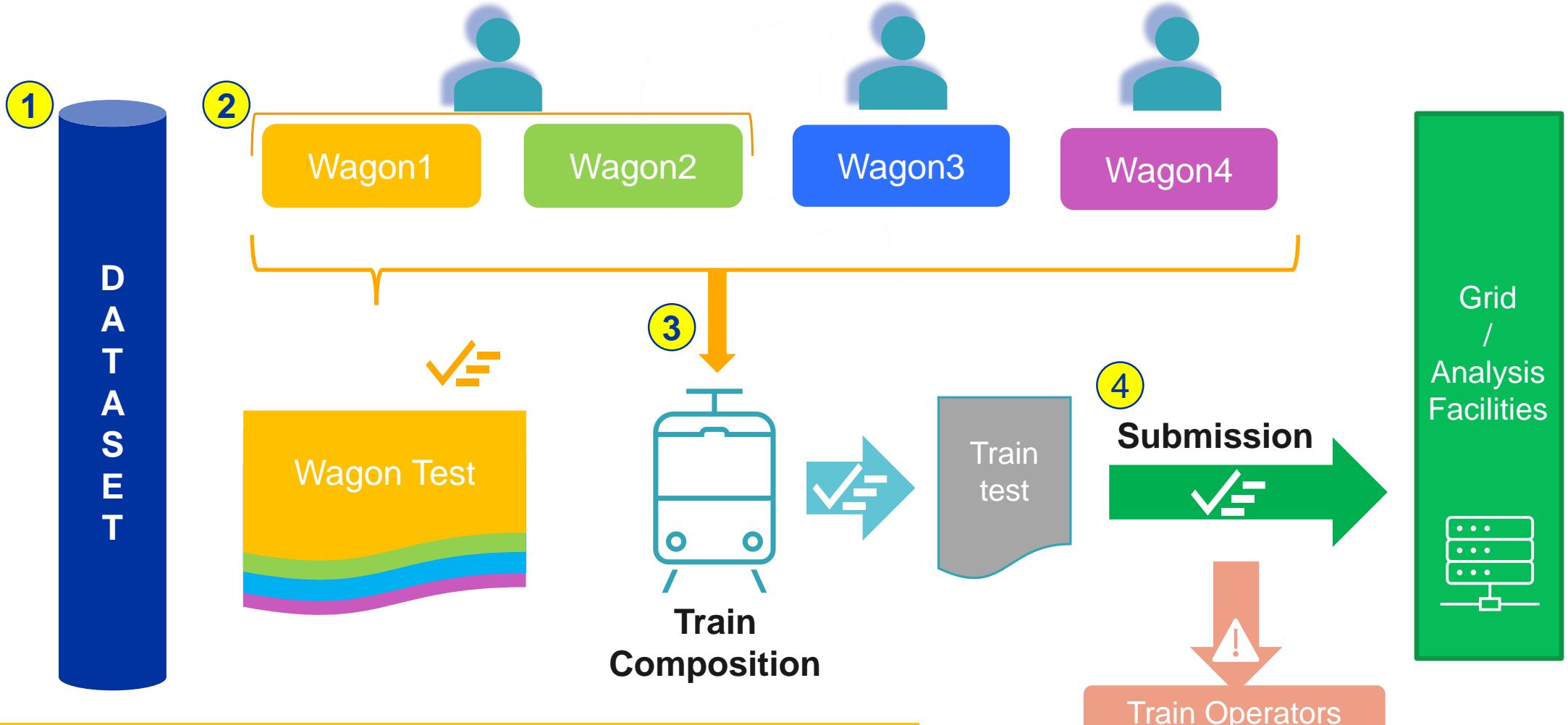
A train is composed from enabled wagons. Train may combine multiple wagons into one train.

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

Individual O2 analysis workflows - known as wagons - are combined into trains to run over the data together



Key concept



Individual **O²** analysis workflows - known as wagons - are combined into trains to run over the data together



Train runs

Four types of trains can run on Hyperloop

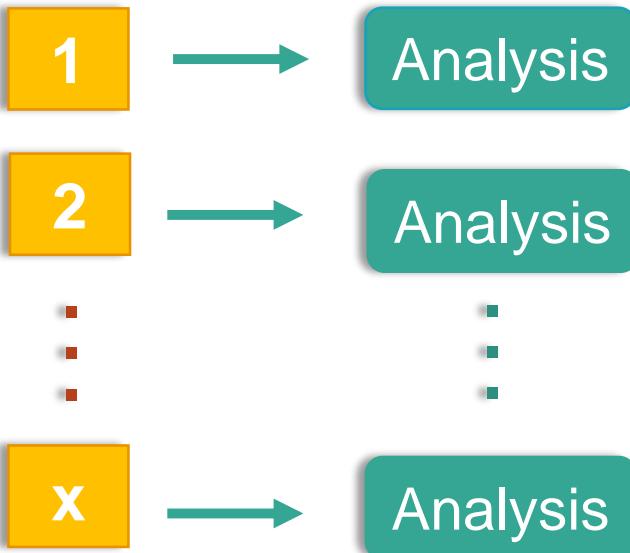
1. Analysis trains
2. Slim derived data trains
3. Derived data trains
4. Linked derived data trains

Let's see the differences between these train types

Analysis Train



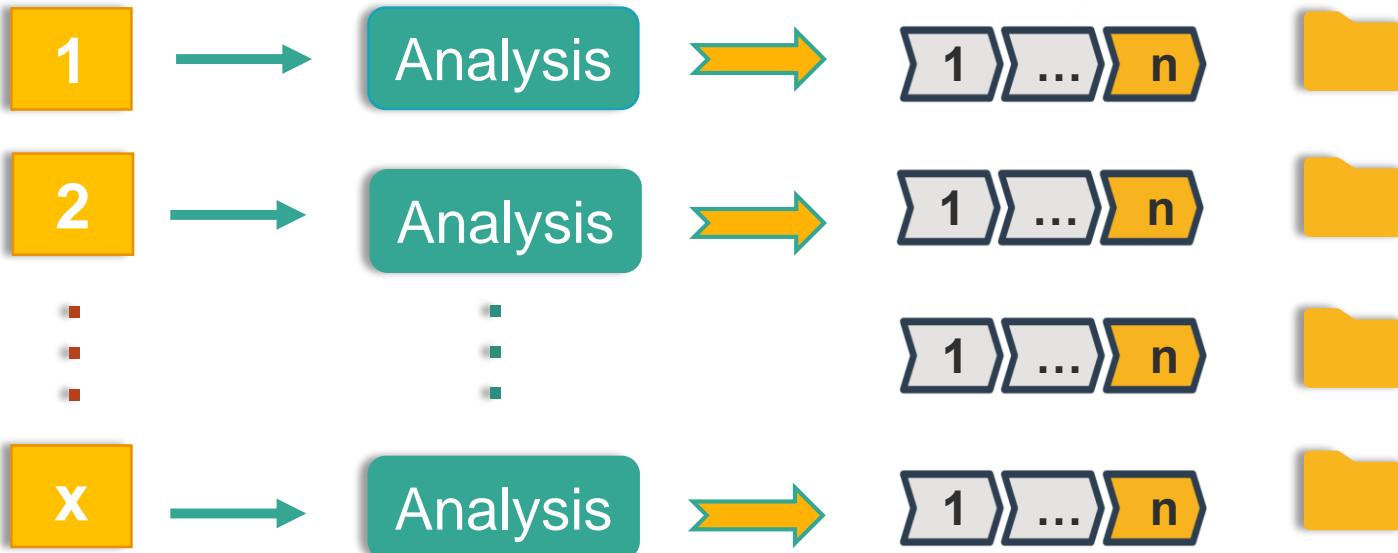
Runs Masterjobs



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



Runs Masterjobs Per-run Merging



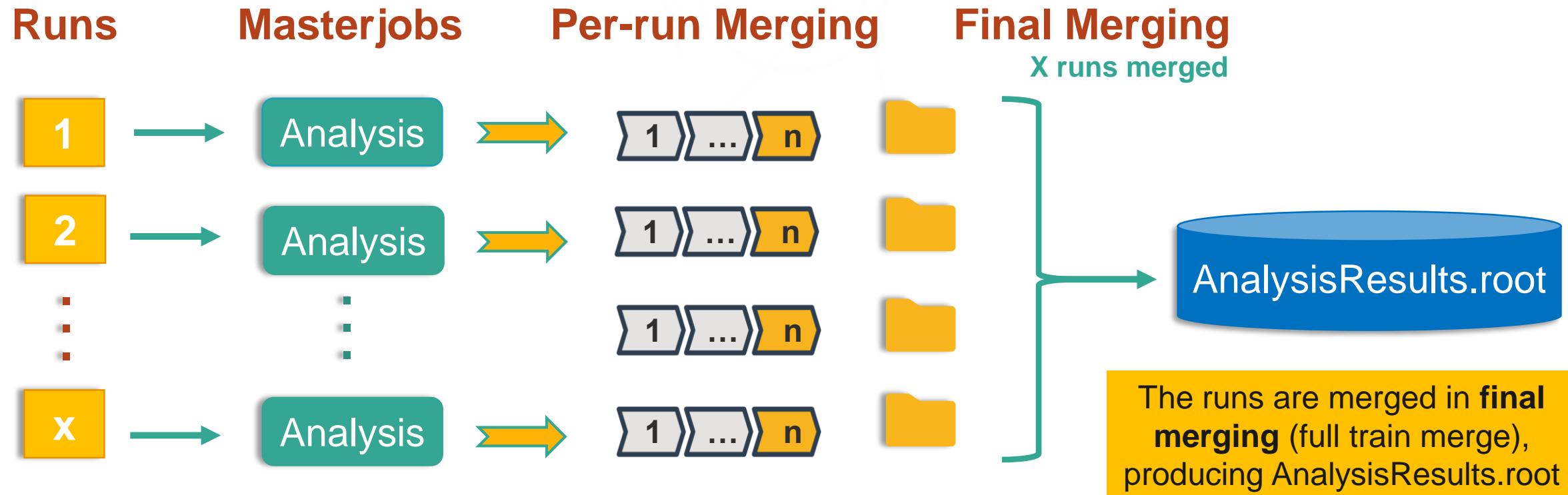
Each run from the dataset is given a **masterjob**

Masterjobs contain **subjobs**

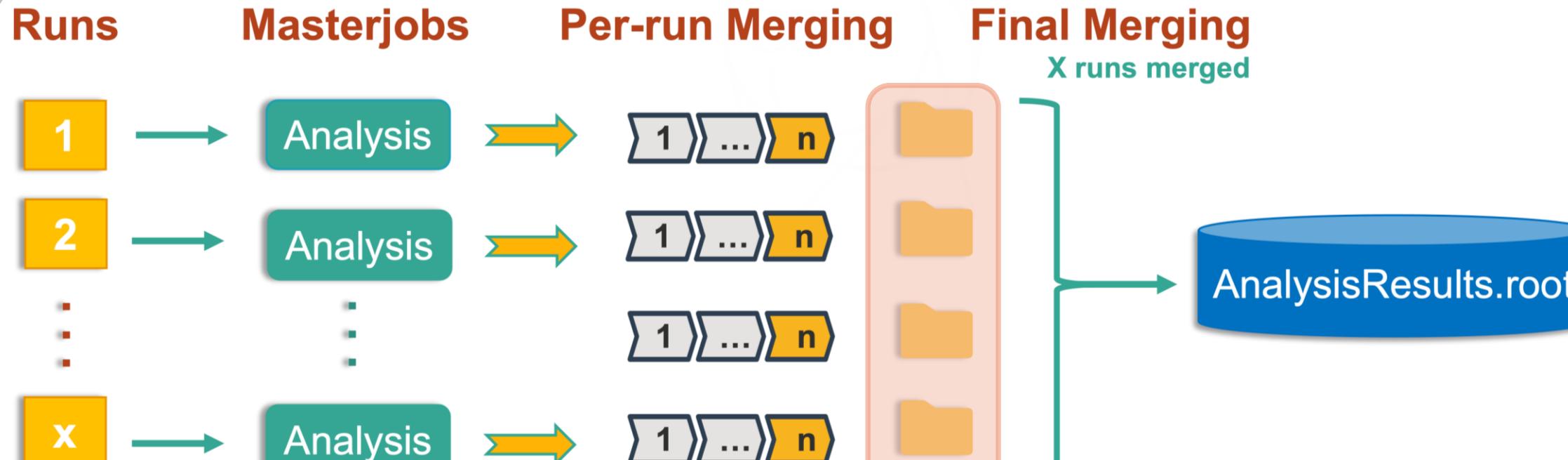
Subjobs are merged in per-run merging

You may access the individual results of each run

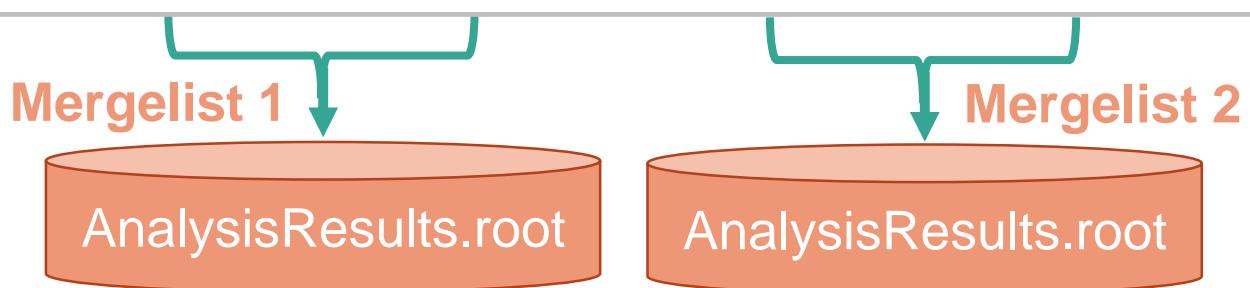
Analysis Train



Analysis Train



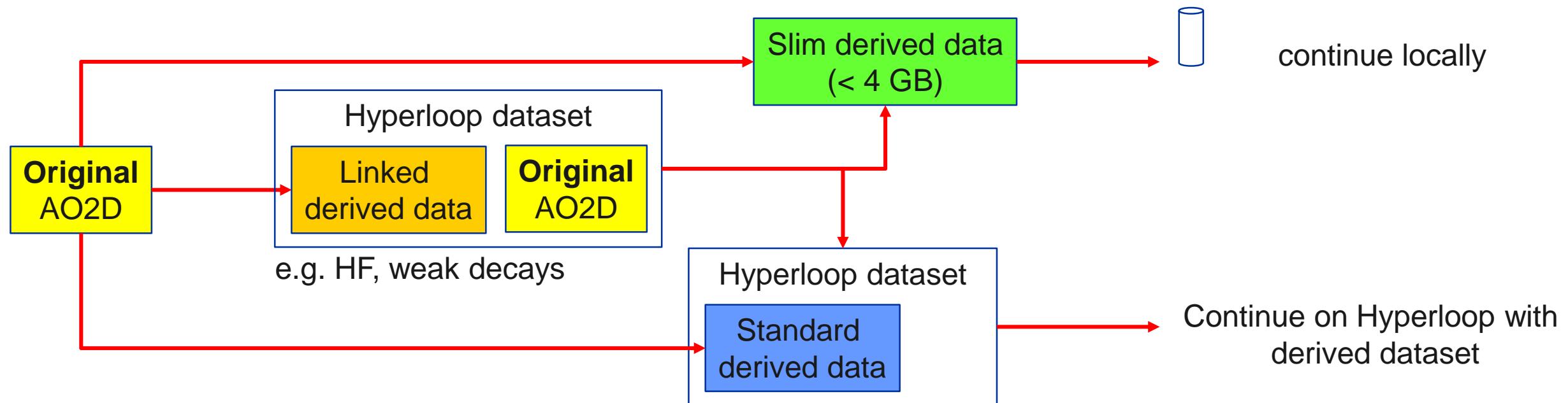
In datasets with multiple **mergelists** or **final mergelists**, a separate merged output is provided for each

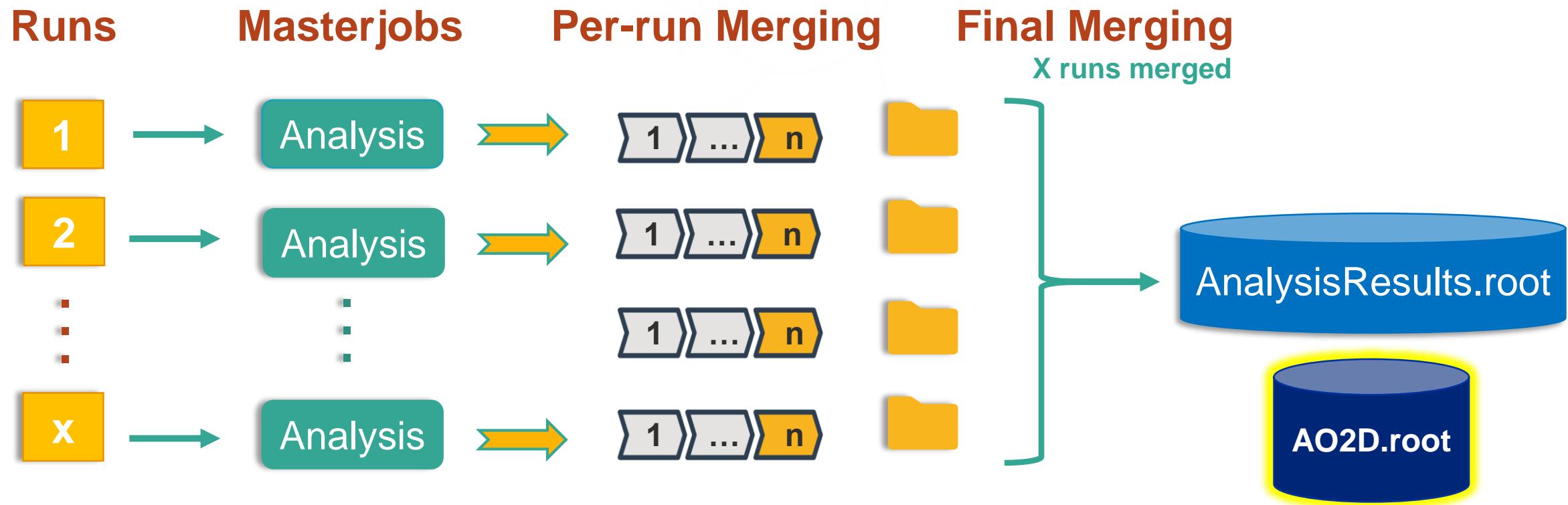




Derived Data

- 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!



Runs

1



Masterjobs

Analysis

2



Analysis

⋮

⋮

X



Analysis

Per-run Merging



1 ⤵ ... ⤵ n



1 ⤵ ... ⤵ n



1 ⤵ ... ⤵ n

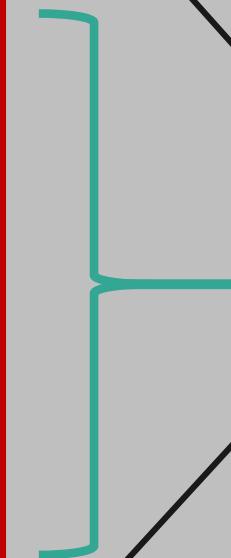


1 ⤵ ... ⤵ n



Final Merging

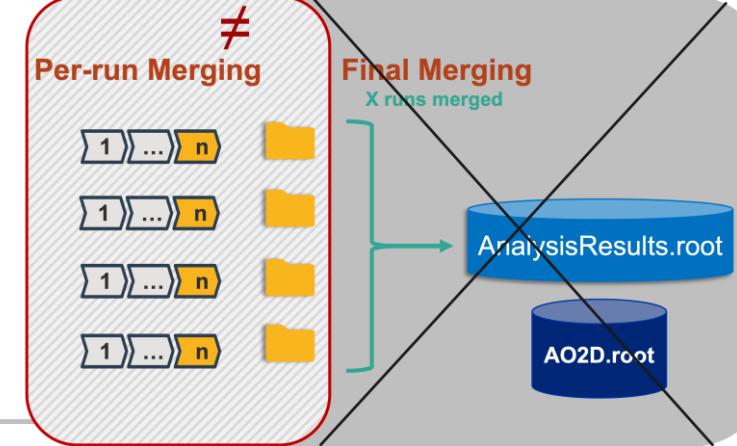
X runs merged



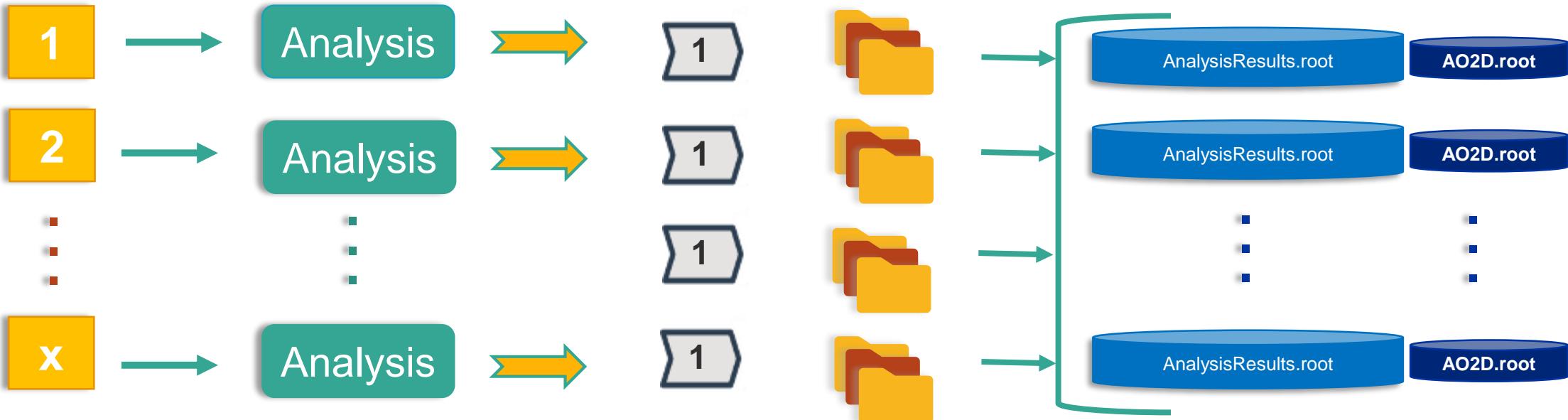
Derived Data Train



To be used as input in future train runs.



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



Linked Derived Data Train



Derived Data Train on Dataset 1



Linked derived data has access to the files from the parent.

Train then runs on Dataset 2 (Parent = Dataset 1)

AO2D.root



So, how do we use Hyperloop?



My Analyses

ALICE

- Displays all the analyses the user belongs to
- The analyses are defined in JIRA of the respective PWG, along with the users that will be part of them
- Several analyzers can share an analysis
- Datasets are enabled per analysis
- Choose a package tag before enabling a wagon

Instantaneous wagon test when enabling a wagon

My Analyses

Hyperloop Framework Test Analysis
Click to start the tour

Analyzers: jgrosseo,npoffley,rccrueru
JIRA : OHSA-6
or newer tags
Future tag based on pull request
Learn more

My Analyses
All Analyses
Dashboard
AliHyperloop
Train Submission
Train Runs
Datasets
DPG Runlists
?
JIRA : OHSA-2

O2 Development
Datasets and Settings

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

Package: O2Physics::nightly-20231118-1
or newer tags
Future tag based on pull request

Wagon
LHC15o_test
LHC15o_de...
LHC21d9m...
LHC21d9n...
Last run

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	Click to disable	✓	⚠	✗	12328
multi-process	Click to enable	✓	⚠	✗	

My Analyses

Welcome to 'My Analyses'. Here you can view every analysis which you are a part of. You can:

Add new wagons - Add a new wagon to your analysis. You can also clone existing wagons.

View and edit wagons - View wagons in the analysis, change their configuration, enable wagon tests. Wagon tests will start immediately, and once finished, the resulting test statistics may be viewed.

View Train Runs - View train runs within the analysis.

Next (1/13)



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Instantaneous wagon test when enabling a wagon

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

My Analyses

[Click to start the tour](#)

HF O2 developments for ALICE3 pp Open HF 2.0 T

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

Package: O2Physics::nightly-20220117-1 or newer tags Future tag based on pull request

Search wagons by name...

Wagon	LHC21d9...	LHC21d9...	LHC21d9i...	LHC21d9f...	LHC21d9...	LHC21d9h...	LHC21d9...	Last run
alice3-trackextension	✗	✗	✗	✗	✗	✗	✗	18434
hf-candidate-creator-2prong-openhf	✗	✗	✗	✗	✗	✗	✓	18434

PWG-HF / PWGHF-284

HF O2 developments for ALICE3 pp Open HF 2.0 T

Edit
 Add comment
 Create Analysis Paper
More
Approve to start
Go to Dropped
Workflow

Details

Type: Analysis Status: OPEN [\(View Workflow\)](#)

Priority: Major Resolution: Unresolved

Component/s: PWG-HF

Labels: None

Run 3 analysis: Yes

Data Set: __placeholder__

Public Result: Yes

To do list: EMPTY

People

Assignee: Andrea Dubla

Reporter: Gian Michele Innocenti

Analyzers: Antonio Palasciano, Deepa Thomas, Fabio Colamaria, Fabrizio Grosa, Gian Michele Innocenti, Jin Joo Seo, Luigi Dello Stritto, Panos Christakoglou, Sourav Kundu, Stefano Trogolo, Vit Kucera

Description

Train for ALICE3 HF O2 studies

Nicolas Poffley

Hyperloop – Accelerating analysis

20



My Analyses

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

My Analyses
Click to start the tour

HF O2 developments for ALICE3 pp Open HF 2.0 T

Analyzers: apalasci, dthomas, fcolamar, 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

Receive emails if test wagon fails: Only user who enabled the wagon

Enabled datasets in HF O2 development: None

LHC21d9_pp_test	LHC21d9_pp_full
LHC21d9g_pp	LHC21d9h_pp

Only user who enabled the wagon

All analyzers

Enable dataset: All datasets

Data MC

Kr-Kr Pb-Pb Xe-Xe p-Pb p-p

Anchor: Not anchored

MC Tag: LHC21d9f

Dataset: LHC21d9f_pp Dataset detail

+ Add to analysis

Done



ALICE

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- Several analyzers can share an analysis
- Datasets are enabled per analysis
- **Choose a package tag before enabling a wagon**

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, fcolamar, fgrosa, ginnocen, jseo, ldellost, pchrist, skundu, strogolo, vkucera

JIRA : PWGHF-284

Package: O2Physics::daily-20241013-0200-1

or newer tags Future tag based on pull request

Datasets and Settings

	LHC21d9f...	LHC21d9...	LHC21d9h...	LHC21d9...	Last run	
O2Physics::daily-20241013-0200-1	✗	✗	✗	✗	18434	
O2Physics::daily-20241012-0200-1	✗	✗	✓	✗	18434	
O2Physics::daily-20241011-0200-1	✗	✗	✗	✗	18147	
O2Physics::daily-20241010-0200-1	✗	✗	✗	✗	15031	
O2Physics::daily-20241009-0200-1	✗	✗	✗	✗	18147	
O2Physics::daily-20241008-0200-1	✗	✗	✗	✗	17068	
O2Physics::daily-20241007-0200-1	✗	✗	✗	✗	11365	
hf-candidate-creator-xicc	✗	✗	✗	✗	18434	
hf-candidate-selector-bPlusToD0Pi	✗	✗	✗	✗	18147	
hf-candidate-selector-d0	✗	✗	✗	✗	15031	
hf-candidate-selector-d0-OLD	✗	✗	✗	✗	15031	
hf-candidate-selector-dplus	✗	✗	✗	✗	15031	
hf-candidate-selector-lb	✗	✗	✗	✗	15031	
hf-candidate-selector-ic	✗	✗	✗	✗	15031	
hf-candidate-selector-xic	✗	✗	✗	✗	18147	
hf-candidate-selector-xicc	✗	✗	✗	✗	18147	

Instantaneous wagon test when enabling a wagon

My Analyses

Choosing 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 that has the selected tag or a **newer tag** (*this is useful to group analysis together in a train*)

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

HF O2 developments for ALICE3 pp Open HF 2.0 T

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

JIRA : PWGHF-284

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

Datasets and Settings

	LHC21d9f...	LHC21d9...	LHC21d9h...	LHC21d9...	Last run
O2Physics::daily-20241013-0200-1	✗	✗	✗	✗	18434
O2Physics::daily-20241012-0200-1	✗	✗	✓	✗	18434
O2Physics::daily-20241011-0200-1	✗	✗	✗	✗	18147
O2Physics::daily-20241010-0200-1	✗	✗	✗	✗	18147
O2Physics::daily-20241009-0200-1	✗	✗	✗	✗	15031
O2Physics::daily-20241008-0200-1	✗	✗	✗	✗	17068
O2Physics::daily-20241007-0200-1	✗	✗	✗	✗	11365
hf-candidate-creator-xicc	✗	✗	✗	✗	18147
hf-candidate-selector-bPlusToD0Pi	✗	✗	✗	✗	18434
hf-candidate-selector-d0	✗	✗	✗	✗	17068
hf-candidate-selector-d0-OLD	✗	✗	✗	✗	15031
hf-candidate-selector-dplus	✗	✗	✗	✗	15031
hf-candidate-selector-lb	✗	✗	✗	✗	15031
hf-candidate-selector-ic	✗	✗	✗	✗	15031
hf-candidate-selector-xic	✗	✗	✗	✗	18147
hf-candidate-selector-xicc	✗	✗	✗	✗	18147

My Analyses

Deciding on package tag:

- Choose a tag from the **dropdown** and the wagon will be tested only with that specific tag
- Selecting **or newer tags** will allow the wagon to be included in a train run that has the previously selected tag or a **newer tag** (*this is useful to group analysis together in a train*)
- Future tag based on PR :**
 - The wagon is tested and runs once the pull request is included in a tag
 - Once the PR is part of the tag, the wagon can be tested on that tag or a future tag

My Analyses AliHyperloop 

Train Submission Train Runs Datasets DPG Runlists ?  

HF O2 developments for ALICE3 pp Open HF 2.0 T

JIRA : PWGHF-284

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

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

	21d9...	LHC21d9h...	LHC21d9...	Last run	
hf-candidate-creator-xicc	✗	✗	✗	✗	  
hf-candidate-selector-bPlusToDOPi	✗	✗	✗	✗	  
hf-candidate-selector-d0	✗	✗	✗	✗	  
hf-candidate-selector-d0-OLD	✗	✗	✗	✗	  
hf-candidate-selector-dplus	✗	✗	✗	✗	  
hf-candidate-selector-lb	✗	✗	✗	✗	  
hf-candidate-selector-ic	✗	✗	✗	✗	  
hf-candidate-selector-xic	✗	✗	✗	✗	  

Wagons

Wagons are defined from O^2 workflows

You may:

- Add/remove wagons
- Enable/disable wagon > immediate wagon test
- Clone/compare wagons

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

O2 Development

Analyzers: aalkin, eulisse, jgrosséo 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	✓ 	✗	✗	✗	13705   
Correlations	✓ 	✗	✗	✗	13705   
CorrelationsFilteredOnTheFly	✓ 	✗	✗	✗	13705   
CorrelationsOnDerivedData	✗	✗	✗	✗	13705   
hf-candidate-creator-3prong-openhf	✗	✗	✗	✗	13705   
hf-candidate-selector-lc	Click to enable 	✗	✗	✗	13705   
hf-task-lc	✗	✗	✗	✗	13705   
hf-track-index-skims-creator-2-3-prong-openhf	✗	✗	✗	✗	13705   
HistogramsFull	Click to disable 	✗	✗	✗	12328   
SpectraTPCTiny	✓ 	✗	✗	✗	13705   
TrackExtension	✗	✗	✗	✗	13705   

+ 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

- Wagons defined from O² workflows
- Displays the list of train runs per analysis
- The user can:
 - 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

Wagons defined from O² workflows
The user can:
Add/remove wagon
Enable/disable wagon
Clone/compare wagons

Datasets and Settings

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

Wagon LHC15o_t... LHC18_pp... LHC15o_d... LHC15o_d... LHC21d9... LHC21d9n... Last run

alice3-centrality ✗ ✗ ✗ ✗ ✗ 13705

O2 Development wagon name... Clone

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

- The user can:
 - Add/remove wagons
 - Enable/disable wagon

Wagons

- Wagons defined from O² workflows
- Displays the list of train runs per analysis
- The user can:
 - 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, jgrosséo 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	X	X	X	X	13705
alice3-trackextension	X	X	X	X	13705

Wagon	LHC15o_test	LHC18_pp...	LHC15o_dev	LHC15o_de...	LHC21d9m...	LHC21d9n...	Last run
alice3-centrality	X	X	X	X	X	X	13705
alice3-trackextension	X	X	X	X	X	X	13705

Core Service Wagons / TrackExtension_Run3

Hyperloop Framework Test Analysis / TableMaker

Core Service Wagons / TimestampCreator

Core Service Wagons / TimestampCreator_Run2_MC

O2 Development / TrackExtension

Core Service Wagons / TrackExtension_Run2

Core Service Wagons / TrackExtension_Run2_MC

Core Service Wagons / TrackExtension_Run3

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

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

(or clone wagon from other analysis)

Wagon settings Configuration Derived data

Name: alice3-trackextension TrackExtension_Run3

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

Dependencies: TrackExtension_Run3 TimestampCreator

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

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

Clear all filters

Train	Wagons	Dataset	Package tag
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

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



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-analysistutorial-jet-task-skim-provider
	o2-analysistutorial-jetspectra-task-skim-analyser
	o2-analysistutorial-jet-analysis
	o2-analysistutorial-configurable-objects
	o2-analysistutorial-tpcspectra-task-skim-analyser
	o2-analysistutorial-efficiency-per-run
	o2-analysistutorial-mc-histograms

Save

Edit wagon



Click to start the tour

CFFilter

Wagon settings Configuration 1 Derived data 2 Test Statistics

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

Name: CFFilter

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

Dependencies:

- Core Service Wagons/TrackSelection
- Core Service Wagons/EventSelection
- Core Service Wagons/Multiplicity
- Core Service Wagons/Centrality

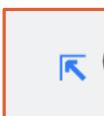
When enabling a wagon, there is no need to enable its dependencies. This is done automatically on train submission.

Save

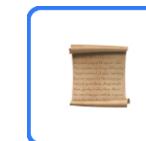
Documentation

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
 - **Dependencies are automatically enabled when enabling a wagon** (this is different from the LEGO trains)
- 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 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

Subwagons

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

Task

Parameter

Value

Variable length

Help

Delete

Histogram binning

cent-binning

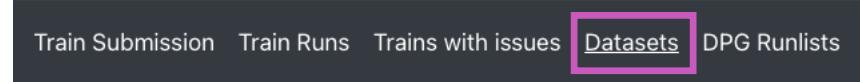
pt-bin-edges

Save

Datasets in Hyperloop



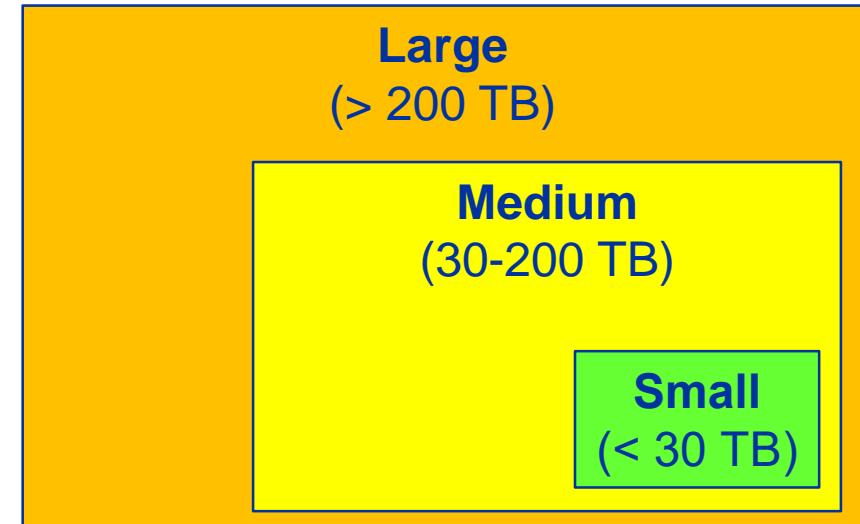
- From the ‘datasets’ page you can see all datasets in Hyperloop
 - Open one to see the configuration!



- Available datasets:
 - Run 2: Converted for all data and general-purpose MC
 - Run 3: DATA, MC, MCGEN (MC on the fly)
- Tiered structure of datasets with staged submission
 - Autosubmission: **small** & **medium**
 - PWG approval: **large**, requires run on small/medium first
 - PB (Physics Board) approval if too slow (see [slide 66](#))
- Special datasets
 - Tiny for not optimized development
 - Sample 5% of each run: for QC

Sampling – for QC
(5% of all runs)

Tiny
(GB to few TB)



Dataset view - General



- **General**
 - Dataset size
 - Runs selected
 - JIRA ticket
 - Dataset sampling (for QC datasets)
- **Staging info**
 - All datasets can run on the GRID
 - 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>
Skimmed datasets over all available 2022 pp periods (High IR).

[Edit dataset](#)

General [Learn more](#)

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

Analysis Facility Staging [Learn more](#)

File Pattern:	AO2D.root
Staged to:	ALICE::GSI::SE2 99.93%

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):	Tuesday - 09:00	Thursday - 09:00					
Composition targets:	GSI - 2 core	GSI - 4 core	GSI - 8 core	Grid - 2 core	Grid - 4 core	Grid - 8 core	Grid - Single core

‘Short’ datasets

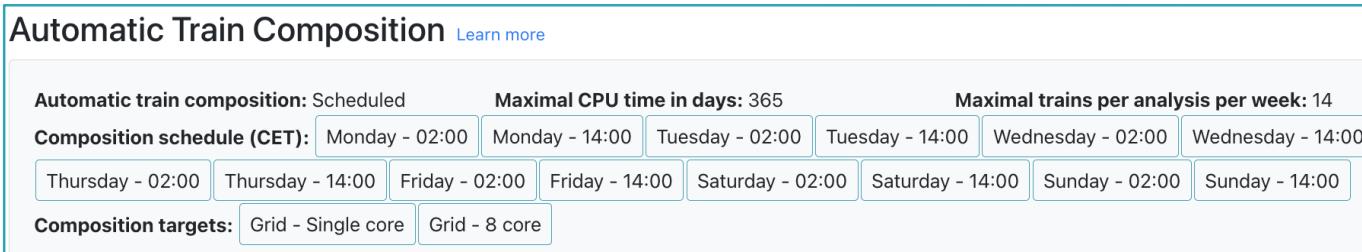
- Large (>200TB) datasets are linked to short datasets which must first be run on before the long train may be used.

Short Datasets: [LHC23zzh_pass4](#) [LHC23zzh_pass4_small](#) [LHC23zzm_pass4_EMGood](#)

Dataset view – Automatic composition



- **Automatic train composition** is scheduled per dataset – see the schedule in the dataset view



- Trains will be composed based on *target memory*, *wagon configuration* and *dependencies*
- Automatic **train submission** to **GRID or Analysis Facilities**
- **Wagons will not be considered for automatic composition if:**
 - Automatic submission is not enabled for the dataset
 - Derived data output is activated and train is not slim
 - Wagon test finished with warning
- ‘Maximal CPU time in days’ shows the maximum CPU usage the train may use. Trains which expect more usage will throw a warning and won’t be submitted automatically.
- ‘Maximal trains per analysis week’ shows the number of train slots permitted per week.

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

16:27

F 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 Thank You 1

Train Support

- **O2 Hyperloop Operation Channel**
- 24/5 Operation (different timezones)
- Institutes: 1 in Americas, 2 in Europe, 1 in Asia

Dataset view - Productions



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

<input checked="" type="checkbox"/> all	ALL	<input type="checkbox"/>	544028	544032
<input checked="" type="checkbox"/> golden_run	<input type="checkbox"/>	544028	544032	

+/- LHC23zh_apass4

Runlist: all

Mergelists

<input checked="" type="checkbox"/> all	ALL	<input type="checkbox"/>	544095	544116	544121	544123
<input checked="" type="checkbox"/> golden_run	<input type="checkbox"/>	544091	544095	544098	544116	<input type="checkbox"/>

Final mergelists

LHC23zzg_apass4	LHC23zzh_apass4	LHC23zzi_apass4
all: <input checked="" type="checkbox"/> all	all: <input checked="" type="checkbox"/> all	all: <input checked="" type="checkbox"/> all
golden_run <input type="checkbox"/>	golden_run <input type="checkbox"/>	golden_run <input type="checkbox"/>

LHC23zzg_apass4	LHC23zzh_apass4	LHC23zzi_apass4
all: <input checked="" type="checkbox"/> all	all: <input checked="" type="checkbox"/> all	all: <input checked="" type="checkbox"/> all
golden_run <input type="checkbox"/>	golden_run <input type="checkbox"/>	golden_run <input type="checkbox"/>

LHC23zzg_apass4	LHC23zzh_apass4	LHC23zzi_apass4
all: <input checked="" type="checkbox"/> all	all: <input checked="" type="checkbox"/> all	all: <input checked="" type="checkbox"/> all
golden_run <input type="checkbox"/>	golden_run <input type="checkbox"/>	golden_run <input type="checkbox"/>

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

Test Analysis for RUN3 Train Development

Datasets and Settings

Receive emails if test wagon fails: None

Enabled datasets in Test Analysis for RUN3 Train Development:

- ArAr_Angantyr_630 (X)
- LHC15o_benchmark (X)
- LHC15o_test (X)
- LHC18_pp_test (X)
- LHC23_PbPb_pass4_medium (X)
- PilotMC_LHC21i1_nightly (X)

Wagons

CFFilter

ConfigurableObjects

corrlcone

Correlations

debug_eventselection_history

Analyzers: npoffley, rcruceru, raquishp

Package: O2Physics:daily-20240919-0200-1

Search wagons by name...

Enable dataset: All datasets

- Data
- MC
- MCGEN
- Kr-Kr
- Pb-Pb
- Xe-Xe
- p-Pb
- p-p

Period: LHC23zzn

Dataset: LHC23zzn_pass3_i-A11_small

+ Add to analysis

Done

JIRA : OHSA-7

Datasets and Settings

Learn more

C1... LHC2... Pilot... Last run

Run final merging over all runs in this dataset: ✓

- Or open a dataset and click here:

Final mergelists

Run final merging over all runs in this dataset: ✓

Category	Dataset	CBT	CBT_electronPID
all	LHC22e_apass4	16 selected runs	10 selected runs
	CBT: all	CBT_electronPID: all	LHC22e_apass4
LHC22f_apass4	CBT: all	CBT_electronPID: all	CBT: all
	CBT_electronPID: all	LHC22f_apass4	CBT_electronPID: all
LHC22f_apass4	CBT: all	CBT_electronPID: all	CBT: all
	CBT_electronPID: all	LHC22f_apass4	CBT_electronPID: all

Analysis (0)

+ Add the Dataset to Analysis



Enable your wagon on the chosen dataset

Enable the wagon to start a wagon test



Wagon	LHC15o_dev	LHC15o_dev_Wigner	Last run	
CFFilter_WriterTest	✓ ⚡	✓ ⚡	139904	⚙️ 🎨 🗑️
Correlations	✗	✗	266763	⚙️ 🎨 🗑️
HistogramsFull	✗	✗	266763	⚙️ 🎨 🗑️
SpectraTOFFull	✗	✗	266763	⚙️ 🎨 🗑️
SpectraTPCTiny	✗	✗	266763	⚙️ 🎨 🗑️

Add new wagon (or clone wagon from other analysis)

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 ✗ 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 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



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.
- **Derived data** wagons and 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.

CEST	2 Warnings	Done
CEST	Start: 09 July 2024 at 17:00:30 CEST	
CEST	End: 09 July 2024 at 17:06:23 CEST	
CEST	Package: O2Physics::daily-20240708-0200-1	Done
CEST	• Memory consumption too large to run.	
CEST	• Derived output too large for slim train (16481 MB)	Done
CEST	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 O2Physics::daily-20240904-0200-1

Dataset hyperloop_development_dataset

Enabled by npoffley

Test status Failed [\(output\)](#)

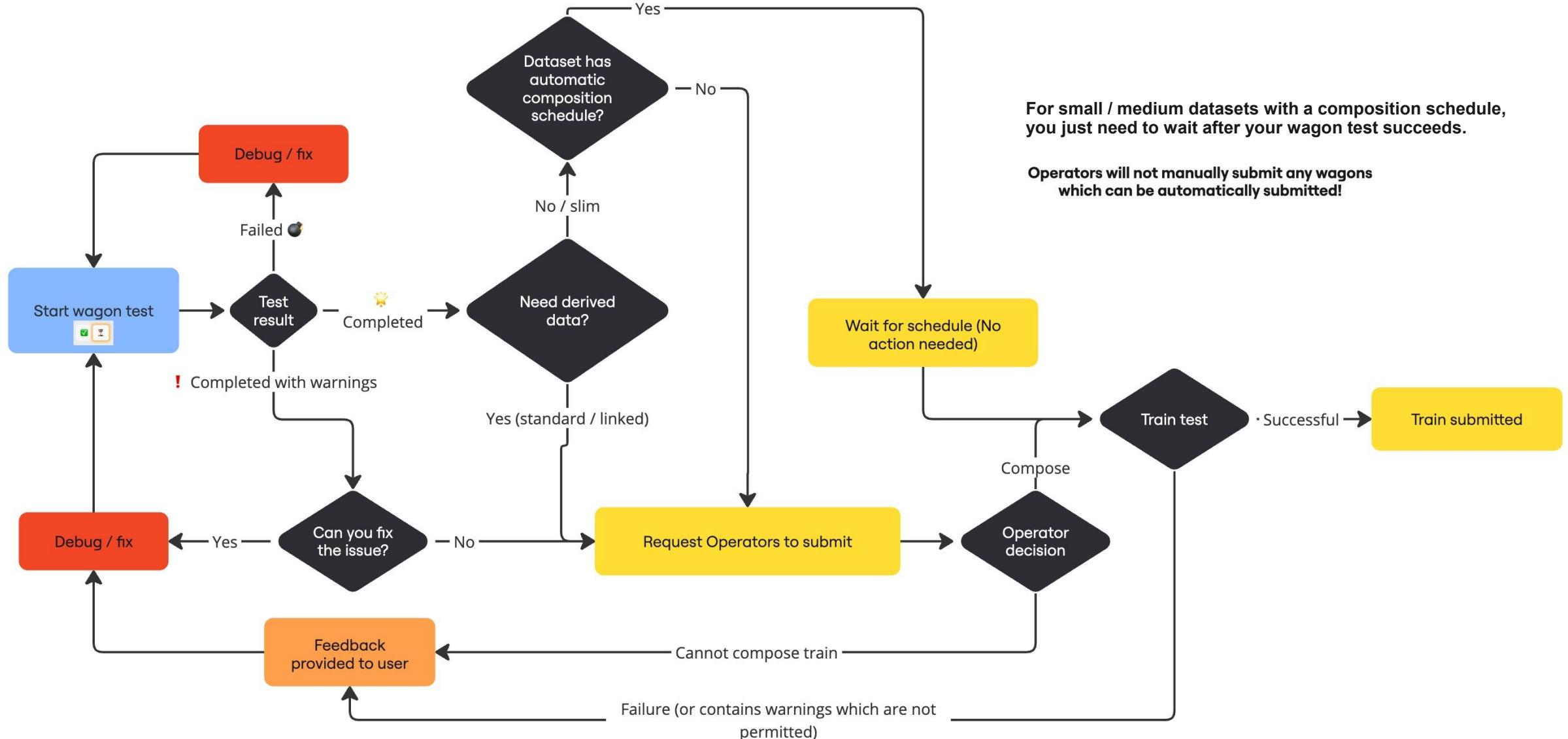
Start Time 18 September 2024 at 13:59:55 CEST

End Time 18 September 2024 at 14:00:13 CEST



```
[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_run00520471_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-analysistutorial-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_run00520471_orbit0644189358_tf0000000301_epn069/002/A02D.root". Please check https://aliceo2group.github.io/analysis-framework/docs/troubleshooting/#tree-not-found for more information.
```

Train submission flow chart





Trains

Train Runs page



My Analyses All Analyses Dashboard

AliHyperloop 

Train Submission Train Runs Datasets DPG Runlists ?   

Show last 3 months  

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	UP...						
38193	cf...						
38192	cf...						
38158	CFF...						
38153	CFF...						
38009	CFF...						
38001	Fer...						

Train run 38301 

General Derived Data Test Submitted jobs Grid Statistics Wagon resources Clone Request long train

Package tag O2Physics::nightly-20221011-1
Dataset LHC15o_benchmark
Operator jgrosseo
Test status Done  (output) 

Settings slow train derived data automatic submission

Wagons CFFilter (jgrosseo)

Train run 38226 

General Derived Data Test Submitted jobs Grid Statistics Wagon resources Clone Request long train

Package tag O2Physics::nightly-20221008-1
Dataset LHC22m_pass1_subset
Operator scostanz
Test status Done  (output)  Speedscope 

Settings slow train derived data automatic submission

Wagons UPCCandidateProducer (nburmaso)
EventSelection_Run3_pp
Multiplicity_Run3_pp
PIDTOFBaseRun3
PIDTOFFullRun3
PIDTPCFull
TimestampCreator
TrackPropagation

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

Delete 

- 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

Train Runs page



My Analyses All Analyses Dashboard

AliHyperloop 🚆

Train Submission Train Runs Datasets DPG Runlists ? 🔔 17 📈

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

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_bsf	10/10/22, 18:16 CEST	Done	!
38193	cf-Multiplic...	cf-Multiplic...	O2Physics::daily-20240301-0100-1	O2Physics::daily-20240229-0100-1			!
38192	cf-Multiplic...	cf-Multiplic...		LHC23zzfghi_pass2_upc_small			!
38158	CFFilter,Cer...	spadhan	alihyperloop				!
38153	CFFilter,Cer...						!
38009	CFFilter,Cer...						!
38001	Femto_Table...						!

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

slow train derived data automatic submission

Settings

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

Train run – General



Train run 132324  ← Click to start the tour

General Derived Data Test Submitted jobs Grid Statistics Wagon resources Merged Output Clone Train type ? x

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

Settings slow train slim derived data automatic submission

Wagons

User wagons

- [EventSelection_Run2_pPb PWGDQ-89](#) Click here to open the JIRA ticket associated with this wagon
- [Im-muon-table-maker-ions-run2 PWGDQ-89](#)
- [Im-muon-table-reader-ions-run2 \(vkovalen\) PWGDQ-89](#)
- bcConverter
- CollisionConverter
- FwdTrackExtension
- TimestampCreator
- tracksExtraConverter
- ZDCConverter

Service wagons

dilepton test analysis

Analysis the wagon is part of

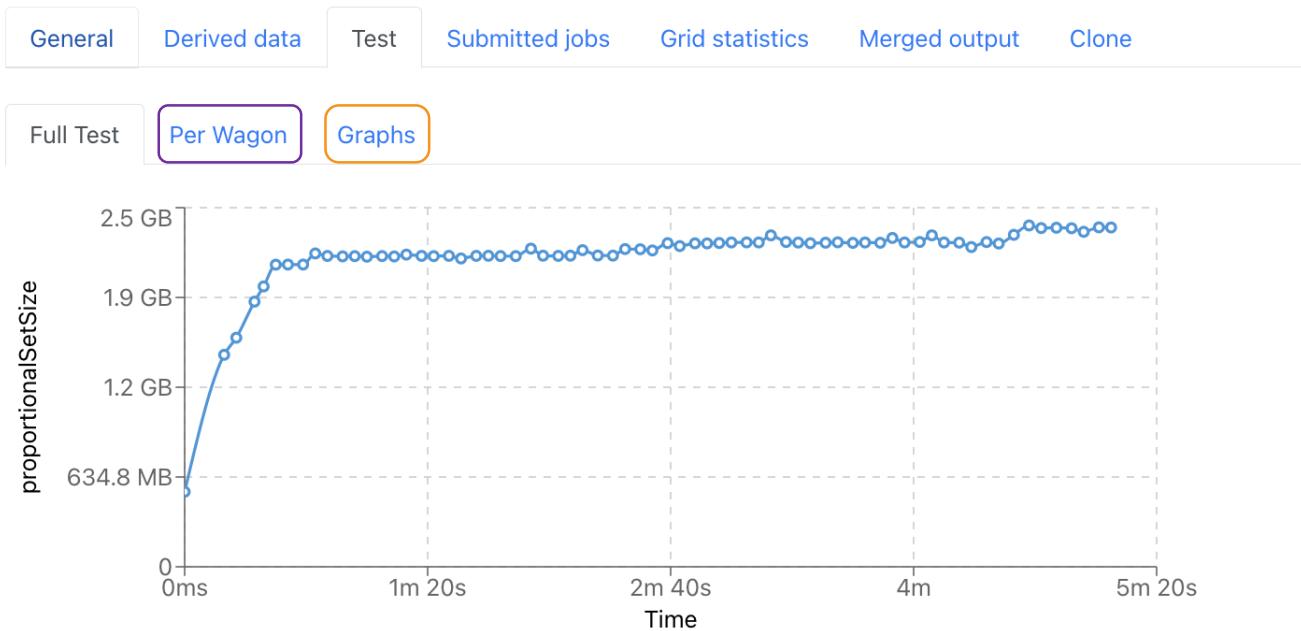
Comment

- Direct links to dataset, package tag and participating wagon configuration
- Train settings, progress timeline and current state
- Duration and needed resources
- Job status, per-run merging and final-merging summary
- Direct links to **test output**, **AnalysisResults.root**, **JIRA ticket**

Train run – Train test



Train Run 267170



- 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 kgCO ₂ eq
Weekly slots used	Non-prompt cascades with strangeness tracking: 1

Train run – Train test



Full Test

Per Wagon

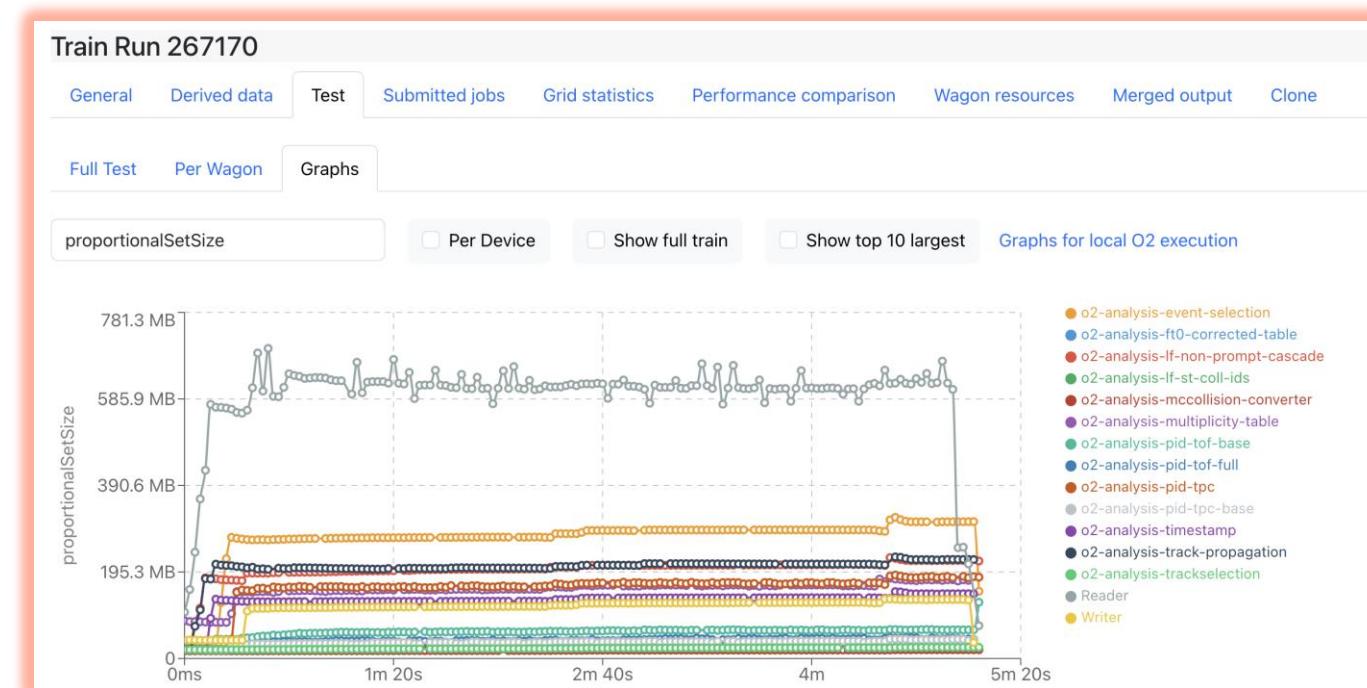
Graphs

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				
<input type="button" value="Reset all filters"/>							
<input type="button" value="Wagon"/>							
				PSS Memory	Private Memory	CPU Time	
Search 15 records...							
Reader				Max 700.0 MB Avg 610.8 MB Slope 136.4 KB/s	558.9 MB 446.9 MB -234.3 KB/s	1m 14s (30%)	
CorrectedFT0				Max 23.7 MB Avg 21.8 MB Slope 14.4 KB/s	18.9 MB 18.8 MB 635.7 B/s	2s (1%)	
EventSelection_Run3_pp				Max 318.7 MB Avg 273.6 MB Slope 319.8 KB/s	241.3 MB 232.9 MB 167.0 KB/s	19s (8%)	
mcCollisionConverter				Max 19.9 MB Avg 18.5 MB Slope 9.0 KB/s	16.6 MB 16.5 MB 389.9 B/s	1s (0%)	
Multiplicity_Run3_pp				Max 181.4 MB Avg 157.0 MB Slope 162.1 KB/s	134.4 MB 130.1 MB 66.1 KB/s	7s (3%)	
new-non-prompt-cascade-mc				Max 227.7 MB Avg 203.5 MB Slope 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
- **IO statistics**
- **Stack trace**

Train run 75957

General Derived Data Test Submitted jobs Grid Statistics Clone

IO Statistics Stack trace Copy all output directories

PID	Run no.	Output directory	Total	Done	Active	Wait	Error	Merging
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
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

Click here to download the job json configuration.

Download icons:

- Search and copy the filtered lists by clicking on the dedicated buttons

Train run view – Submitted jobs



- **IO statistics**

Train run 75967

General Test Submitted jobs Grid Statistics Wagon resources Merged Output Clone

IO Statistics Stack trace Copy all output directories

Clear all filters

PID Run no. Output directory Total Done Active Wait Error Merging

Search 12 | Search 1: Search 12 records...

2840407805	529043	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168943	190	187	0	0	3	Done
2840407804	529039	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168942	598	592	0	0	6	Done
2840407786	529038	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168941	240	224	0	0	16	Done
2840407762	529037	/alice/cern.ch/user/a/alihyperloop/jobs/0016/hy_168940	48	47	0	0	1	Done

IO stats for 12 master jobs executed between 20.04.2023 12:11 and 20.04.2023 13:43 (1:31)

Site activity					SE access		
Site	Job eff.	All files	Local files	Remote files	CERN EOS	CCIN2P3 SE	CNAF SE
CERN 1133 jobs (96.43%)	123.3%	2644 files 7.486 MB/s	2644 (100%) 7.486 MB/s		2644 (100%) 7.486 MB/s		
CCIN2P3 26 jobs (2.213%)	139.4%	61 files 19.3 MB/s	58 (95.08%) 23.83 MB/s	3 (4.918%) 3.244 MB/s	3 (4.918%) 3.244 MB/s	58 (95.08%) 23.83 MB/s	
CNAF 16 jobs (1.362%)	128.4%	38 files 17.02 MB/s	38 (100%) 17.02 MB/s			38 (100%) 17.02 MB/s	
TOTAL 1175 jobs	123.7%	2743 files 7.643 MB/s 3.547 TB	2740 (99.89%) 7.652 MB/s 3.544 TB		2644 (96.5%) 7.486 MB/s 3.424 TB	58 (2.117%) 23.83 MB/s 77.45 GB	38 (1.387%) 17.02 MB/s 45.62 GB
					3 (0.109%) 3.244 MB/s 2.98 GB	3 (100%) 3.244 MB/s 2.98 GB	



Train run view – Submitted jobs



- Stack trace

Collects the errors from your 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
Search 11	Search 11	Search 11 records...	Search 11						All
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

 11101010
01000
0101010
101010 ALICE

»

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

```
***internal-dpl-aod-reader]: [****][ERROR] Exception caught: Couldn't open file "****"  
[***internal-dpl-aod-reader]: Executable is /cmvms/alice.cern.ch/el7-x86_64/Packages/O2Physics/nightly-20230418-1/bin/o2-analysis-timestamp  
[***internal-dpl-aod-reader]: /cmvms/alice.cern.ch/el7-x86_64/Packages/O2/nightly-20230418-1/lib/libO2Framework.so: ?? ?:0  
[***internal-dpl-aod-reader]: /cmvms/alice.cern.ch/el7-x86_64/Packages/O2/nightly-20230418-1/lib/libO2Framework.so: o2::framework::DataProcessingDevice::doRun(o2::framework::ServiceRegistryRef)  
[***internal-dpl-aod-reader]: /cmvms/alice.cern.ch/el7-x86_64/Packages/O2/nightly-20230418-1/lib/libO2Framework.so: o2::framework::DataProcessingDevice::Run()  
[***internal-dpl-aod-reader]: /cmvms/alice.cern.ch/el7-x86_64/Packages/FairMQ/v1.4.56-21/lib/libFairMQ.so.o.1.44 fair::mq::Device::RunWrapper()  
[***internal-dpl-aod-reader]: /cmvms/alice.cern.ch/el7-x86_64/Packages/FairMQ/v1.4.56-21/lib/libFairMQStateMachine.so.1.4: boost::detail::function::void function_obj_invoker<std::function<void (fair::mq::State), void, fair::mq::State>>::operator()()  
[***internal-dpl-aod-reader]: /cmvms/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>, boost::signals2::connection>::operator()()  
[***internal-dpl-aod-reader]: /cmvms/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]: /cmvms/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]: /cmvms/alice.cern.ch/el7-x86_64/Packages/FairMQ/v1.4.56-21/lib/libFairMQ.so.o.1.44 fair::mq::DeviceRunner::Run()  
[***internal-dpl-aod-reader]: /cmvms/alice.cern.ch/el7-x86_64/Packages/O2/nightly-20230418-1/lib/libO2Framework.so: doChild(int, char**, o2::framework::ServiceRegistry&, o2::framework::RunningWorkflowInfo const&, o2::framework::WorkflowSpec const&)  
[***internal-dpl-aod-reader]: /cmvms/alice.cern.ch/el7-x86_64/Packages/O2/nightly-20230418-1/lib/libO2Framework.so: runStateMachine(std::vector<o2::framework::DataProcessorSpec> const&, std::allocator<o2::framework::DataProcessorSpec> const&)  
[***internal-dpl-aod-reader]: /cmvms/alice.cern.ch/el7-x86_64/Packages/O2/nightly-20230418-1/lib/libO2Framework.so: doMain(int, char**, std::vector<o2::framework::DataProcessorSpec, std::allocator<o2::framework::DataProcessorSpec> const&)  
[***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 ???:
```

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  Click to start the tour ?

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	REDUCEEVENT
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
- **Max DF size and max derived file size**

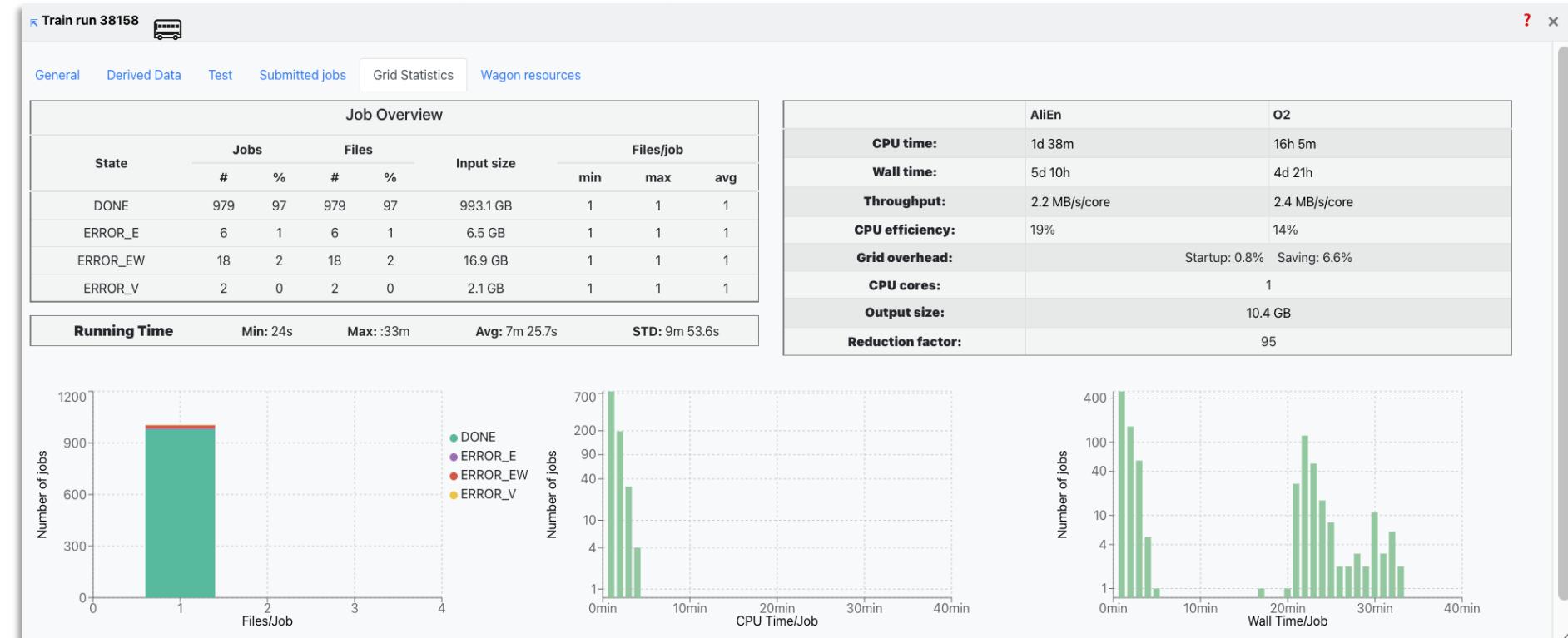
Train run view – Grid Statistics



- Summarizes the jobs 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 - Merged Output

- Shows merged outputs for the full train, then every individual activated mergelist and final mergelist. The mergelists are defined in the **dataset settings**
- When the final merge is started manually by the operator, some of the runs may not be merged
- You can copy the list of **merged runs** or the total **list of runs** by clicking on the (red) number

[Train run 67011](#)

General Test Submitted jobs Grid Statistics Wagon resources Merged Output Clone AnalysisResults.root Runs

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) 529066,529067,529077,529078,529084,529088,529116,529117,529128,529129,529129,529208,529209,529210,529237,529242,529248,529252,529270,529306,529310,529317,529320,529324,529324,529338,529341	25 out of 28

Productions (1) [Learn more](#) [+ Production](#)

LHC22r_apass2 (LHC22r - apass2 of LHC22r on CPU - 13.6 TeV pp, O2-3464) [trash](#)

Run exclude list
Comma separated list of runs ✓

all:	529066	529067	529077	529078	529084	
	529088	529115	529116	529117	529128	529129
	529208	529209	529210	529211	529235	529237
	529242	529248	529252	529270	529306	529310
	529317	529320	529324	529338	529341	

Mergelists [+ Mergelist](#)

all	trash
<input checked="" type="checkbox"/> all	
Comma separated list of runs	✓

low_rate	trash
<input checked="" type="checkbox"/> low_rate	
529066,529067	✓

Train run - debugging



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

State	Job Overview				Input size	Files/job			
	Jobs		Files			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	260	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 (validation)..

Train run - debugging



- If your train has many failed jobs...
- 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 most errors, you'll find the cause in the **trace**. For jobs failing with **ERROR_V**, check the stdout in the **log files**

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																																																																																
<input type="button" value="Reset all filters"/> <table border="1"> <thead> <tr> <th>PID</th> <th>Run no.</th> <th>Output directory</th> <th>Throughput (/core)</th> <th>Total</th> <th>Done</th> <th>Active</th> <th>Wait</th> <th>Error</th> <th>Merging</th> </tr> </thead> <tbody> <tr> <td>Search 86</td> <td>Search</td> <td>Search 86 records...</td> <td>Search 8€</td> <td></td> <td></td> <td></td> <td></td> <td>All</td> <td></td> </tr> <tr> <td>3129938053</td> <td>545345</td> <td>/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596526</td> <td></td> <td>612</td> <td>0</td> <td>0</td> <td>0</td> <td>612</td> <td></td> </tr> <tr> <td>3129931268</td> <td>544991</td> <td>/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596491</td> <td></td> <td>472</td> <td>0</td> <td>0</td> <td>0</td> <td>472</td> <td></td> </tr> <tr> <td>3129935264</td> <td>545210</td> <td>/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596512</td> <td></td> <td>462</td> <td>0</td> <td>0</td> <td>0</td> <td>462</td> <td></td> </tr> <tr> <td>3129936604</td> <td>545289</td> <td>/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596518</td> <td></td> <td>452</td> <td>0</td> <td>0</td> <td>0</td> <td>452</td> <td></td> </tr> <tr> <td>3129936593</td> <td>545262</td> <td>/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596517</td> <td></td> <td>450</td> <td>0</td> <td>0</td> <td>0</td> <td>450</td> <td></td> </tr> <tr> <td>3129933320</td> <td>545086</td> <td>/alice/cern.ch/user/a/alihyperloop/jobs/0059/hy_596506</td> <td></td> <td>438</td> <td>0</td> <td>0</td> <td>0</td> <td>438</td> <td></td> </tr> </tbody> </table>									PID	Run no.	Output directory	Throughput (/core)	Total	Done	Active	Wait	Error	Merging	Search 86	Search	Search 86 records...	Search 8€					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		3129936593	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	
PID	Run no.	Output directory	Throughput (/core)	Total	Done	Active	Wait	Error	Merging																																																																															
Search 86	Search	Search 86 records...	Search 8€					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																																																																																
3129936593	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																																																																																

```
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
```

Per-run merging only happens if
>50% of subjobs have succeeded!

Train run - debugging



If you don't understand your error..

- Check <https://aliceo2group.github.io/analysis-framework/docs/troubleshooting/>
- Ask in your working group
- Write a message in the O2 Hyperloop Operation Channel

Train Run 245367

General	Test	Submitted jobs	Grid statistics	Performance comparison	Wagon resources	Merged output	Clone	Request long train
<div style="display: flex; justify-content: space-between;"> IO Statistics Stack trace Copy all output directories </div>								
<div style="display: flex; justify-content: space-between;"> Reset all filters </div>								
PID	Run no.	Output directory	Throughput (/core)	Total	Done	Active	Wait	Error
Search 86	Search	Search 86 records...	Search 8€					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
3129936590	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

```



Long train request

- Short datasets are subsets of a large dataset (set up in the Dataset settings)
- First, a train run needs to be **Done** on a smaller linked dataset before being run on a larger dataset

Train run 132176

General Derived Data Test Submitted jobs Grid Statistics Wagon resources Merged Output Clone Request long train

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 Wigner - Single core.

Dataset: LHC22o_pass4
Target: Grid - Single core
Package tag: O2Physics::daily-20231103-0100-1
Settings: slow train, Slim derived data, automatic submission

Wagons (as of 03/11/23, 15:01 CET):

- CFFilter (alihyperloop)
- integrationTest (alihyperloop)
- integrationTestCCDB (alihyperloop)

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.**

Long train request



The user can **decompose** their own long train.

You may wish to do this when:

- The wrong wagons were selected to be part of the long train
- The selected train type is incorrect (e.g. slim instead of standard)
- The long train request was created by mistake

General	Derived Data	Test	
Package tag	O2Physics::daily-20231031-0100-1		Settings
Dataset	LHC22m_pass4		<input type="checkbox"/> slow train <input checked="" type="checkbox"/> slim derived data <input type="checkbox"/> automatic submission
Operator	skundu		
Test status	Warning ! (output) (browse) Speedscope		Wagons
Target	Grid - Single core		(as of 31/10/23, 10:26 CET)
Train status	Approval needed		
Approved by	PWG-LF		
Train created	31 October 2023 at 17:10:40 CET		
Expected resources	2y 339d 7.4 GB		
Decompose			
Comment Composed from train 130731			

Once the long train is approved:

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

General	Derived Data	Test	
Package tag	O2Physics::nightly-20230412-1		Settings
Dataset	LHC22m_pass3		<input type="checkbox"/> slow train <input checked="" type="checkbox"/> standard derived data <input type="checkbox"/> automatic submission
Operator	jgrosseo		
Test status	Done ✨ (output) (browse) Speedscope		Wagons
Target	Grid - Single core		(as of 12/04/23, 10:34 CEST)
Train status	Approval needed		
Approved by	PWG-CF Approve long train		
Train created	13 April 2023 at 09:36:37 CEST		
Expected resources	279d 13h 1.1 TB		
Train status Approved Approved by Operator PWG-CF			



Key things to know



Train slots per week

ALICE



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

- Typically (but subject to change):
 - 14** for small datasets (< 30TB)
 - 6** for medium datasets (30 TB < x < 200 TB)
 - 2** for large datasets (> 200TB)

LHC23zh_pass4
Automatic train composition enabled. Click to see schedule.
3_PbP...
6 trains this week.
Reached maximum of 6 trains per week.

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
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.

1y 6d
54 kgCO2eq
MC Predictions on the OTF: 1

- Trains with many wagons may use > 1 slot. But, 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 measrement using heavy flavour tagging in pp collision at 13.6TeV: 2

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

Extensive comparison tools



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 1
- processDerived 0

correlation-task

- axisDeltaEta Bins: 40, Min: -2, Max: 2
- axisDeltaPhi Bins: 72, Min: -1.5707963267948966, Max: 4.71238898038469
Bins: 72, Min: -1.5707963705062866, Max: 4.71238899230957

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

35
99
3
5

3
900
5
100

100
77
3
- cut.bins

3
4
4

46

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 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
---	--	---

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

Message of the day

[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

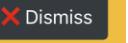
Look out for new deployments

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

Notifications



- 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) ! 

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

Info: The train run "399 / full" has been added into the "LHC18g4" dataset on "2022-09-27 09:33:59 CET" by "jgrossleo". [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 "jgrossleo". [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 that depend on it (e.g. use it as dependency)
 - Users who own wagons that 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](#)

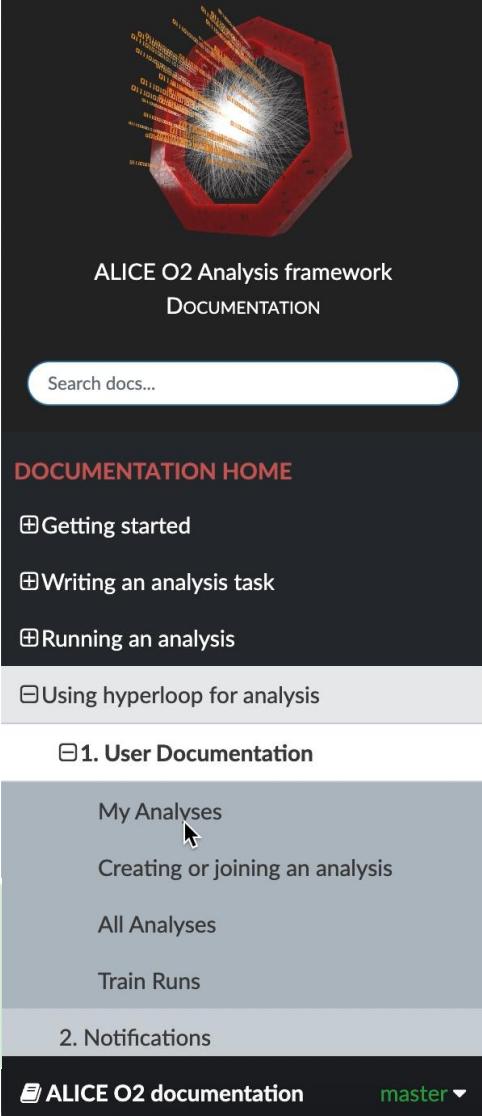
Documentation

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

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



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 and , 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:

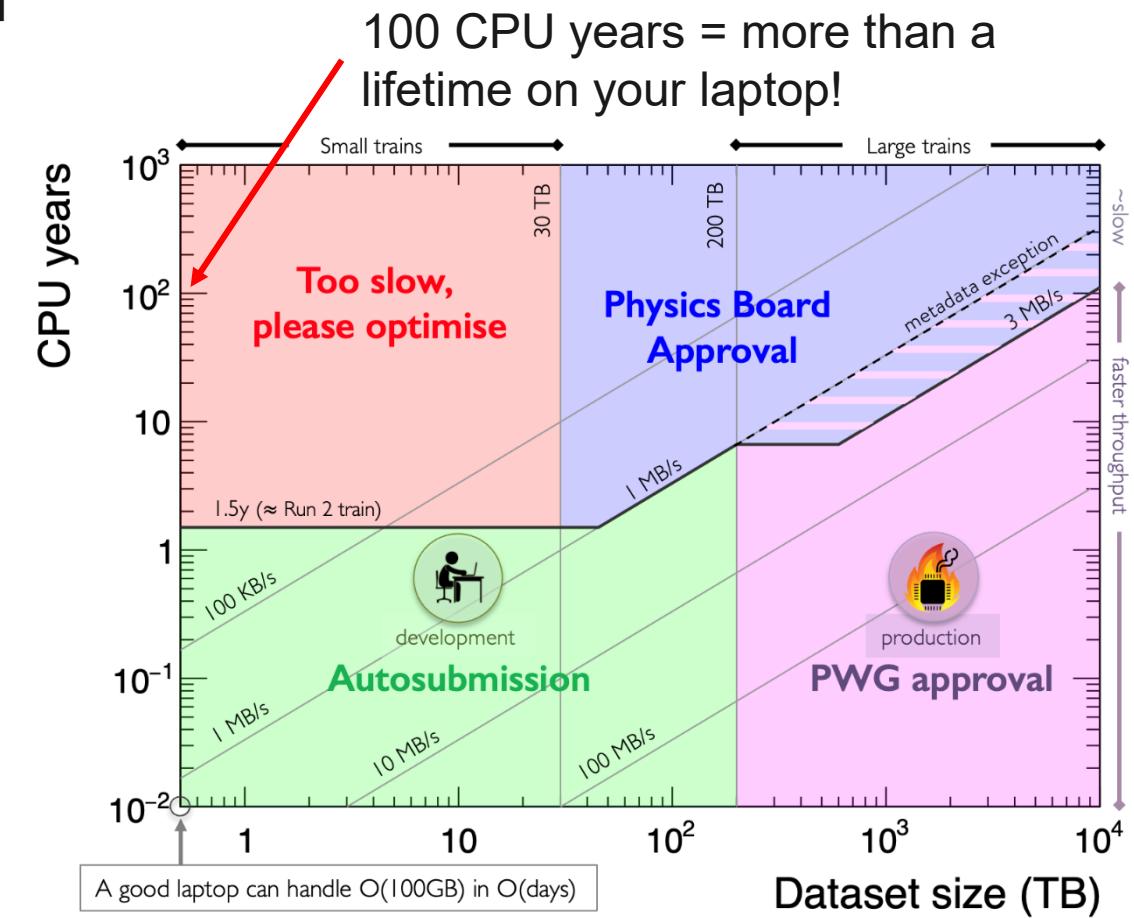
Using the *My Analyses* page, inside of the *Analysis* you want to add the wagon to, click on

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! 



MyAnalyses

AllAnalyses

Dashboard

Train Support

24/5 Operation

DPG runlists



Train Submission

Train Runs

Datasets

Derived Data

Trains with issues

Resources

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