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Overview of Release Validation

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Credit: Talk by Anup

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PPD: Physics Performance & Datasets

- Work with Phyisics to develop physics code
- Responsible for the validation of the physics performance of the code
- Sign-offs of the CMSSW production releases

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Goals: Validate the CMSSW

- CMSSW(CMS SoftWare) is a complex software that consist of many parts
- Every update will cause a lot of changes in many parts
- Ensure all the changes are expected before release

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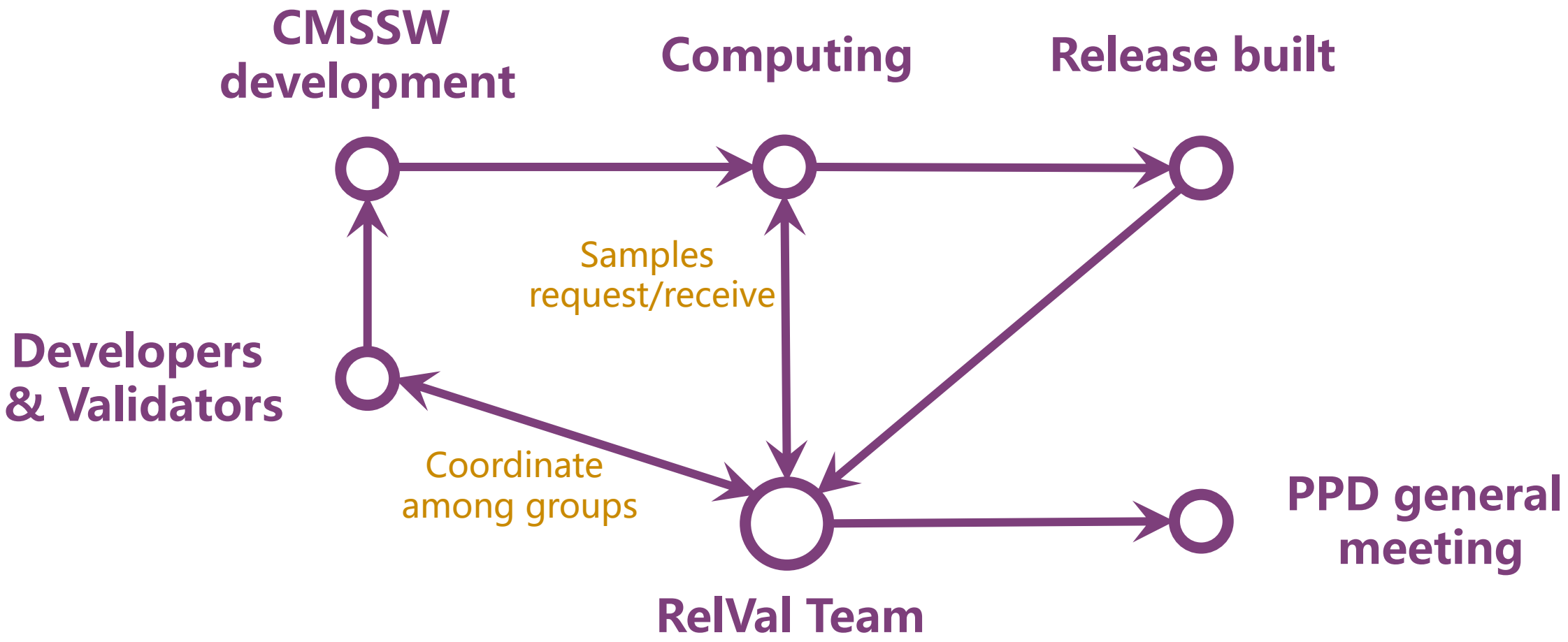
Efforts: Verify every changes

- Using samples(Data, FullSim and FastSim) to check whether update causes any change
- Verify every changes and give feed back if there is unexpected performance
- Sign off the release if everything is OK

Workflow


CMSSW development
Computing
Release built
Samples request/receive
Developers & Validators
Coordinate among groups
PPD general meeting
RelVal Team

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Main Validation Campaigns

- **CMSSW pre-release**
  - There will be many pre versions in the development of a main release
  - Every pre-release need to be validated
- **CMSSW main release**
  - No new features allowed except for customizations needed for production
  - Physics performance stays unchanged up to RECO level

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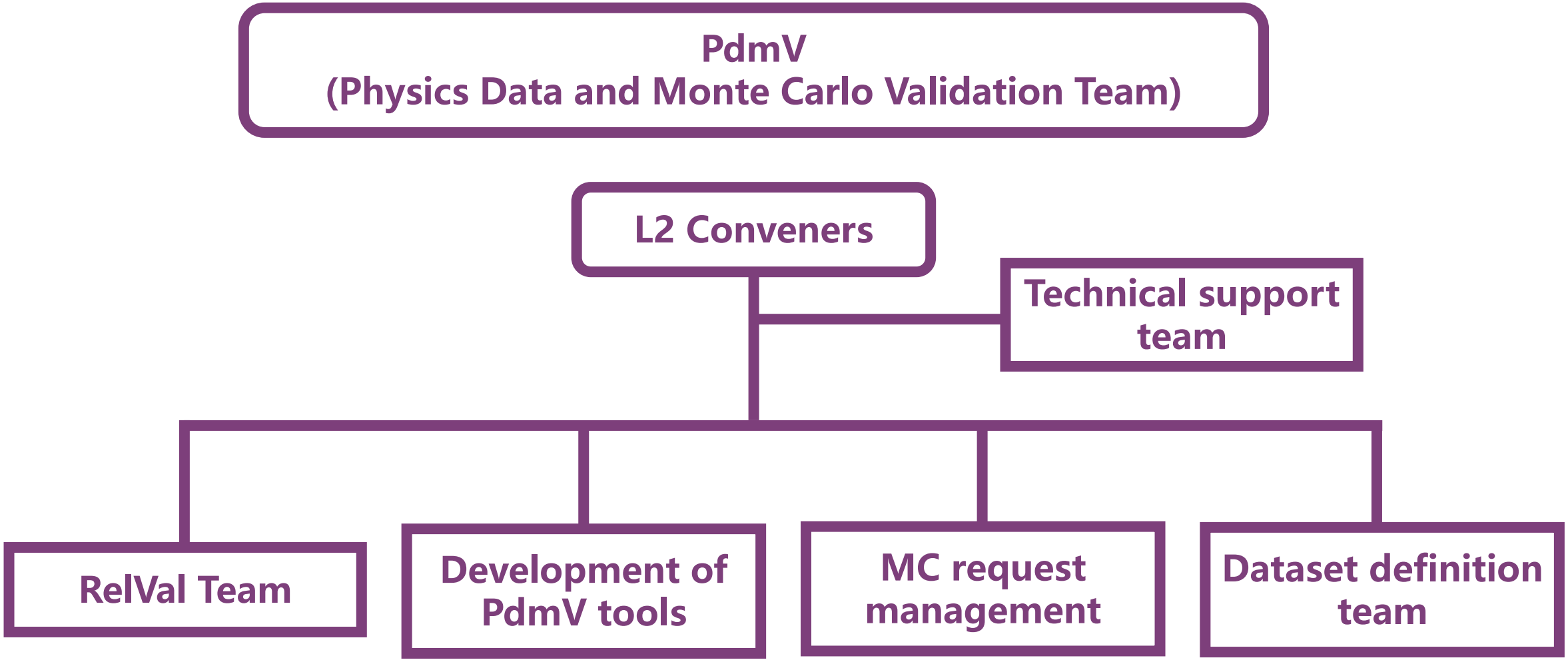
PdmV Organigram



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Validation Tools

RunTheMatrix framework

- Submit workflow by running a command "runTheMatrix"
- Approve the workflow through Reqmgr2 page

```
runTheMatrix.py --what upgrade -l
11640.0,11634.0,11646.0,11650.0,11692.0,11652.0,11643.0,11661.0,11687.0,11719.0,11607.0,11608.0,11609.0
-t 8 -b 'fullsim_noPU_2021_14TeV' -i all --noCaf --wm force
```

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Validation Tools

RunTheMatrix framework

- Submit workflow by running a command “runTheMatrix”
- Approve the workflow through Reqmgr2 page

	Request	Days Since Approval	Comp status	McM status	Unified status	Priority	#Primary	#ACDCs	#Clones	CPU-days	Requested	Produced	Completion
1	CMSSW_11_2_0_pre7__fullsim_noPU_2021_14TeV-1602002529-BuMixing_14	12.9	done	undefined	done	500,000	0	0	1	104.2	900,000	12,406	1.4%
2	CMSSW_11_2_0_pre7__fullsim_noPU_2021_14TeV-1602002529-H125GGgluonfusion_14	12.9	done	undefined	done	500,000	0	0	1	1	9,000	9,000	100.0%
3	CMSSW_11_2_0_pre7__fullsim_noPU_2021_14TeV-1602002529-MinBias_14TeV	12.9	done	undefined	done	500,000	0	0	1	10.4	90,000	90,000	100.0%
4	CMSSW_11_2_0_pre7__fullsim_noPU_2021_14TeV-1602002529-NuGun	12.9	done	undefined	done	500,000	0	0	1	1	9,000	9,000	100.0%
5	CMSSW_11_2_0_pre7__fullsim_noPU_2021_14TeV-1602002529-QCD_FlatPt_15_3000HS_14	12.9	done	undefined	done	500,000	0	0	1	5.8	50,000	50,000	100.0%
6	CMSSW_11_2_0_pre7__fullsim_noPU_2021_14TeV-1602002529-QCD_Pt_1800_2400_14	12.9	done	undefined	done	500,000	0	0	1	1	9,000	9,000	100.0%
7	CMSSW_11_2_0_pre7__fullsim_noPU_2021_14TeV-1602002529-SingleMuPt10	12.9	done	undefined	done	500,000	0	0	1	1	9,000	9,000	100.0%

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Validation Tools

RelVal DQM GUI

- DQM plots are produced in the RelVal samples production
- Check the DQM plots and perform sample-to-sample comparison

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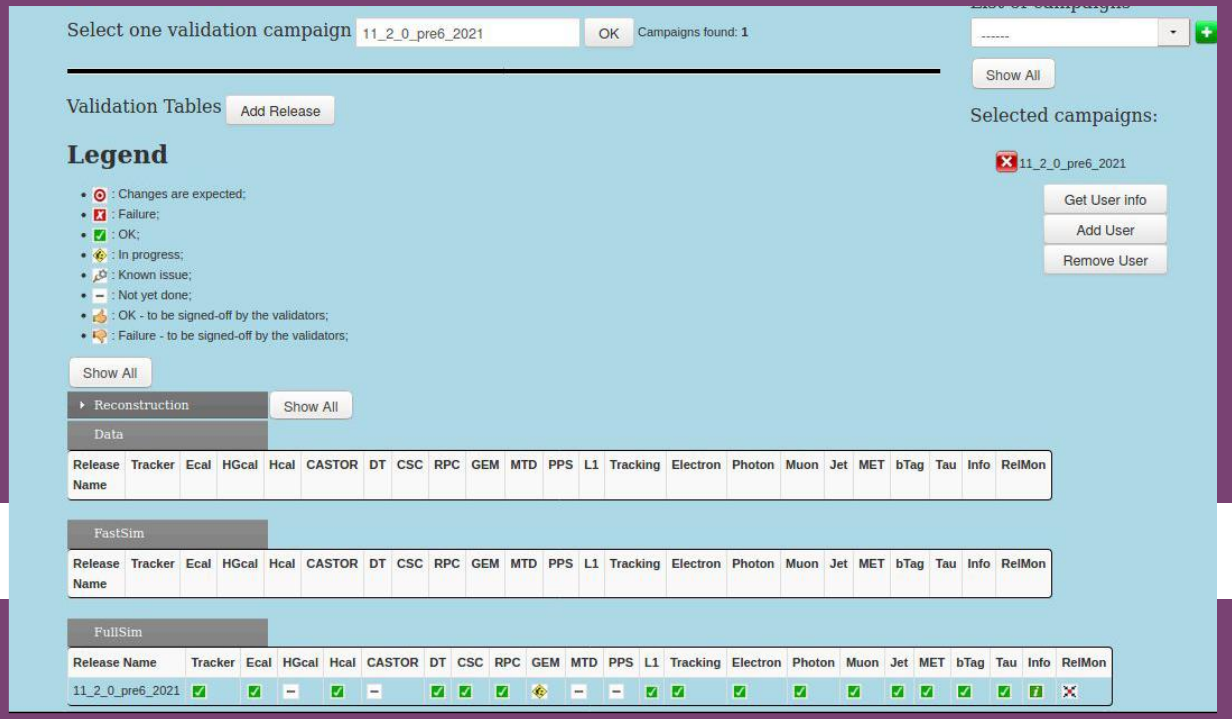
Validation Tools

ValDB

- A web site gathering reports from all validation campaigns



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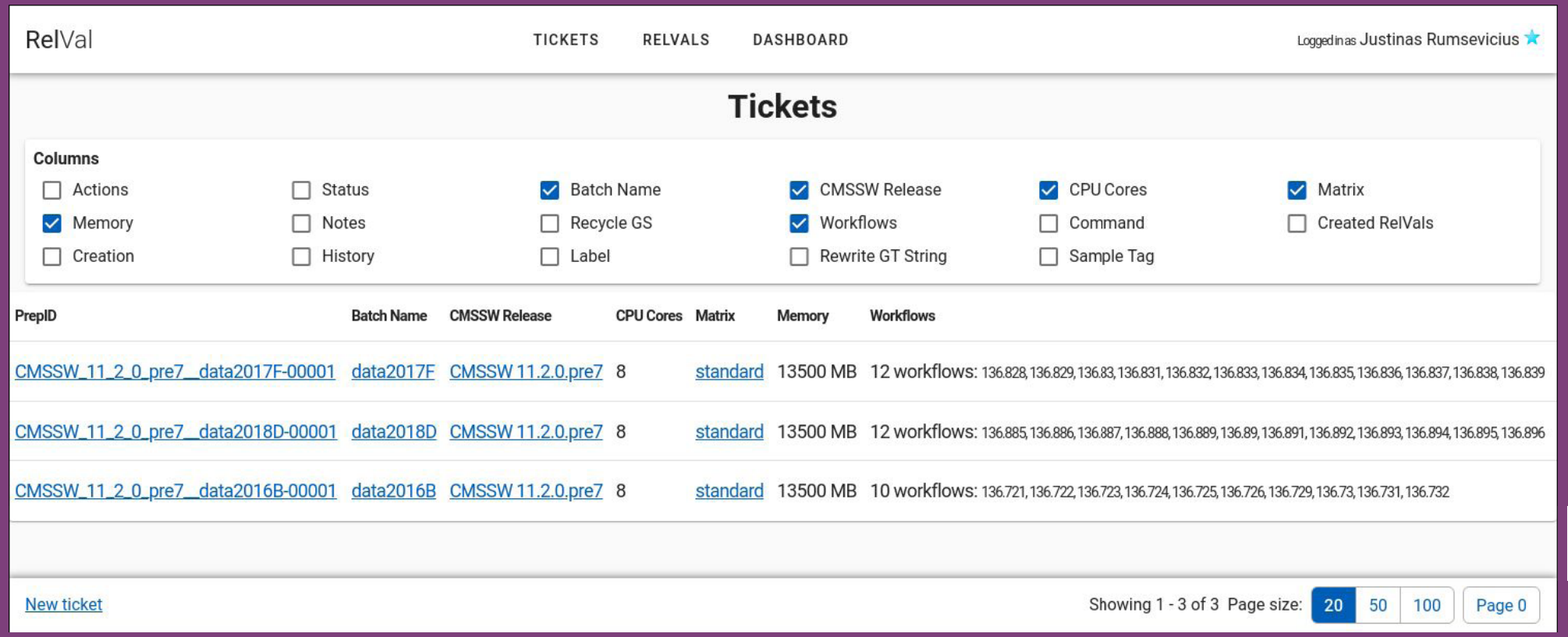
Validation Tools

RelVal Machine



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Validation Tools

Relmon Report Page

RelMonReports

- Link to the Online DQM GUI
- Link to the Offline DQM GUI
- Link to the RelVal DQM GUI
- Link to the Data RelVal files
- Link to the MC RelVal files

RelMon na

CMSSW_11_2_0_pre6_Phase2_vs

Created: 2020-09-22 12:23

Size: 166.72 MB

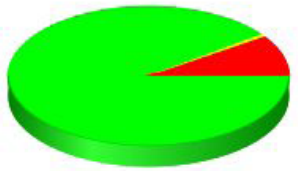
RelMon Global Report: FullSimReport main...

Summary

1130792 COMPARISONS:

- **SUCCESS: 89.9% (1016420)**
- **NULL: 0.6% (7109)**
- **FAIL: 9.5% (107263)**

To the DQM GUI...



Releases:

- CMSSW_11_2_0_pre5
- CMSSW_11_2_0_pre6

Statistical Test (Pvalue threshold):

- **CHI2 (1E-05)**

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Campaigns in 2020

- 11_1_X: for HLT TDR ReReco campaign (finished)
- 11_2_X: for migration to DD4HEP (ongoing)
- 10_6_X: Pythia bug fix for UL17 (finished)

- 11_3_X: for GPU-CPU validation (to be continued)
- 12_X_X: for RunIII physics exercise and preparation (to be continued)

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Summary & Outlook

- **Overview of release validation work**
- **Another fruitful year for release validation campaigns**
  - Phase2 HLT TDR
  - UL campaign with Pythia bug fix
  - Migration plan pf DD4HEP
  - Continuation of RunIII and Phase2 development
- **Ongoing work and next plan**

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THANKS