



# Belle II Data production

2024 Belle II Summer Workshop



**Renu**  
**on behalf of the Data Production group**  
**Supported by US DOE funding**  
**17<sup>th</sup> June, 2024 - 21<sup>st</sup> June, 2024**

# Belle II Data Production

- **Primary Goal:**

- Smooth, timely production of data and MC samples for physics analysis and other studies

- **Tasks:**

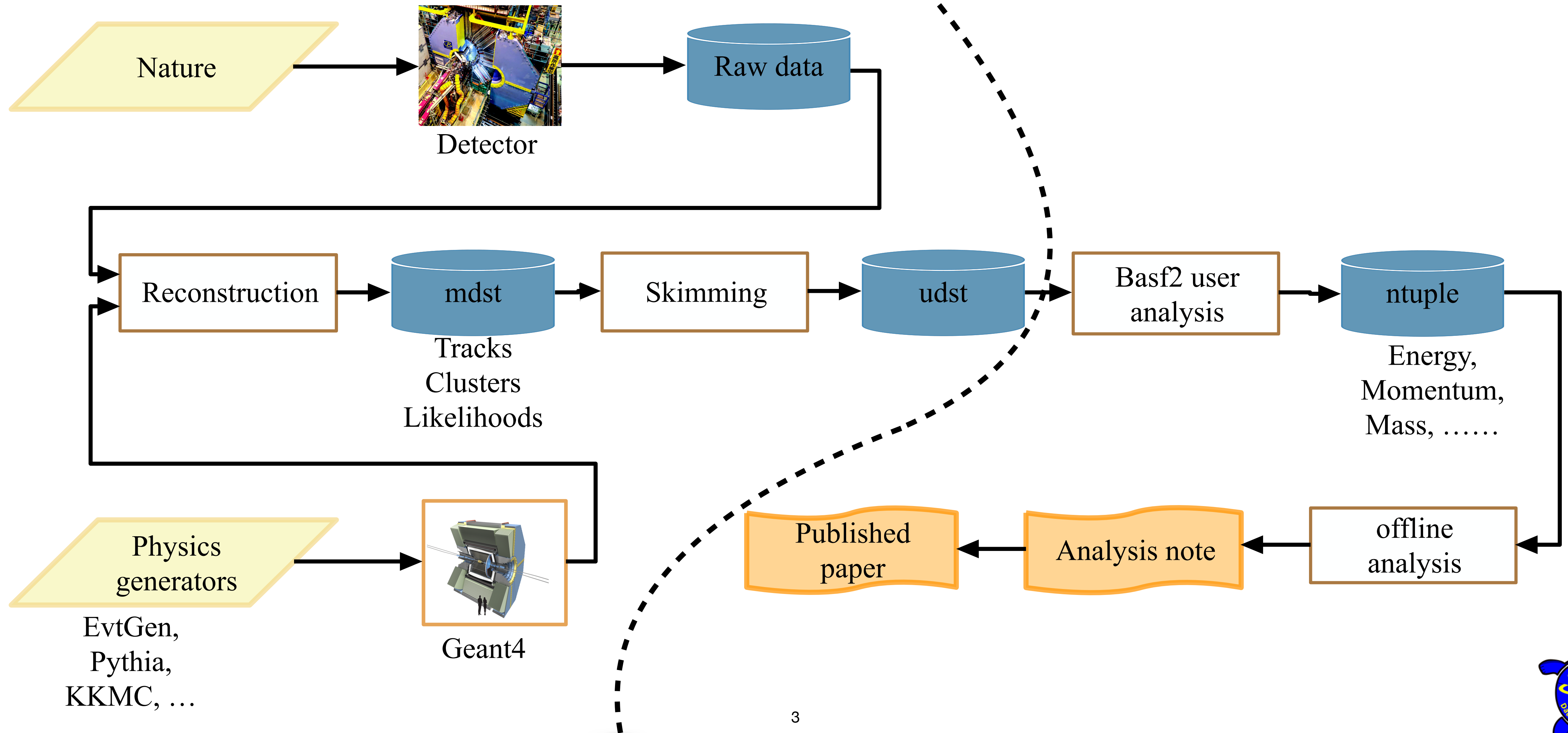
- Calibration and alignment (<https://confluence.desy.de/display/BI/Data+Production+Calibration>)
- RAW data (re)processing (<https://confluence.desy.de/display/BI/Phase+3+data>)
- MC production (<https://confluence.desy.de/display/BI/Data+Production+MC12>)
- Analysis skimming (<https://confluence.desy.de/display/BI/Skimming+Homepage>)



# The Big Picture

Managed by collaboration

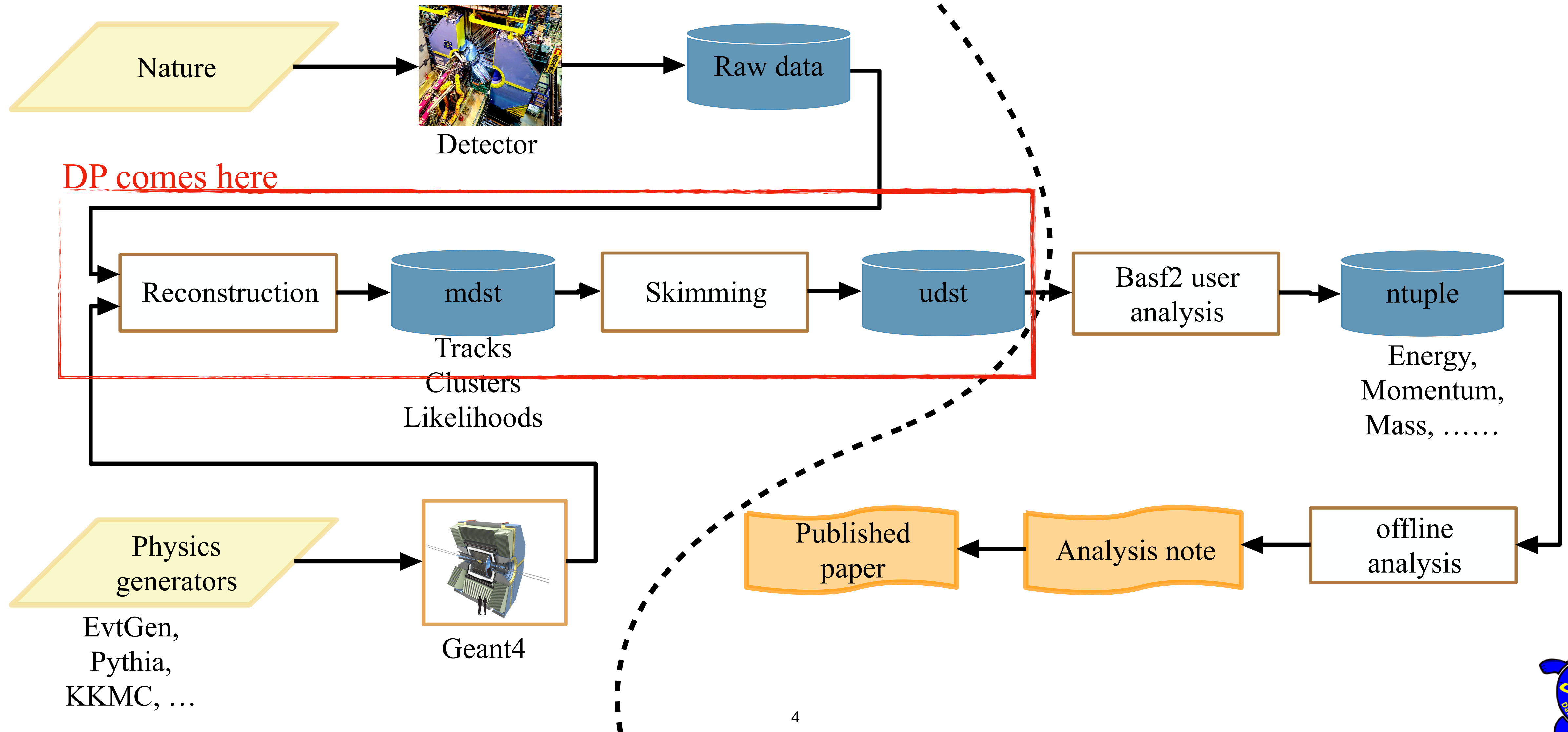
Managed by analyst



# The Big Picture

Managed by collaboration

Managed by analyst



# Data Confluence page

<https://confluence.desy.de/display/BI/Data+Production+WebHome>

**Confluence** Spaces ▾ People Create ... Search ?

Belle II Group Pages  
‣ Belle II Public  
‣ Belle II Internal  
 ‣ Archive WebHome  
 ‣ Computing Steering Group  
 ‣ Computing WebHome  
 ‣ **Data Production WebHome**  
  ‣ Data production status  
  ‣ Data main page  
  ‣ Offline Luminosity Page  
  ‣ MC main page  
  ‣ Skim main page  
  ‣ Data Production Calibration main page  
  ‣ Data Production Validation Page  
  ‣ Data Production Analysis Validation\_Draft  
  ‣ Data Production service Task list  
  ‣ HLT skim expert page - NEW DRAFT  
  ‣ Public Datasets Task Force  
  ‣ Data production WebHome - OLD  
  ‣ Collection summary  
  ‣ Review of /dataprod disk at KEKCC  
  ‣ Special processing

## Data Production WebHome

Umberto Tamponi posted on 11. Mar. 2021 13:08h - last edited by Giulio Dujany on 24. Apr. 2024 15:28h

Welcome to the **Data production** confluence page.

Here you will find all the **official information** about the available Data and MC samples.

[Data production status](#)

[MC main page](#)      [Data main page](#)      [Skim main page](#)

[Luminosity main page](#)      [Validation page](#)      [Calibration page](#)

[DP repository](#)      [Special Processing page](#)      [Operation](#)

Space tools ‹‹



# Data Confluence page

<https://confluence.desy.de/display/BI/Data+Production+WebHome>

Confluence Spaces People Create ... Search ?

- Review of /dataprod disk at KEKCC
- Special processing
- Data Production Operation WebPage
- Prompt Calibration bucket planning
- > Detector WebHome
- Going to KEK
- Guidelines on Belle II Talks and Posters
- Life WebHome
- > Main WebHome
- > Operations WebHome
- > Organization WebHome
- > Physics Performance Webhome
- > Physics WebHome
- > Publications WebHome
- > Social WebHome
- Software
- Sustainability
- > B2TiP
- > Meeting notes
- > How-to articles
- Group meeting slides

## Who's who and contacts

**Coordinators:** @Stefano Lacaprara @Giulio Dujany (deputy) -  
**Former:** @Umberto Tamponi @Jake Bennett

Skim manager: @Bianca Scavino @Valerio Bertacchi  
@Shanette Anne De Lamotte (former @Trevor Shillington ,  
@Racha Cheaib (deputy) )

Calibration manager: @Renu Garg , @Umberto Tamponi (deputy) -  
former @Laura Zani , @Markus Prim @Michael De Nuccio  
(deputy)

Validation manager: @Patrick Ecker , (former)  
@Unknown User (eoxford)

Data processing manager: @Pere Gironella @Watanuki Shun  
(deputy),

MC processing manager:, @Giovanni Gaudino @Gaurav Sharma  
(deputy) - Former: @Ansu Johnson (deputy) @Alberto Martini

Operation manager: @Giulio Dujany

DP leadership responsibilities are listed here. (To be updated)

## Meetings and Mailing list

**Mailing list:** [dataprod@belle2.org](mailto:dataprod@belle2.org)

**Meetings:** [meetings page.](#)

## Data production liaisons

(responsibilities of the data production liaisons can be found [here](#))

Group	Liaison
Semileptonic and Missing Energy Decays	@Tommy Martinov @Cameron Cooper Harris
Radiative & Electroweak Penguin	@Igor Prudiev
Time Dependent CP Violation	@Noah Brenny
Hadronic B decays	@Xiaodong Shi
Quarkonium	@Yang Li
Charm	@Jaeyoung Kim
Tau	@Naveen Baghel @Kenji Inami
Dark-sector and low multiplicity	@Gaurav Sharma
Performance	@Lekai Yao
Upgrade	@Benjamin Schwenker

Space tools <<



# Data format

In general, Belle II output is stored in **ROOT** files containing various subsets of dataobjects, dobjects, nTuples, etc

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**RAW:** un-processed, un-calibrated output of the detector

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**hRAW:** same as RAW, but only for events passing a given HLT filter or skim

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## calibration Data Summary Table

**cDST:**

- cDST contain RAW data and additional data-objects useful for calibration

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## mini Data Summary Table

**mDST:**

- Controlled version of a DST.
- only a subset of available processed data-objects are included
- **Flagged skim approach!**
- **Use for most analysis (see below)**

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## user Data Summary Table

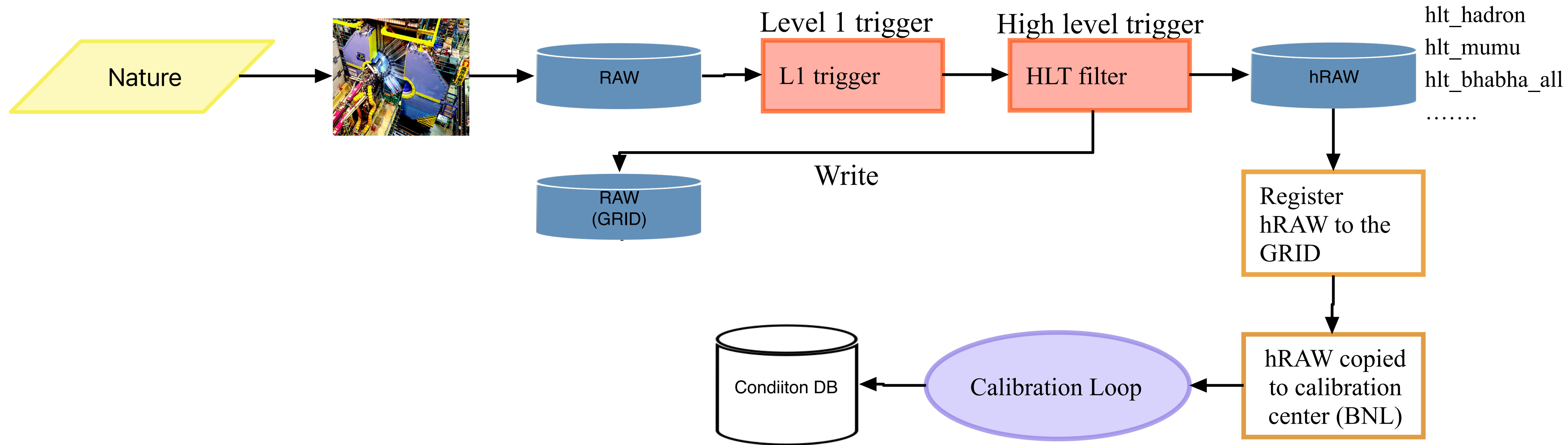
**uDST:**

- mDST objects plus analysis objects (e.g. particleLists)
- produced from skims - reduce time needed to run analysis jobs
- **Samples created only for FEI based analysis!!**

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# Data Flow

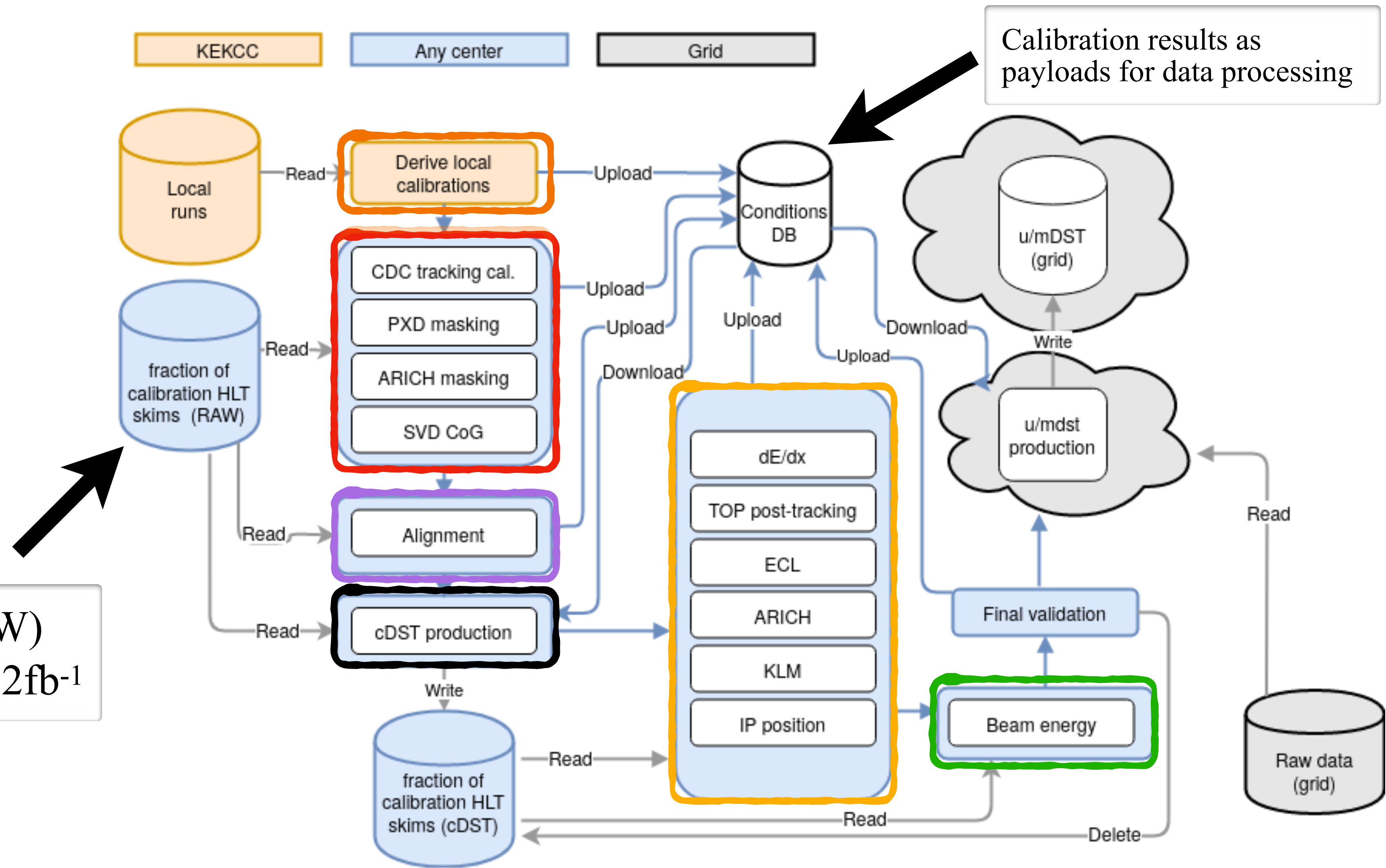




# Calibration Loop

- **Local calibration**
- **Raw data based calibration**
- **Alignment**
- **cDST production**
- **Post-tracking calibrations**
- **Analysis based calibrations**

Calibration skims (hRAW)  
Adaptive prescaling to  $12\text{fb}^{-1}$



The calibration loop is fully automated



# Calibration Confluence page

<https://confluence.desy.de/display/BI/Data+Production+Calibration+main+page>

The screenshot shows a Confluence page with a blue header. The left sidebar contains a navigation menu for the 'Data Production webHome' space, with 'Data Production Calibration main page' highlighted in a red box. The main content area features a breadcrumb trail, a title, a post date, and a bulleted list of links. At the bottom, there is a section for 'Important info' listing the manager and deputy, and a 'Hot topics' section with one item.

**Confluence** Spaces ▾ People Create ... Search ? 🔔 👤

Data Production webHome

- › Data production status
- › Data main page
- › Offline Luminosity Page
- › MC main page
- › Skim main page
- ▼ **Data Production Calibration main page**
  - Proc16 logbook
  - Prompt calibration bucket planning (pre
  - Prompt calibration for Run2 Logbook
- Data Production Validation Page
- › Data Production Analysis Validation\_Draft
- Data Production service Task list
- HLT skim expert page - NEW DRAFT
- Public Datasets Task Force
- › Data production WebHome - OLD
- › Collection summary
- Review of /dataprod disk at KEKCC
- Special processing
- Data Production Operation WebPage
- Prompt Calibration bucket planning

› Detector WebHome

⚙ Space tools ‹

Pages / ... / Data Production WebHome 🔒 🗒

Edit Save for later Watching Share ...

## Data Production Calibration main page

Umberto Tamponi posted on 11. Mar. 2021 15:24h - last edited by Renu Garg on 11. Apr. 2024 17:51h

- Important info
  - Calibration who's who
  - B2Notes, documentation, papers
  - Meetings, mailing lists, minutes, useful links
- General overview
  - The Belle II calibration strategy
  - Prompt calibration and reprocessing calibration
  - CAF and Airflow
- FOR EXPERTS ONLY
- Data size
- Implementation of the calibration loop
- Automatic calibration service
- Validation and sign-off
- Calibration FAQ
- Prompt calibration planning available here
  - proc 13 re-calibration planning available here
  - Older news: proc 11 instructions available here
  - proc 12 instructions available here

### Important info

Calibration who's who

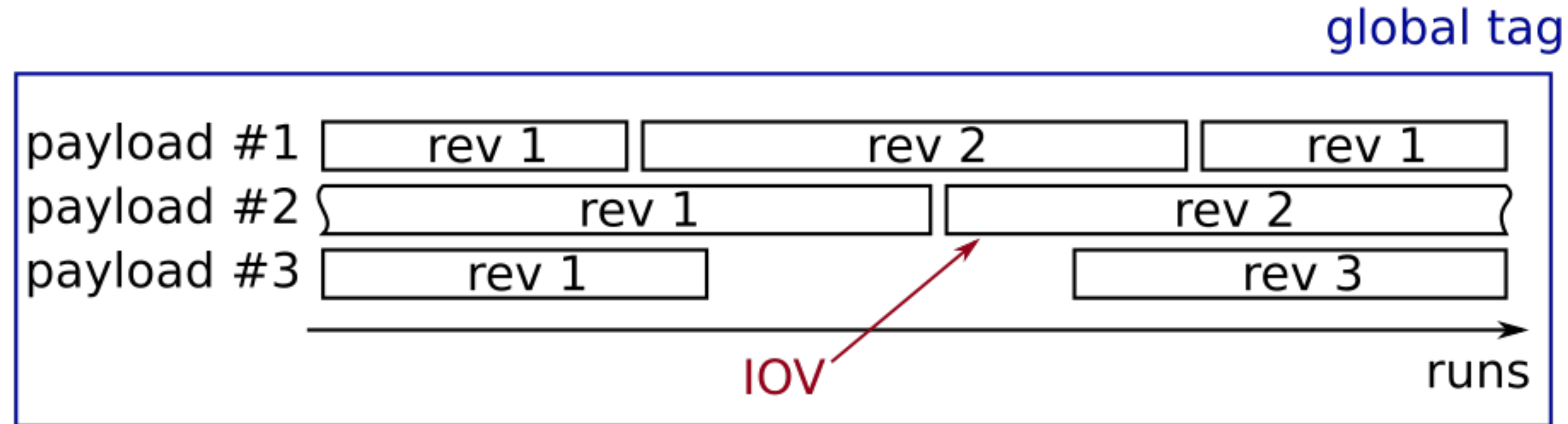
Manager: @Renu Garg  
Deputy: @Umberto Tamponi

### Hot topics - What we have to work on :

1. Automate the calibration validation (CQM)



# Global Tag



IoV

## Interval of Validity

An experiment and run interval for which a payload is valid.

Payload

An atom of condition data (e.g CDCDedxWireGain)

Identified by name and revision number

ROOT format

Global tag

Collection of payloads and their IoVs

Has a unique name and a description

## IoVs

- consists of four values:

`first_exp`, `first_run`, `final_exp`, `final_run`

## Special case:

- `final_exp >= 0 && final_run < 0`:

valid for all runs in `final_exp`

- `final_exp < 0 && final_run < 0`:

valid forever

Correct global tags are automatically selected during processing



Condition database: <https://cdbweb.sdcc.bnl.gov>

Questions? Write to [T1 CDB team](#)

Home **GlobalTag** Payload Types of Payload Global Tag Comparison

**GlobalTag: 3194 items found**    Click on items for more details

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ID:    
 Name (can be partial):    
 Status:    
 Type:    
 Modified by:    
 items per page:    

Name ▲	ID ▲	Default? ▲	Description ▲	Status ▲	Type ▲	Modified ▲	Mod. by ▲	Total Payloads ▲	Dist
<a href="#">mcrd_prompt_rel08</a>	3308	⊖	Globaltag that contains the simulation payloads for MC16rd to supersede the ones in data_prompt_rel08 and online	TESTING	DEV	05/03/2024 10:12 a.m.	<a href="#">gdujany</a>	0	0
<a href="#">mcrd_proc16</a>	3307	⊖	Globaltag that contains the simulation payloads for MC16rd to supersede the ones in data_proc16 and online	TESTING	DEV	05/03/2024 8:28 a.m.	<a href="#">gdujany</a>	1622	43
<a href="#">user_gaudino_mcrd_proc16</a>	3306	⊖	staging MCrd GT for proc16 production	TESTING	DEV	05/03/2024 8:02 a.m.	<a href="#">gaudino</a>	1622	43
<a href="#">temp_gdujany_beam_parameters_proc16_chunk1</a>	3305	⊖	Beam parameters for proc16 chunk1	OPEN	DEV	04/29/2024 1:55 p.m.	<a href="#">gdujany</a>	1566	1
<a href="#">neutrals_2024</a>	3304	⊖	GT with photon energy bias correction variation and photon efficiency corrections obtained with preLS1-data and MC15rd	TESTING	DEV	04/26/2024 10:14 a.m.	<a href="#">eganiev</a>	21	3
<a href="#">user_cwessel_ROISimulationParameters_update</a>	3303	⊖	Special ROISimulationParameters for exp12 runs 1188 and 1189, c.f. gitlab issue 10473.	OPEN	DEV	04/25/2024 7:55 a.m.	<a href="#">cwessel</a>	1	1
<a href="#">AIRFLOW_operation_staging_proc16_chunk2</a>	3302	⊖	staging Gt for chunk2	OPEN	DEV	04/24/2024 2:37 p.m.	<a href="#">tamponi</a>	0	0
<a href="#">user_takaham_pxd_exp1004_5deadL2modules</a>	3301	⊖	user GT for PXD with PXDDeadPixelPar including 5 L2 modules which have been OFF since the beginning of Run2 physics run	TESTING	DEV	04/21/2024 12:27 p.m.	<a href="#">takaham</a>	1	1
<a href="#">user_lacaprar_test3_software_trigger_cut</a>	3300	⊖	A test GT to upload only software_trigger_cut from online	OPEN	DEV	04/19/2024 3:24 p.m.	<a href="#">lacaprar</a>	108	108
<a href="#">user_lacaprar_test2_software_trigger_cut</a>	3299	⊖	A test GT to upload only software_trigger_cut from online	OPEN	DEV	04/19/2024 3:23 p.m.	<a href="#">lacaprar</a>	14	14
<a href="#">user_lacaprar_test_software_trigger_cut</a>	3298	⊖	A test GT to upload only software_trigger_cut from online	TESTING	DEV	04/19/2024 3:11 p.m.	<a href="#">lacaprar</a>	108	108
		⊖	Globaltag for storing payloads						



# (Re)Processing scheme

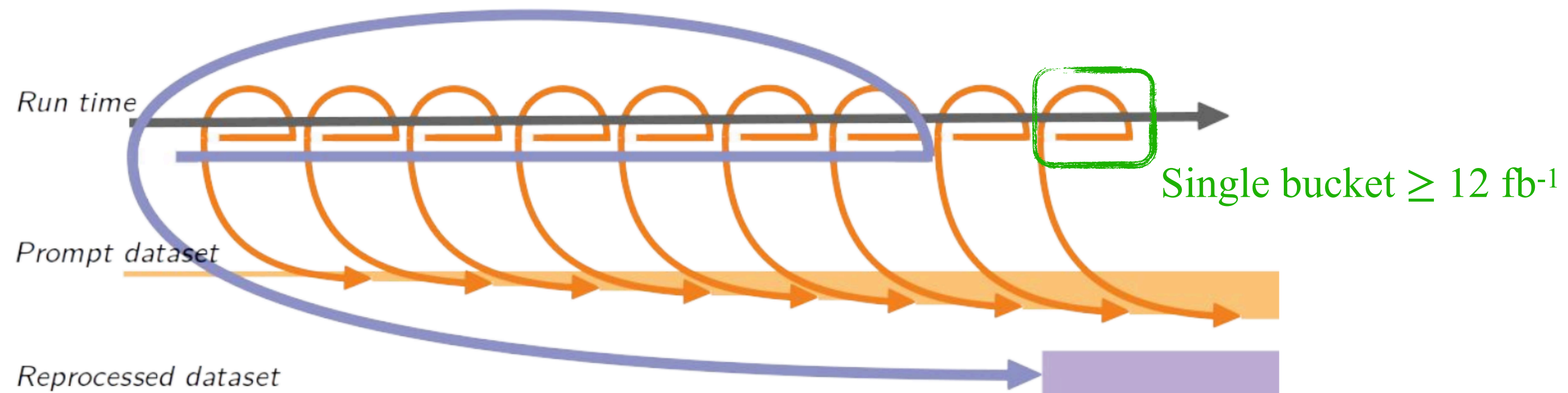
For any given data, calibration and processing happens twice:

## Prompt processing:

- Calibration @ BNL
- Minimum luminosity:  $12 \text{ fb}^{-1}$
- Uses hRAW as input
- All calibrations included
- Terminology: **bucketXX**
- ~one bucket every 2 weeks of data taking
- Ideally already final calibration

## Official reprocessing:

- Recalibration @ KEKCC
- To update older data with the latest reconstruction software
- Uses cDST as input
- Only calibration with expected improvement
- Terminology: **procXX**
- ~once/year until 2025, every other year starting from 2025



# (Re)Processing scheme

For any given data, calibration and processing happens twice:

## Prompt processing:

- Calibration @ BNL
- Minimum luminosity:  $12 \text{ fb}^{-1}$
- Uses hR
- All calib
- Termino
- ~one bu
- Ideally a

## Current data campaign:

### Prompt processing:

- Bucket37-39: experiment 30, 31, 32
- Integrated luminosity:  $54.3 \text{ fb}^{-1}$
- Will add more buckets

### Official processing:

- Proc16: experiments 7-8, 10, 12, 14, 16-18, 20-22, 24-26

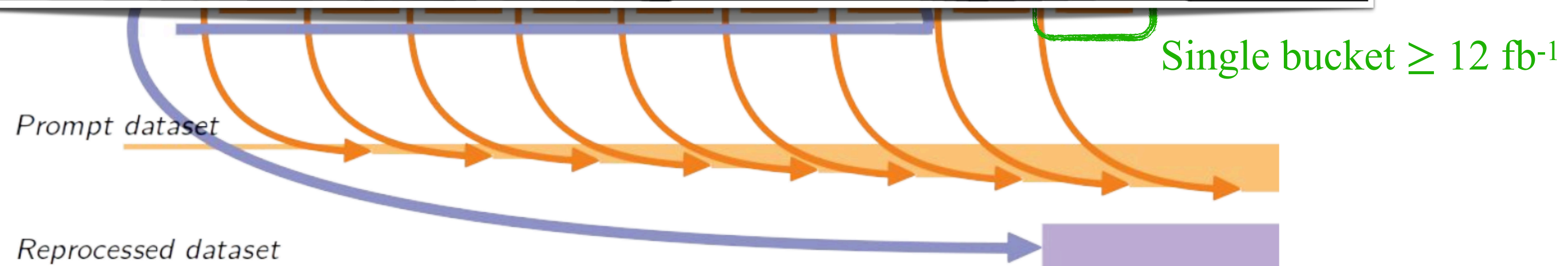
## Official reprocessing:

- Recalibration @ KEKCC

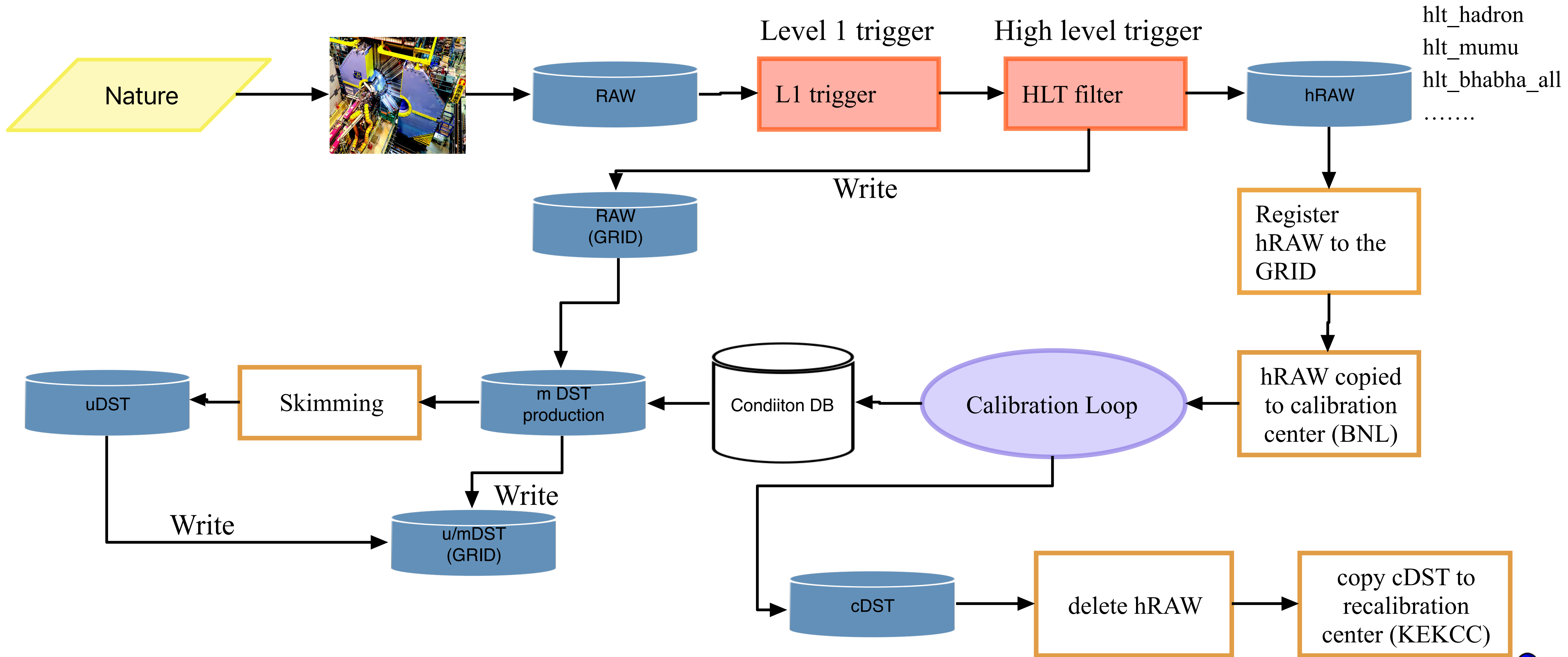
To update older data with the latest

improvement

per year starting



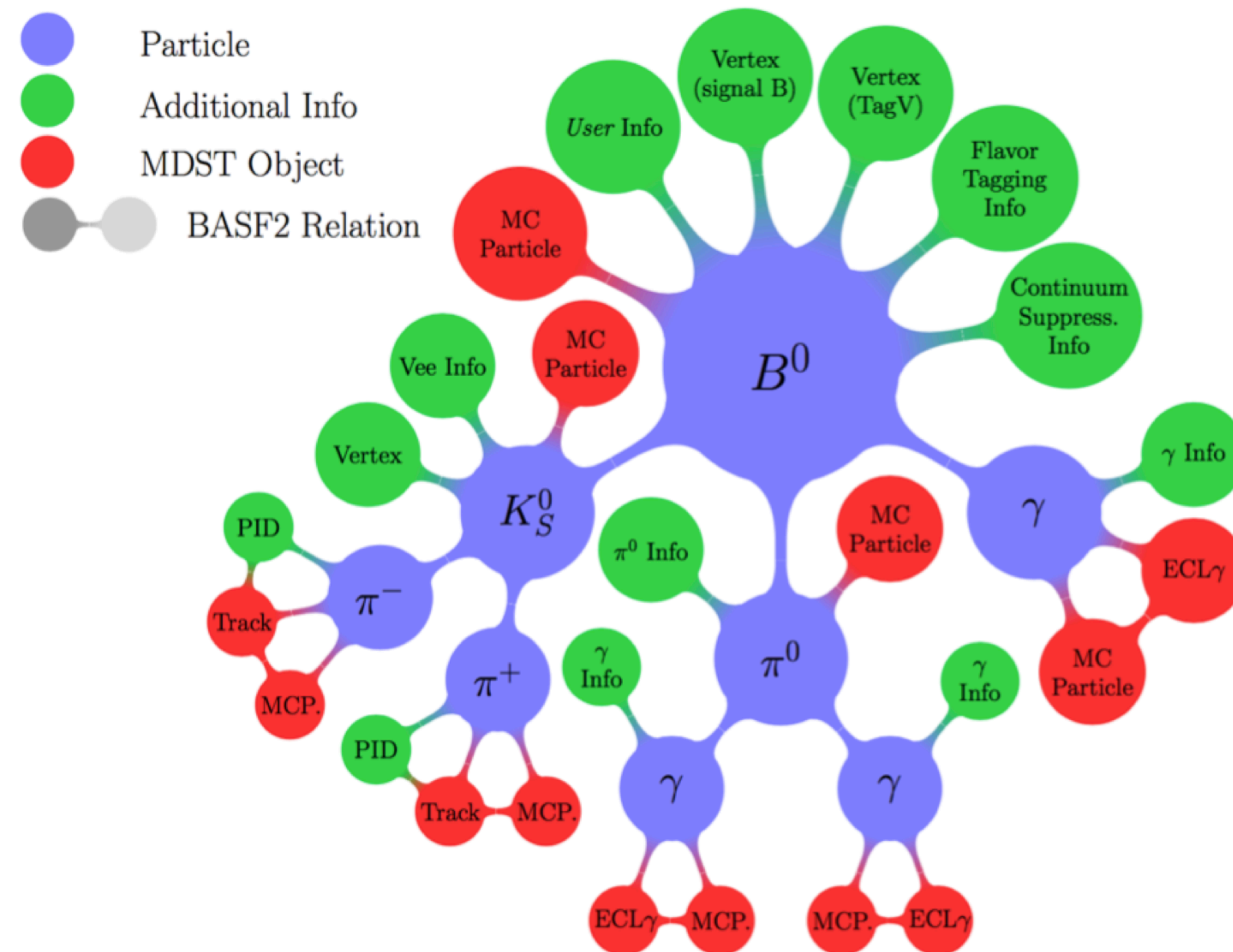
# Data Flow



# Analysis Skim

**Skims are meant to provide analysis-oriented MC and data in reduced sizes**

- Produced as uDST = **mDST information** + **analysis-level information**
  - **Particle objects**: which links particle hypotheses with tracks, neutral clusters, and particle identification information
  - **Vertex fit results**
  - Information from **full B and D reconstruction, Continuum suppression and other complex algorithms**
- **That means more information in smaller files!**
  - This allows for preprocessing that reduces the CPU requirements for the analysis
  - Your grid jobs on skimmed samples will finish much more quickly!



**Use uDST for FEI based analysis!!**





# Flagged skim approach

Starting with proc16 and MC16 campaign a **Flagged skim approach** will be used

For more details:

[slides](#), [slides-1](#)

- **Merged** different skims into groups
- Add a **flag** to each event according to the skim, to identify the skim within the group
- Produce **mDST** output

- **Why?**

- Reduce the amount of work
- Exploit the large overlap between the skims
- Make submissions faster and lighter

- **How to use?**

- Need to add the flag selection when you make the ntuples

```
ma.inputMdstList(filelist=infile, path=path)
ma.applyEventCuts(
    'eventExtraInfo(passes_mySkim)==1',
    path=path)
```

Use mDST for your analysis, if not FEI based!!

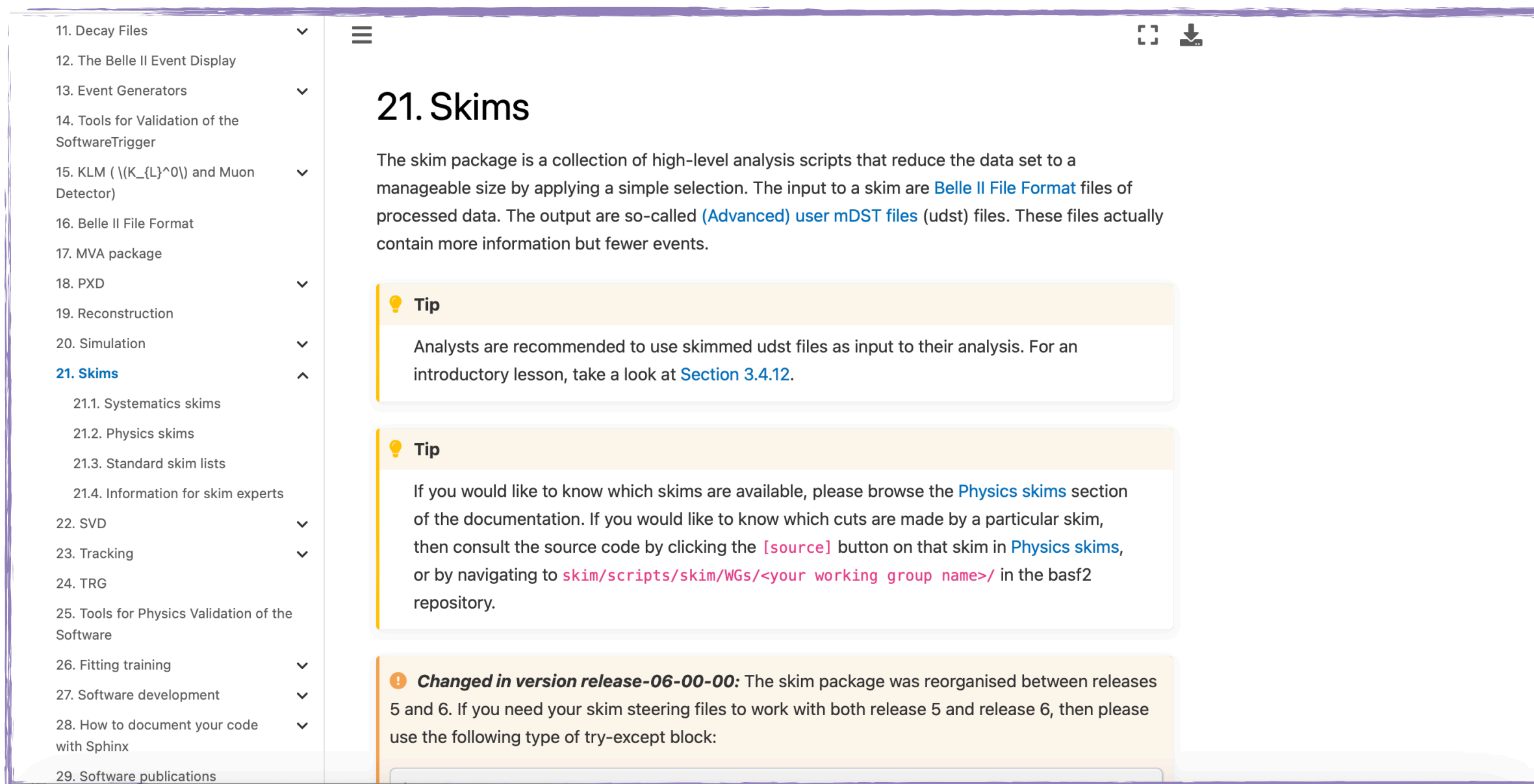


# Understanding of Skimming

## Two primary sources for information:

### Sphinx Documentation

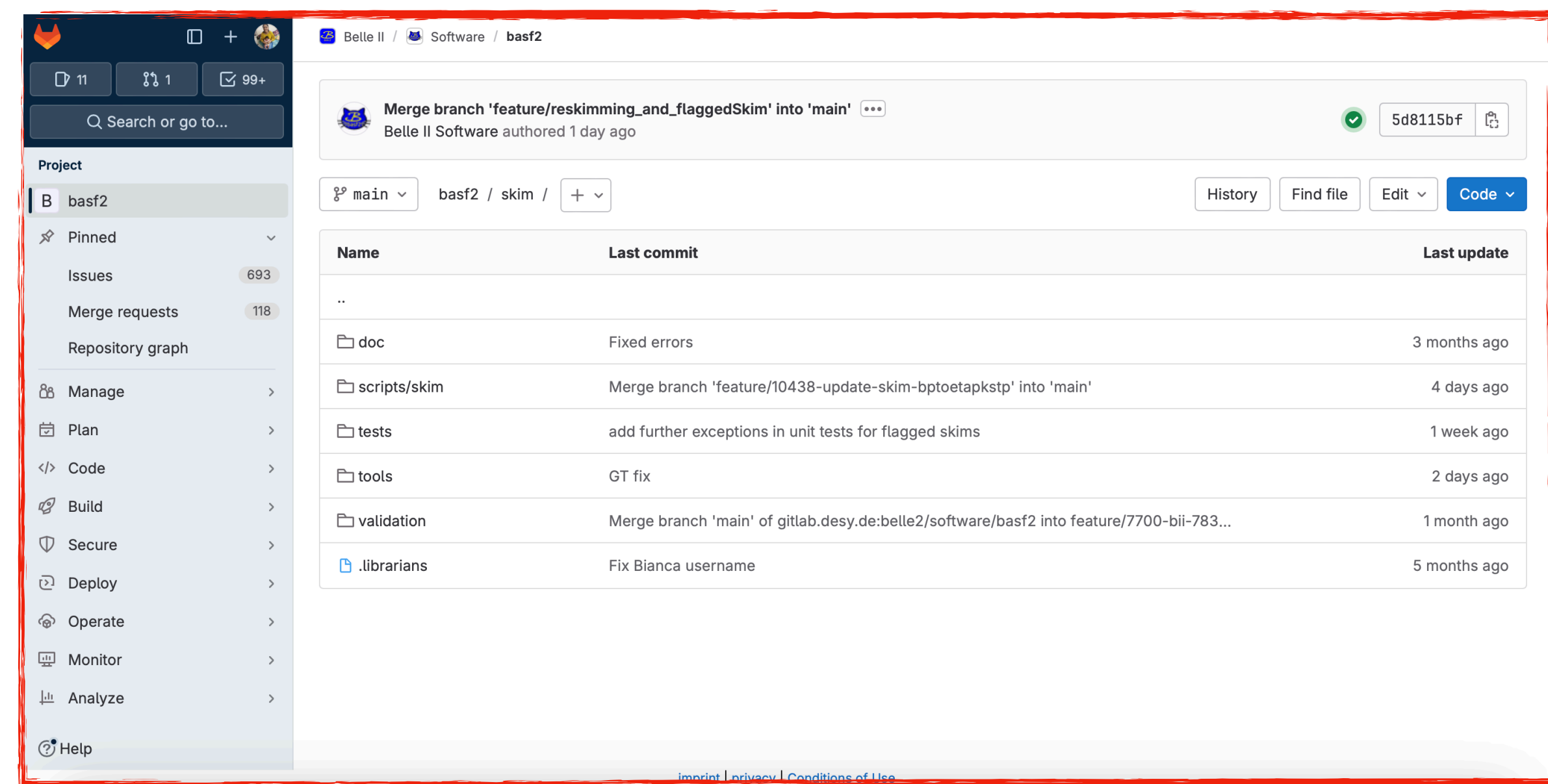
- Good for general information and tutorials



The screenshot shows the Sphinx documentation for '21. Skims'. The left sidebar contains a table of contents with items 11 through 29. The main content area is titled '21. Skims' and contains the following text: 'The skim package is a collection of high-level analysis scripts that reduce the data set to a manageable size by applying a simple selection. The input to a skim are Belle II File Format files of processed data. The output are so-called (Advanced) user mDST files (udst) files. These files actually contain more information but fewer events.' Below this text are two 'Tip' boxes. The first tip states: 'Analysts are recommended to use skimmed udst files as input to their analysis. For an introductory lesson, take a look at Section 3.4.12.' The second tip states: 'If you would like to know which skims are available, please browse the Physics skims section of the documentation. If you would like to know which cuts are made by a particular skim, then consult the source code by clicking the [source] button on that skim in Physics skims, or by navigating to skim/scripts/skim/WGs/<your working group name>/ in the basf2 repository.' At the bottom, there is a 'Changed in version release-06-00-00' notice: 'The skim package was reorganised between releases 5 and 6. If you need your skim steering files to work with both release 5 and release 6, then please use the following type of try-except block:'

### Source code on gitlab

- Full information and always up to date



The screenshot shows the GitLab source code interface for the 'basf2' project. The top navigation bar includes a search bar and a merge button. The main content area displays a table of files and their commit history. The table has columns for 'Name', 'Last commit', and 'Last update'. The files listed are: 'doc' (Fixed errors, 3 months ago), 'scripts/skim' (Merge branch 'feature/10438-update-skim-bptoetapkstp' into 'main', 4 days ago), 'tests' (add further exceptions in unit tests for flagged skims, 1 week ago), 'tools' (GT fix, 2 days ago), 'validation' (Merge branch 'main' of gitlab.desy.de:belle2/software/basf2 into feature/7700-bii-783..., 1 month ago), and '.librarians' (Fix Bianca username, 5 months ago).

Name	Last commit	Last update
..		
doc	Fixed errors	3 months ago
scripts/skim	Merge branch 'feature/10438-update-skim-bptoetapkstp' into 'main'	4 days ago
tests	add further exceptions in unit tests for flagged skims	1 week ago
tools	GT fix	2 days ago
validation	Merge branch 'main' of gitlab.desy.de:belle2/software/basf2 into feature/7700-bii-783...	1 month ago
.librarians	Fix Bianca username	5 months ago

It is important for analysts to understand the skim they are using to make sure that it is aligned with their analysis goals.



# Finding your Skim

3 ways to find your skims:

- **Dataset searcher on DIRAC (web version)**

- <https://dirac.cc.kek.jp:8443/DIRAC/>

- **Dataset searcher via command line (gbasf2 environment)**

- `source /cvmfs/belle.kek.jp/grid/gbasf2/pro/bashrc`

- [gbasf2.belle2.org](http://gbasf2.belle2.org)

- **Collections**

- Recommended!

- <https://gbasf2.belle2.org/collectionSearcher.html>

- <https://confluence.desy.de/display/BI/Skim+Information+for+Analysts#SkimInformationforAnalysts-SkimCollections:>



# Skim Confluence page

<https://confluence.desy.de/display/BI/Skim+main+page>

The screenshot shows a Confluence page with a blue header bar containing the 'Confluence' logo, navigation links for 'Spaces', 'People', and 'Create', a search bar, and user profile icons. The left sidebar lists a hierarchy of pages, with 'Skim main page' highlighted in a red box. The main content area features a title 'Skim main page', a post history line, a table of contents, and three columns of text: 'Welcome to the Skimming Confluence Page!', 'Mailing list', and 'Skimming Personnel'. The 'Welcome' section explains the purpose of skimming data at Belle II. The 'Mailing list' section provides two email addresses for subscription. The 'Skimming Personnel' section is partially visible at the bottom.

**Skim main page**

Umberto Tamponi posted on 11. Mar. 2021 15:27h - last edited by Shanette Anne De Lamotte on 11. Jan. 2024 05:06h

- Welcome to the Skimming Confluence Page!
  - First things first. What are skims?
  - Types of skims and data types
  - More information
- Navigation of Skim Confluence Pages
  - Skim Information for Analysts
  - Skim Production Status
  - Skim Expert Page
  - Skim Meetings
- Mailing list
- Skimming Personnel
- Liaisons

### Welcome to the Skimming Confluence Page!

#### First things first. What are skims?

At Belle II, we collect a lot of data. As an analyst, when you run over this data, it is not feasible to use the entire dataset as input. It would simply take too long and use too many resources. For this reason, we must reduce the size of the dataset by applying a set of high-level cuts, keeping only events that are relevant to your analysis. You can then run your analysis on this "skimmed" dataset, significantly improving run times and resource consumption. This keeps you happy, and our friends at Distributed Computing happy. Win-win.

#### Types of skims and data types

**General skims:** all and hadron. These are high level skims, where "all"

### Mailing list

Join this mailing list by clicking the link and hitting subscribe. It is intended for skim experts, not analysts. All skim information relevant to analysts will be propagated by liaisons to their own WG mailing lists and at WG meetings, or to the physics mailing list if it is a large announcement.

[dataprod-skim@belle2.org](mailto:dataprod-skim@belle2.org)

You can also join the Data Production mailing list below for more general DP communications.

[dataprod@belle2.org](mailto:dataprod@belle2.org)

### Skimming Personnel



# MC production

Two types of MC production:

- **Signal MC:**

- Specific to your own analysis
- **Dec files:** specify your own dec file according to the dec file naming rules
- Contact the **Data production liaison** in your working group to get started!

- **Generic MC:**

- Produced automatically at every MC production campaigns
- They are just the typical processes which we expect to see at Belle II, such as:

$$e^+e^- \rightarrow \Upsilon(4S) \rightarrow B^+B^- \text{ (charged)}, B^0B^0 \text{ (mixed)}$$

$$e^+e^- \rightarrow u\bar{u}, d\bar{d}, c\bar{c}, s\bar{s}$$

$$e^+e^- \rightarrow \gamma\gamma, e^+e^-, \mu^+\mu^-, \tau^+\tau^- \text{ (taupair)}$$

$$e^+e^- \rightarrow \ell\ell XX \text{ (} ee\pi\pi, eepp, \text{ etc.)}, hh\text{ISR (}\pi\pi\text{ISR, } KK\text{ISR, etc.)}$$

- Generated based on central decay file: [DECAY\\_BELLE2.DEC](#)

## Data production liaisons

(responsibilities of the data production liaisons can be found [here](#))

Group	Liaison
Semileptonic and Missing Energy Decays	@Tommy Martinov @Cameron Cooper Harris
Radiative & Electroweak Penguin	@Igor Prudiev
Time Dependent CP Violation	@Noah Brenny
Hadronic B decays	@Xiaodong Shi
Quarkonium	@Yang Li
Charm	@Jaeyoung Kim
Tau	@Naveen Baghel @Kenji Inami
Dark-sector and low multiplicity	@Gaurav Sharma
Performance	@Lekai Yao
Upgrade	@Benjamin Schwenker



# MC production campaign

Two types of MC production campaign:

## Run-independent (RI)

- Easier to produce
- Use simulated background and static detector conditions
- Produced in predetermined luminosity
- Less accurate detector performance and beam backgrounds.
- Terminology: **MC16ri\_X**

## Run-dependent (RD)

- Difficult to produce
- Use random trigger events from data and real conditions
- Produced in streams (1 stream = luminosity of corresponding data)
- More accurate detector performance and beam backgrounds
- Terminology: **MC16rd\_X**



# MC Confluence page

<https://confluence.desy.de/display/BI/MC+main+page>

The screenshot shows a Confluence page with a blue header bar containing the Confluence logo, navigation links (Spaces, People, Create), a search bar, and utility icons. The left sidebar shows a tree view of spaces, with 'MC main page' highlighted in a red box. The main content area features a breadcrumb trail, the page title 'MC main page', and a post by Umberto Tamponi. The main text contains a warning about using collections and a list of links. Below this is an 'Important Info' section with detailed instructions and a final 'IMPORTANT:' note.

Confluence Spaces People Create ... Search ? ? ?

Pages / ... / Data Production WebHome

**MC main page**

Umberto Tamponi posted on 11. Mar. 2021 13:29h - last edited by Giovanni Gaudino on 12. Apr. 2024 15:36h

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Unless you have specific use-case, **it is strongly suggested to use collections** to run on MC run-dependent and MC run-independent

Searching for samples on your own, could easily lead to mistakes and, eventually, wrong physics results.

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- Important Info
- MC Campaign layout
- MC campaigns status
  - Run-dependent MC
  - MCrd signal production
  - Run-independent MC
  - MCri generic production for 5S\_scan data
  - MCri Signal production
  - MCri mis-aligned signal production

### Important Info

- Low multiplicity samples in MC run-dependent are accessible with dedicated flags (EventCode added as EventExtraInfo). Please check [here](#) for the details.
- We found a number of irregular LPNs in MC13ri/MC14ri: [Check this page for more info](#)
- cDST production: the "full" cDST format will not be anymore available starting from release-06 thus we will not accept anymore any cDST production using the full format. The new cDST foresees a format with digits + tracking. Then you can either request:
  - enriched mDSTs: use add\_mdst\_output + additional dataobjects (exploiting the additionalBranches parameter)
  - digits + tracking cDSTs: use add\_cdst\_output + additional parameter mc=True
- **IMPORTANT:**

Space tools <<



# More great resources

- <https://www.belle2.org/>
- **chat:** <https://chat.belle2.org>
- **questions:** <https://questions.belle2.org>
- **sympa (email lists):** <https://lists.belle2.org/sympa/home>
- **Mailing list:** [dataprod@belle2.org](mailto:dataprod@belle2.org), [dataprod-skim@belle2.org](mailto:dataprod-skim@belle2.org), [software-calibration@belle2.org](mailto:software-calibration@belle2.org)
- **Basf2 documentation (Sphinx):** <https://software.belle2.org/>
- **gbasf2:** <https://confluence.desy.de/display/BI/Computing+GBasf2>  
- <https://confluence.desy.de/display/BI/Instructions+for+gbasf2+analysis>
- **Data production:** <https://confluence.desy.de/display/BI/Data+production+WebHome>
- **Gitlab:** <https://gitlab.desy.de/belle2/>
- **Experiment Numbering:** <https://confluence.desy.de/display/BI/Experiment+numbering>
- **Conditions Database:** <https://cdbweb.sdcc.bnl.gov/> (globaltag information)
- **DIRAC (for dataset searcher):** <https://dirac.cc.kek.jp:8443/DIRAC/>

