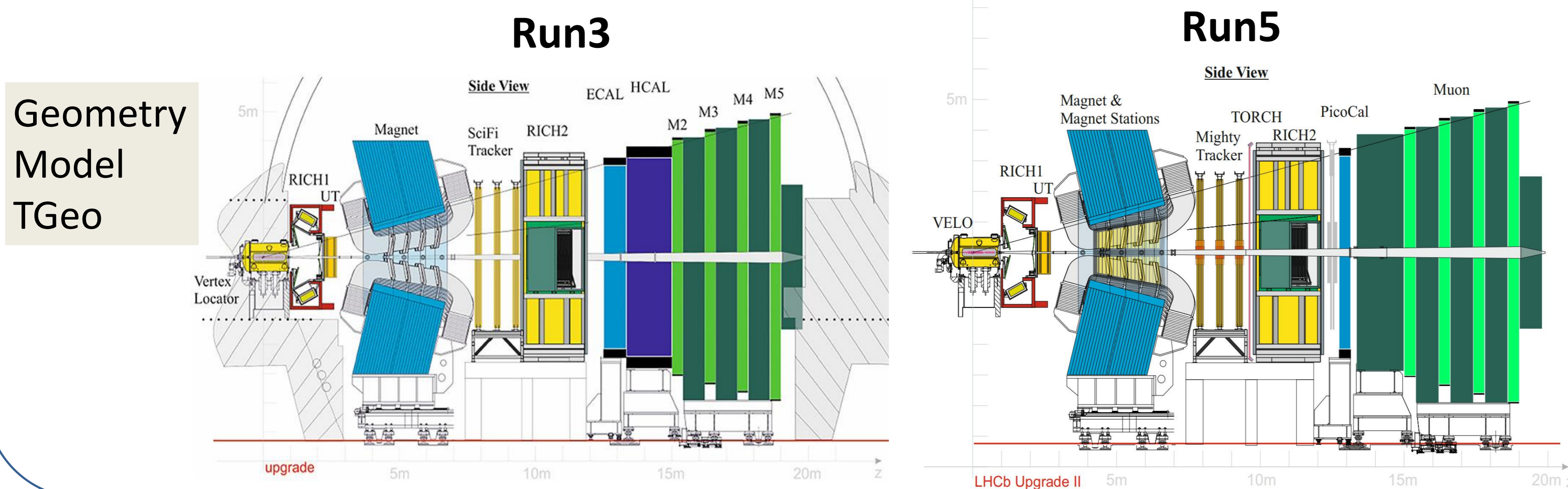# Versioning of the LHCb DD4hep-based Detector Description

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1. The University of Warwick, 2. CERN

LHCb Detector geometry[1] - DD4hep [2]

Run3

Run5

Geometry Model TGeo

DD4hep does not have versions, a set of custom version is necessitated on top of the DD4hep descriptions format

- detector constructors c++: **single version**
- parameters xml: **versioned**

Version naming conventions

The versions of the sub-detectors and of the whole LHCb are called:

<data taking period>-<version of tag>

- <data taking period>: data taking year + further granularity

e.g. 2024.Q1.2: year 2024 with validity between Quarter 1 and 2 expected in Qq.q format

- <version of tag>: vXX.YY starting with v00.00

Global definitions

Placed in the **common** directory, **single version**

- subdetector ID
- subdetector parent volumes
- common generic visualization attributes
- invokes plugin that computes all alignments

Support different versions of the detector layout in different data taking periods
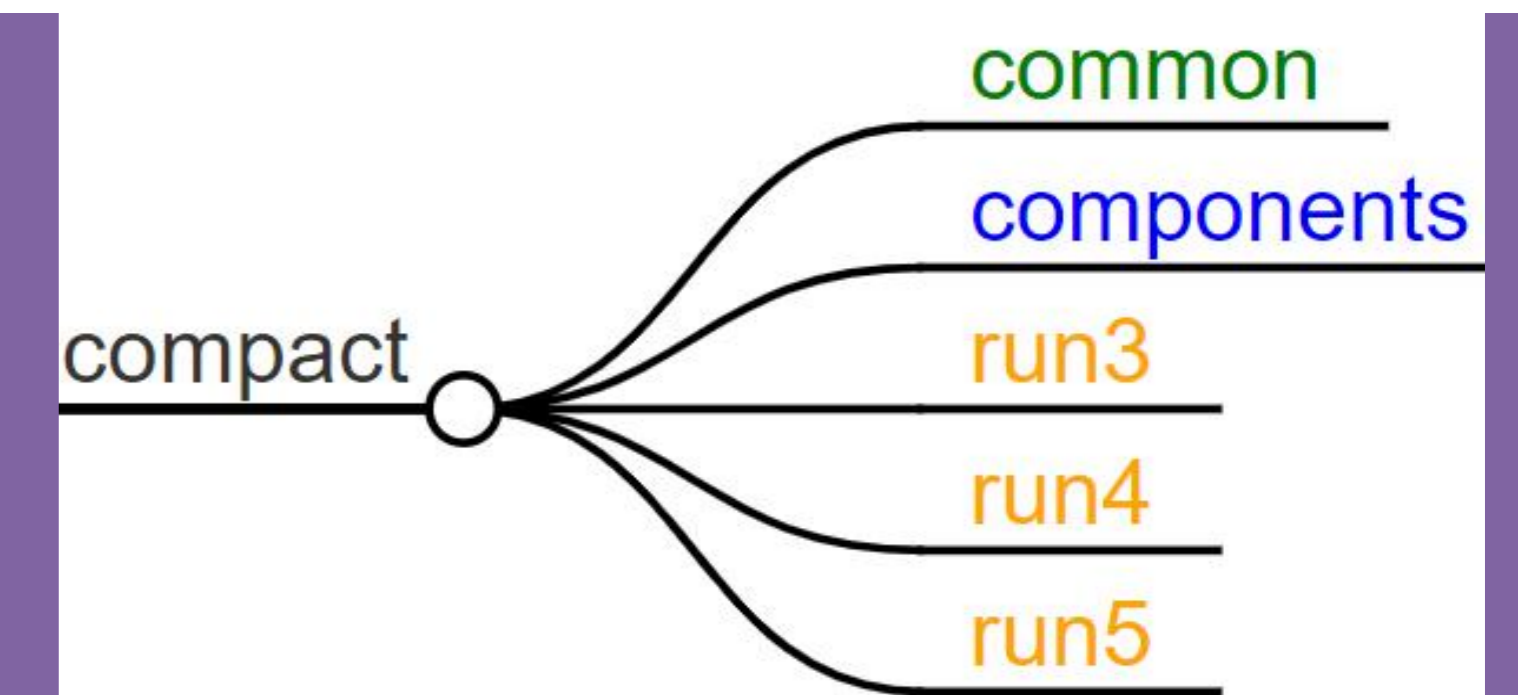
Description of subdetectors and other components

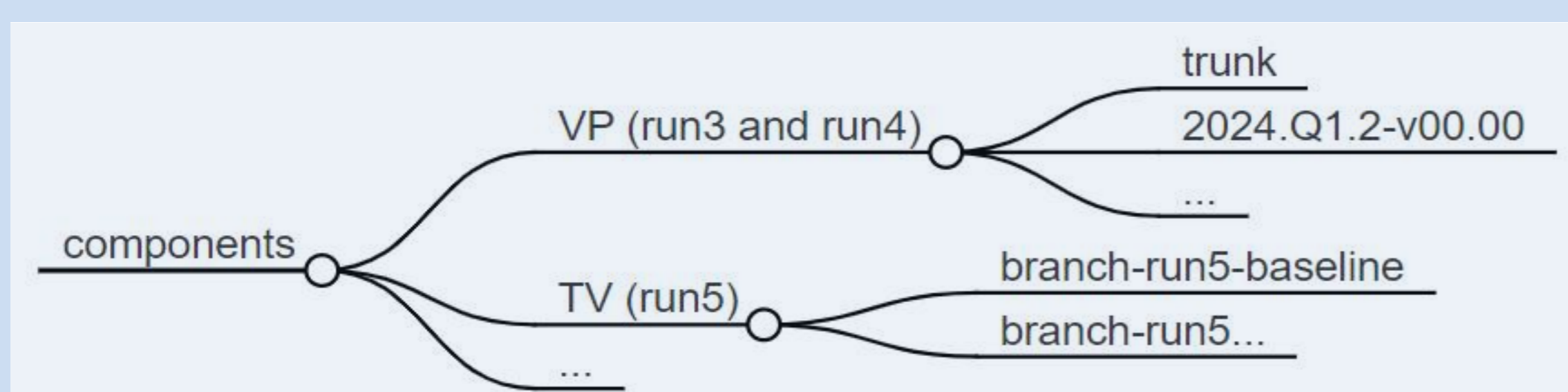Each component must be self-contained, only including xml files from its own subdirectory or from common

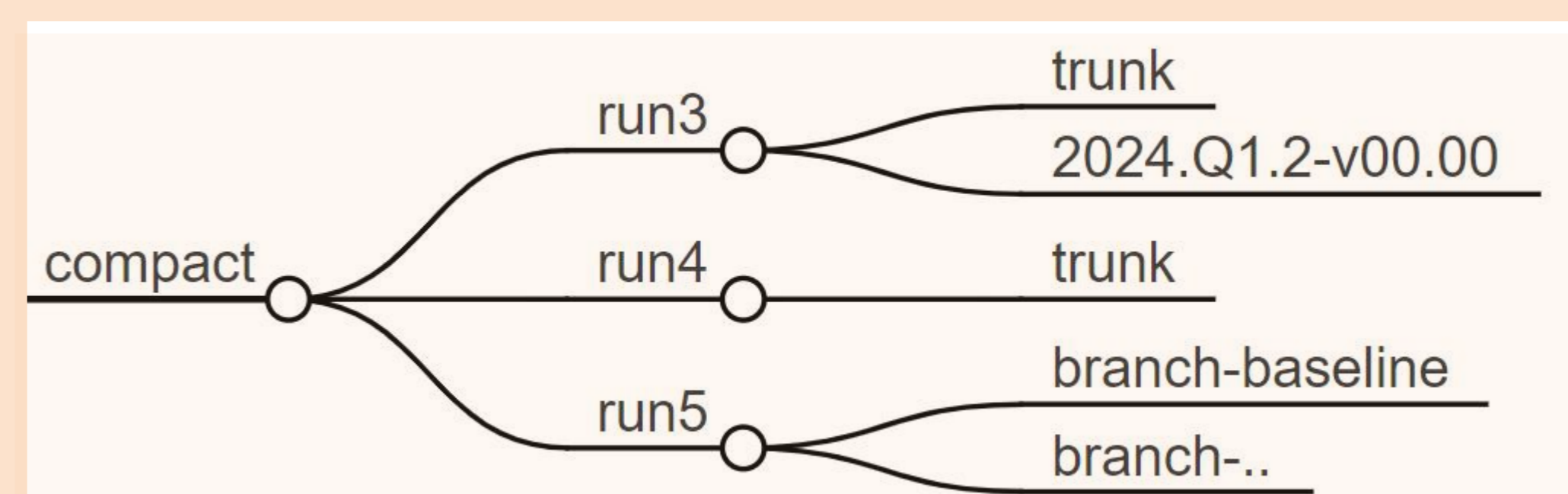**pre-commit**
check-dependency .... Failed!
ValueError: subdetectors should not include XML from other components please check the following files
compact/components/VP/trunk/VP.xml

Each component is versioned using directories

Detector geometry versioned in runN using directories

- trunk: working version
- branch-*: run5 development version

Released version are frozen

The released LHCb versions depend on frozen versions of the components

Released versions are not allowed to be changed

- Each version has a *checksums* file that contains the list of volumes four levels deep in the geometry tree, and the checksum of the associated sub-tree

Developers are not allowed to update the checksum

Updates of checksums for working versions can be triggered in the CI by maintainers adding corresponding label

pre-commit
check-path-xml........ Failed!
Testing compact/run3/2024.Q1.2-v00.00/path.xml
ValueError: trunk version is found in path:UT

verify_checksums_version
test

pre-commit
disallow-checksums-update........ Failed!
ValueError: Change to checksums file are not allowed!

update working checksum
Gitlab CI authored 1 week ago

Labels
update-working-checksum

[1] Perspectives for the migration of the LHCb geometry to the DD4hep toolkit, C. Burr, CHEP 2018
[2] DD4hep Toolkit, https://dd4hep.web.cern.ch/dd4hep/

CHEP 2024