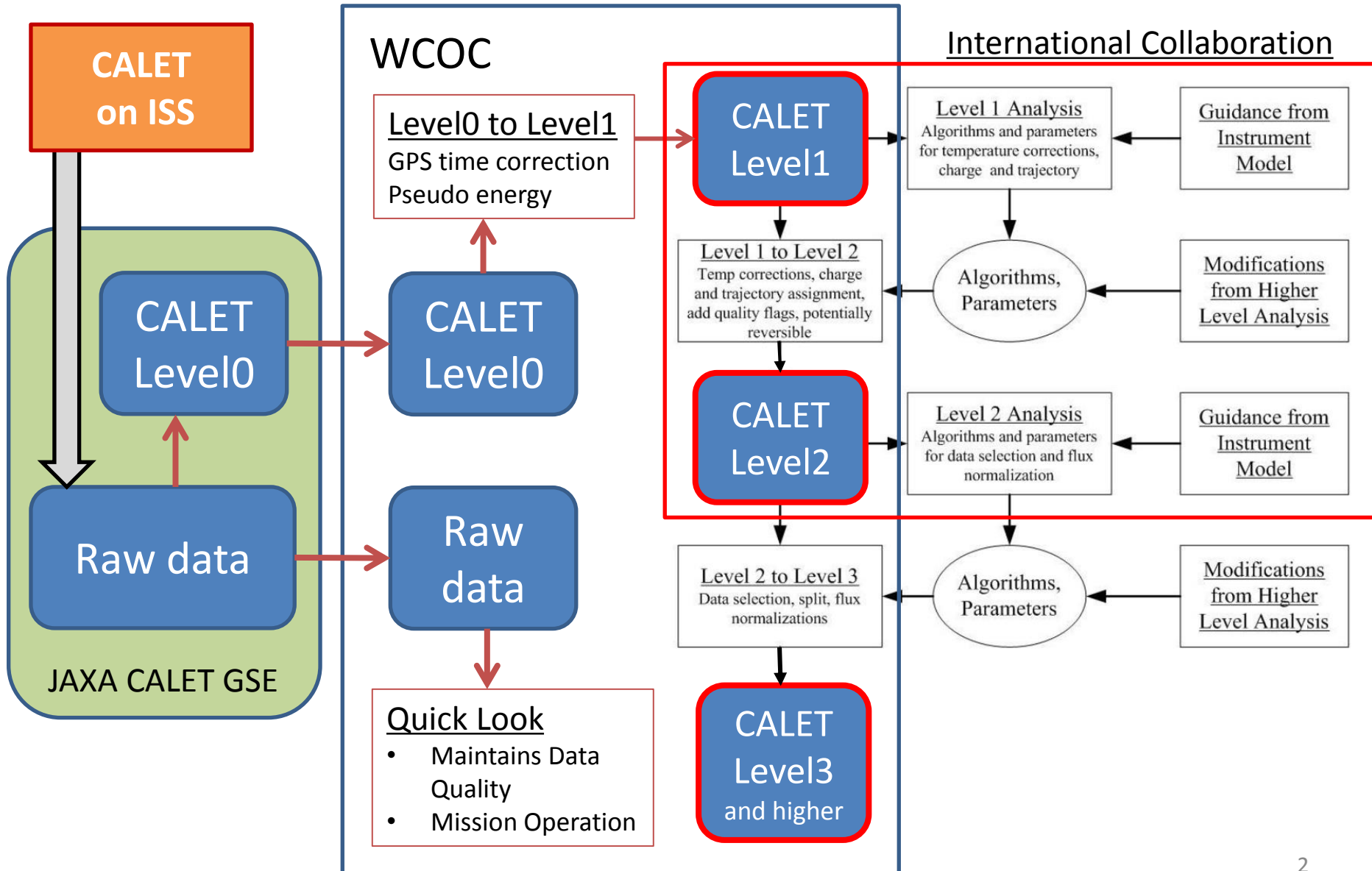


CALET Level1 to Level2 Analysis Plan

DH&A Japan Y. Asaoka

2015.6.24 CALET-TIM @ Pisa Univ.

Analysis Procedure (As defined in DPAP)



Questions to be addressed

1. What has to be done from Level1 to Level2?
 - fully corrected energy deposits for all of scintillators (CHD, IMC and TASC).
 - MIP Calibration
 - temperature dependence
 - position dependence
 - latitude dependence
 - other calibrations
 - cross talks in MaPMT
 - fiber position correction
 - tracking, attitude can be further studied in Level2, but preliminary version of those information will be attached in Level2.
2. What is the Level2 format?

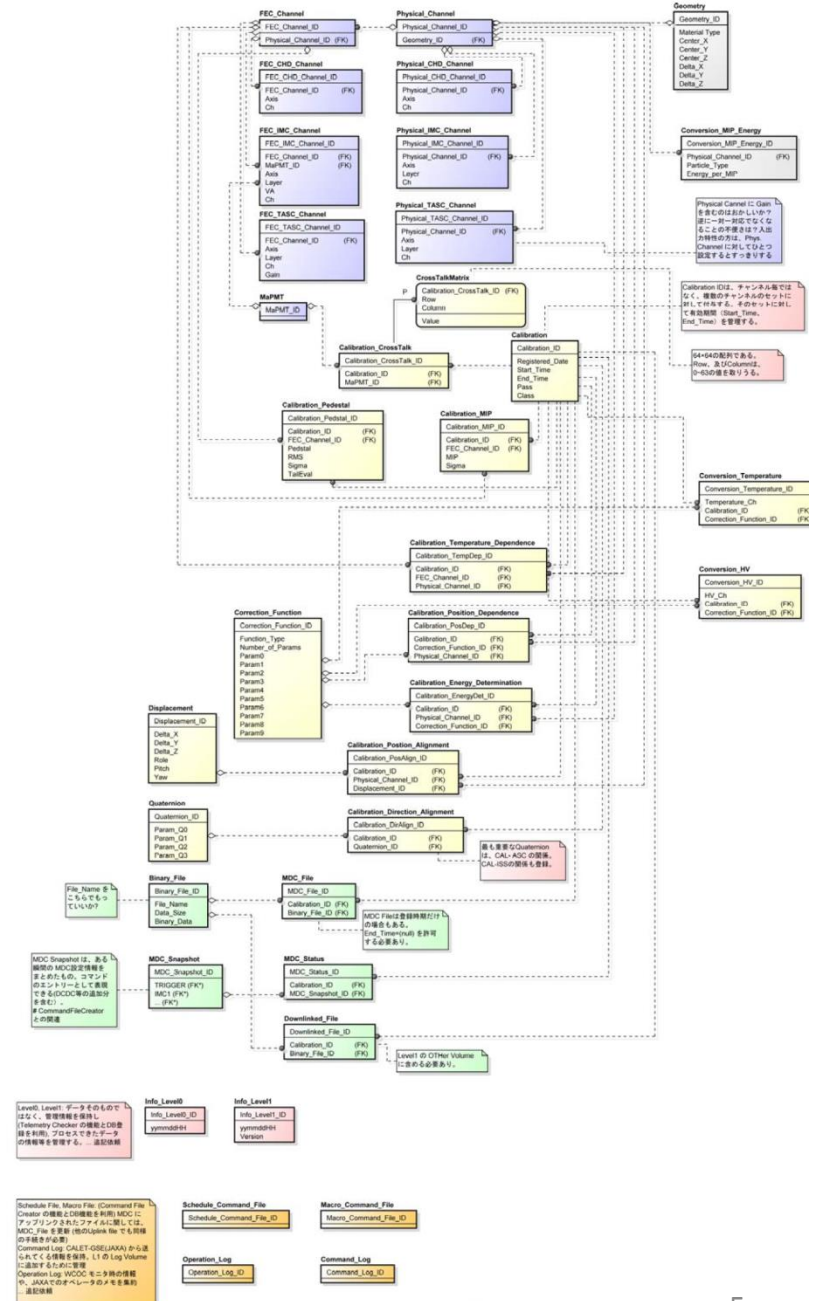
Handling Calibration Parameters

- To compare, to reproduce the result of calibration, it is critical to have nice arrangement for calibration parameters.
- It is especially important for WCOC since we have to process official volumes.
- To resolve this, we are developing calibration database so called “WCOC_DB”.
 - define official release using PASS and tag calibrations used to produce them.
 - by requiring appropriate selection condition, it is possible to retrieve older version and/or specific version.

WCOC_DB

- Based on the use-case study , ER diagram of calibration database for WCOC is designed.
- PostgreSQL is used because it's free and has nice track record.
- Upper parts are defined and tables are created for performance test.
- Using ground muon data, we will try to validate the response speed and other performance.

ERDiagram



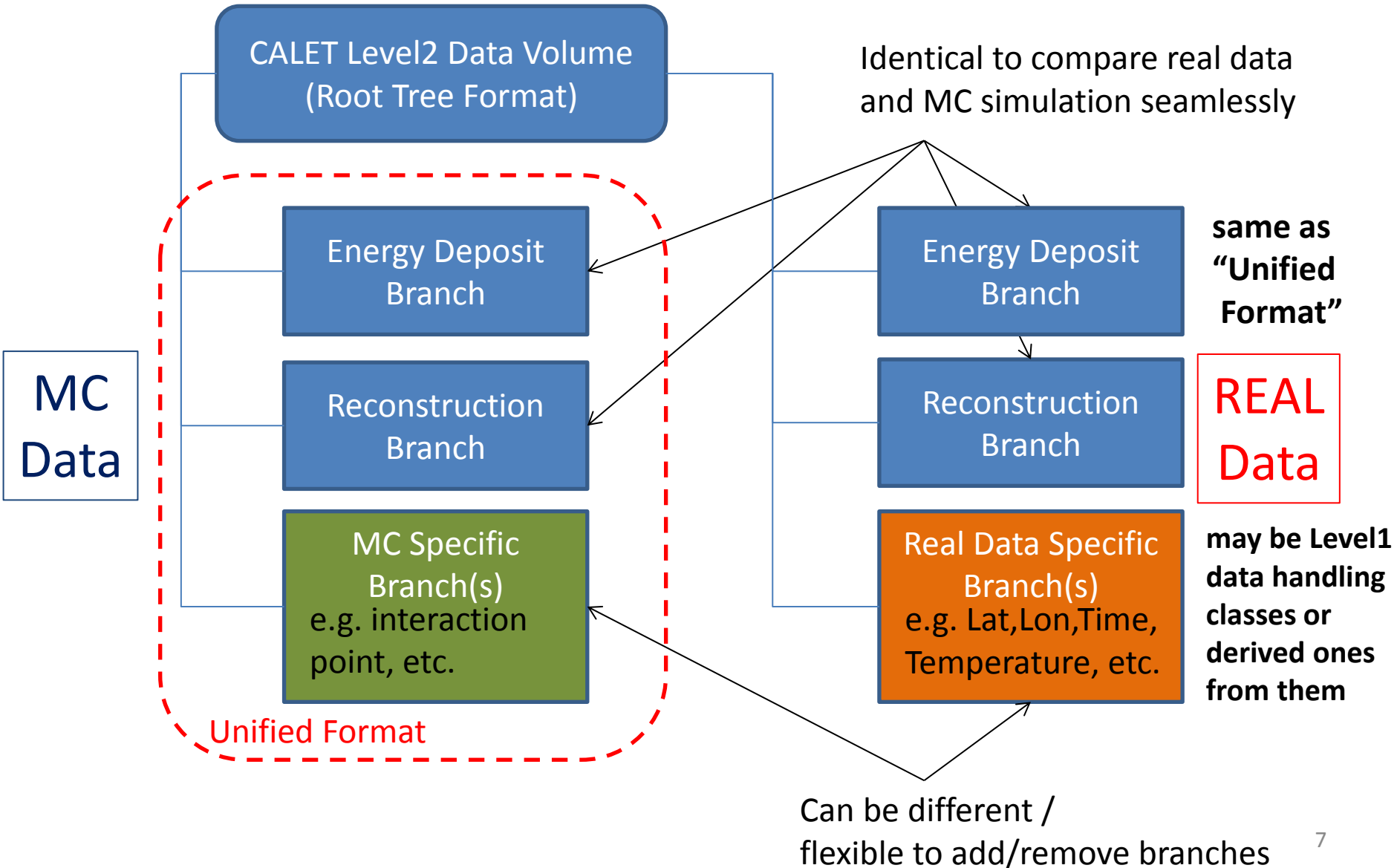
Possible Level 2 Data Format

140428 DH&A Japan @ 140429 DH&A Teleconference

1. By using Root tree format, it becomes easy to add/remove information from event data by adding/removing branches.
2. Level2 “REAL” data volume will have:
 - Energy deposit branch
 - Reconstruction parameter branch
 - Real data specific branch (Latitude, Longitude, Time, etc.)
3. Level2 “MC” data volume will have:
 - Energy deposit branch
 - Reconstruction parameter branch
 - MC data specific branch (Interaction Point, etc.)

=> This is identical to Unified output format discussed in M&S team
4. This way, comparison between “REAL” and “MC” Level2 data is straightforward and will help determine the “official” Level2 data.
5. During calibration process (i.e. Level1 to Level2), other branches will be defined and used to improve the data quality step by step. This process must be iterative, and branches in such intermediate levels can be determined freely by each team to accelerate analysis.

Possible Level2 Data Format (cont'd)



Possible Level2 Data Format (cont'd)

