

基于LordStar的数据刻度和分析

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Motivation

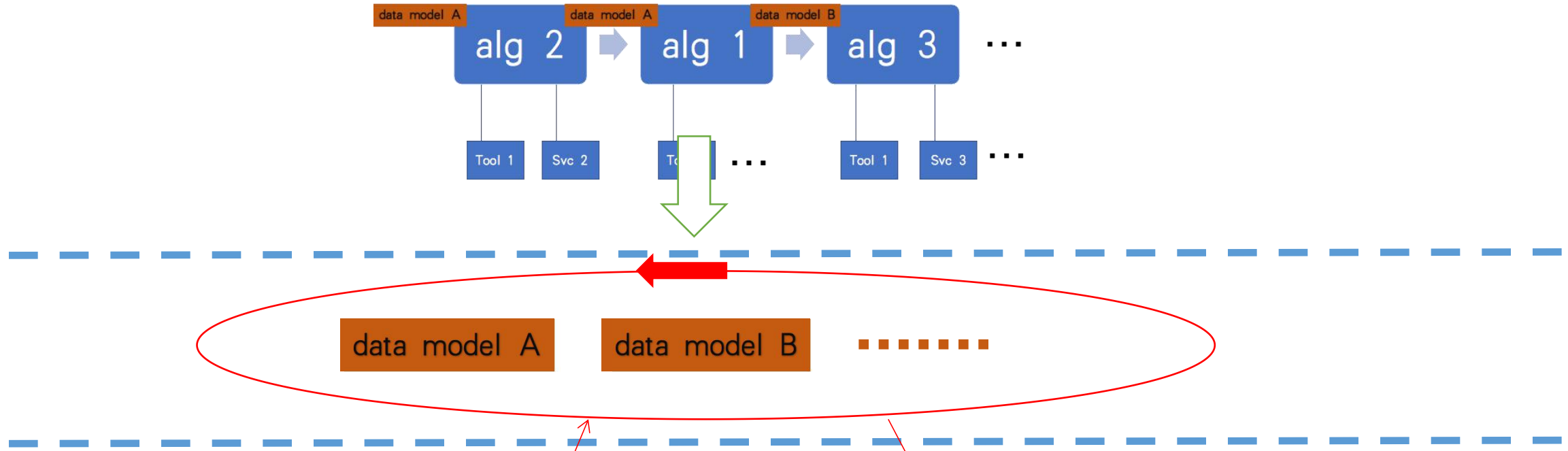
- LordStar is an “operation system” for LHAASO offline analysis
 - provide as much as possible functionalities to simplify coding
 - make user concentrate on “One Event Processing”.
- LoarStar provide
 - data read into memory and event organization in memory.
 - event loop, user only concentrate in the processing of “AN” event.
 - data output, save results into file

Code Modulization/Sealing

- package: a same-structure directory contains coding for a specific functionality.
- package categorized by functionality:
 - algorithm: provide data processing in event loop.
 - Tools/Service: plug into algorithm to provide a piece of code/information.
 - Data Model: standardized input/output format for algorithms
- Analysis chain: head-to-end connected algorithms.
- Advantages:
 - easy to compose an analysis chain, simply connected/plug-in.
 - easy to debug. One person found bug, fix for all.
 - easy to crosscheck result. exactly knows code difference.
 - efficiently switch part of code

Data/mamory managed by LordStar

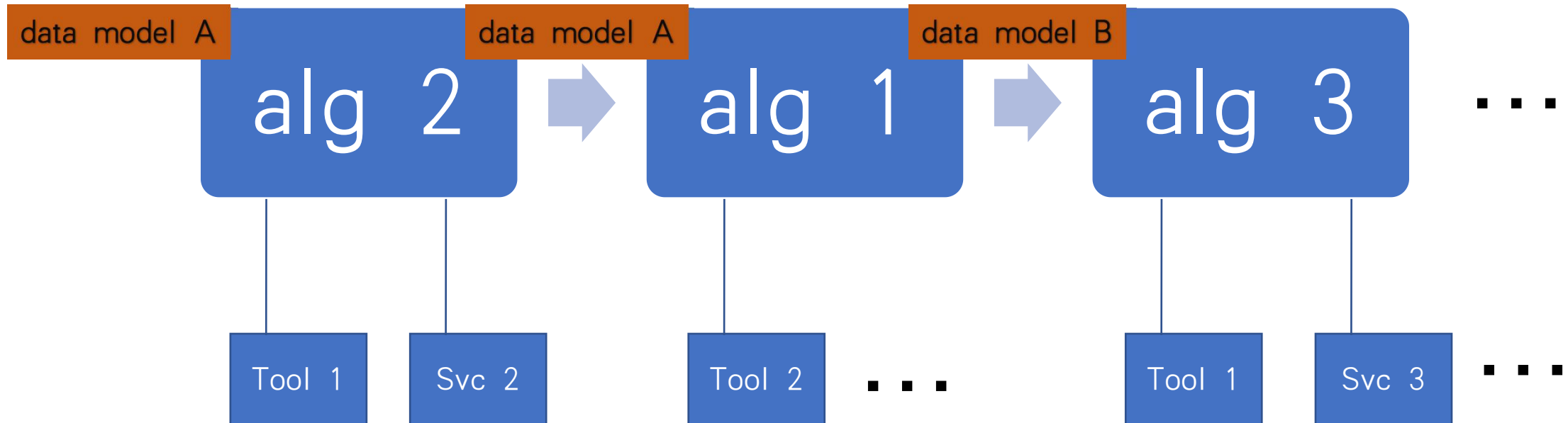
Algorithm chain freely connected bacause of the memory management, otherwise, algorithm has to be merged or connected by data file.

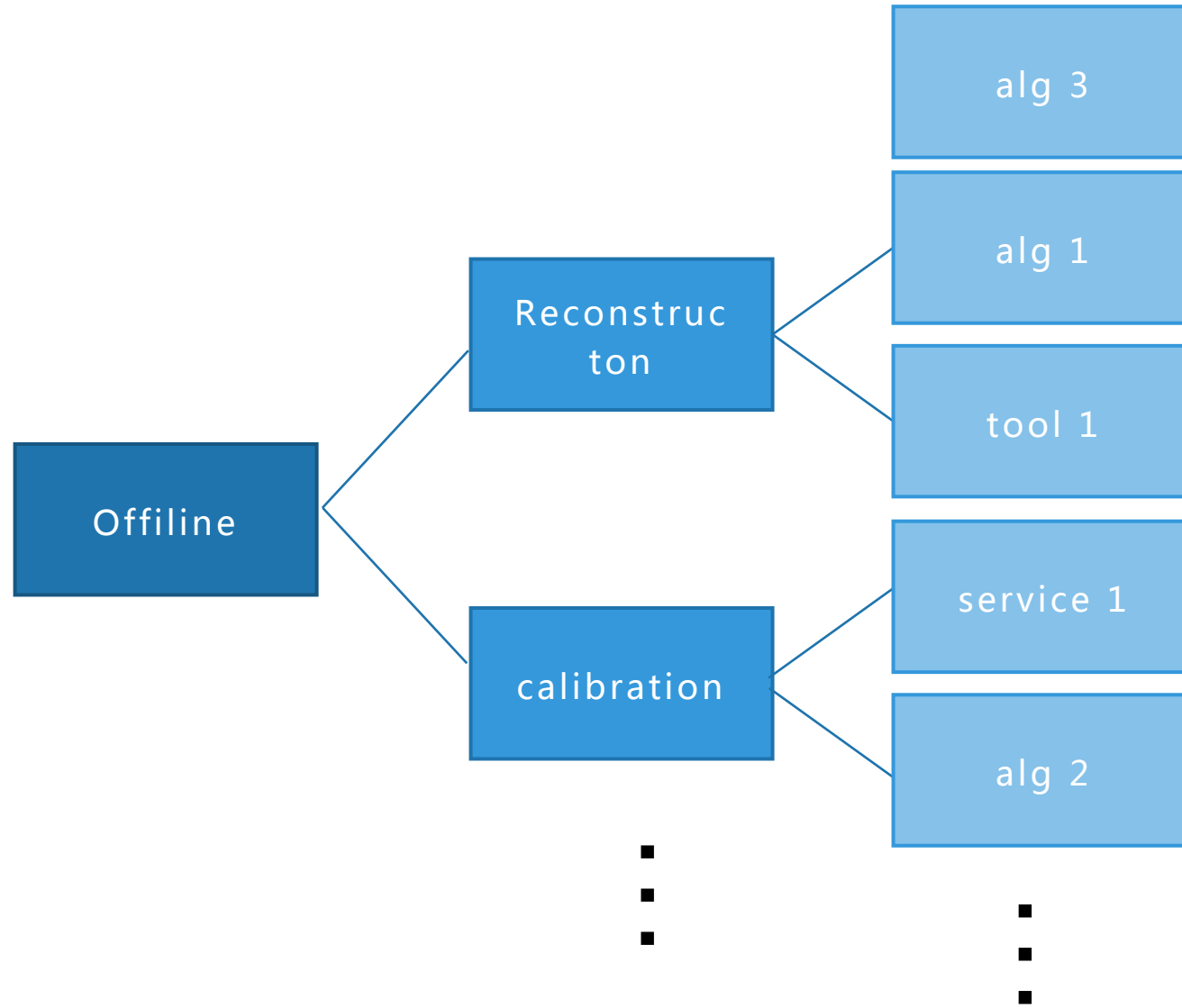


- open XXX.dat or XXX.dat.root
- fill data into variables in memory
- manage the event loop

- save the data in specific event model into file

The analysis chain to process one event is the responsibility of user





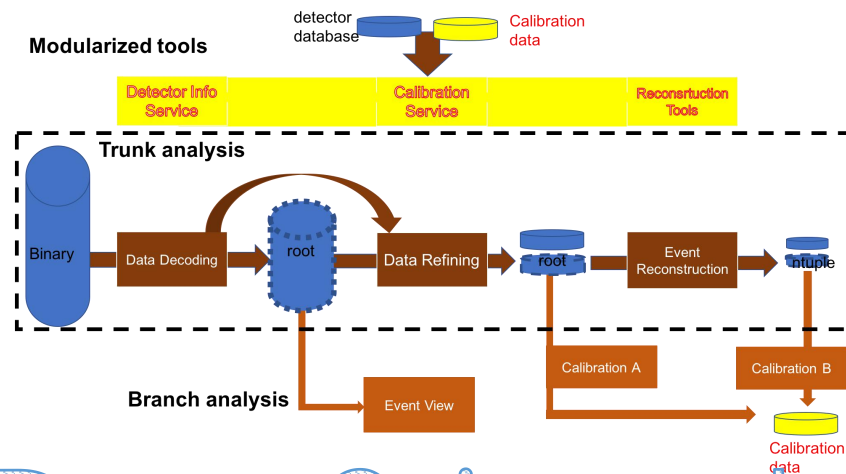
Macros to make a analysis chain

- Algtask = Sniper.Task("Algtask")
 - iSvc = Algtask.createSvc("RawInputSvc/InputSvc")
 - oSvc = Algtask.createSvc("RootOutputSvc/OutputSvc")
 - detSvc = Algtask.createSvc("DetcPosSvc/DetcPosSvc");

 - CaliAlg = Algtask.createAlg("DataCleaning/mycalialg")
 - RecAlg = Algtask.createAlg("EventRecIhep/myrecalg")

 - CaliAlg.createTool("PlaneFit/myfit1");
1. Omit parameter setting
 2. alg/tool/service exchangeable
 3. version exchangeable
 4. Adapted cali/rec code from Lizhe/Songzhan to LordStar

Based on LordStar
CMT style packages
Run on farm



Data Oriented

Standardized
Modularized
Easy sharing

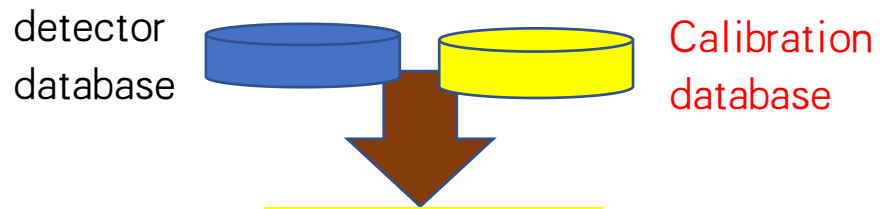
Based on ROOTCORE/ROOT running on
laptop/farm
Optional based on LordStar running on
farm



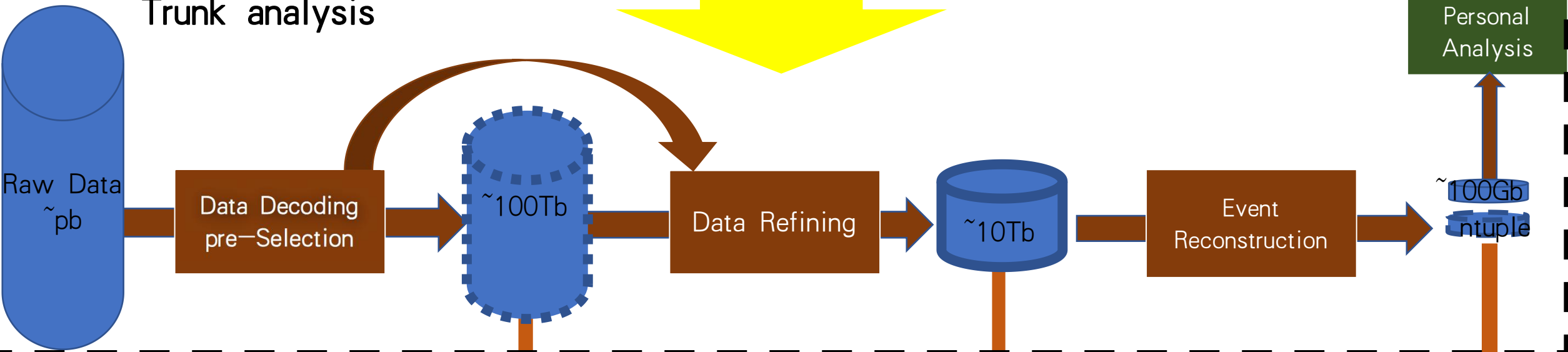
User Oriented

Fast, fast, fast

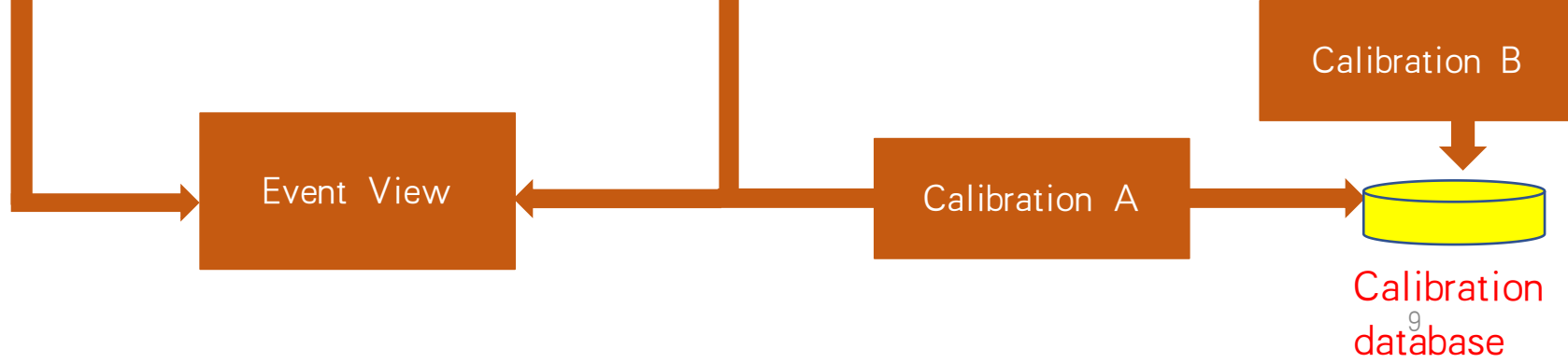
Modularized tools



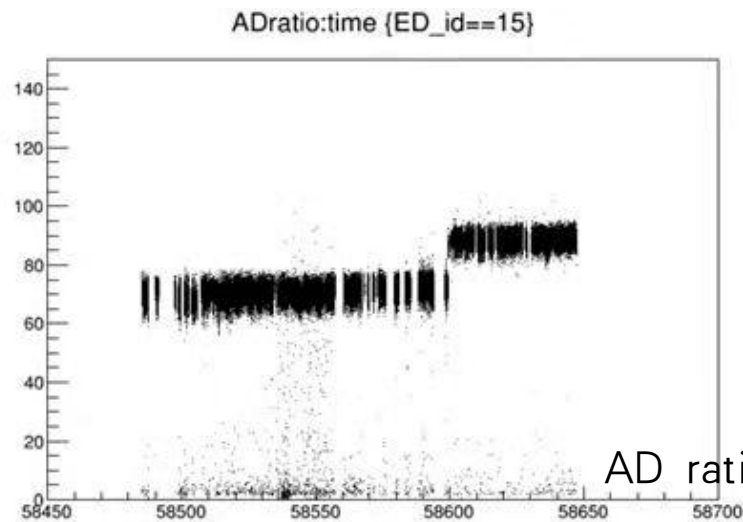
Trunk analysis

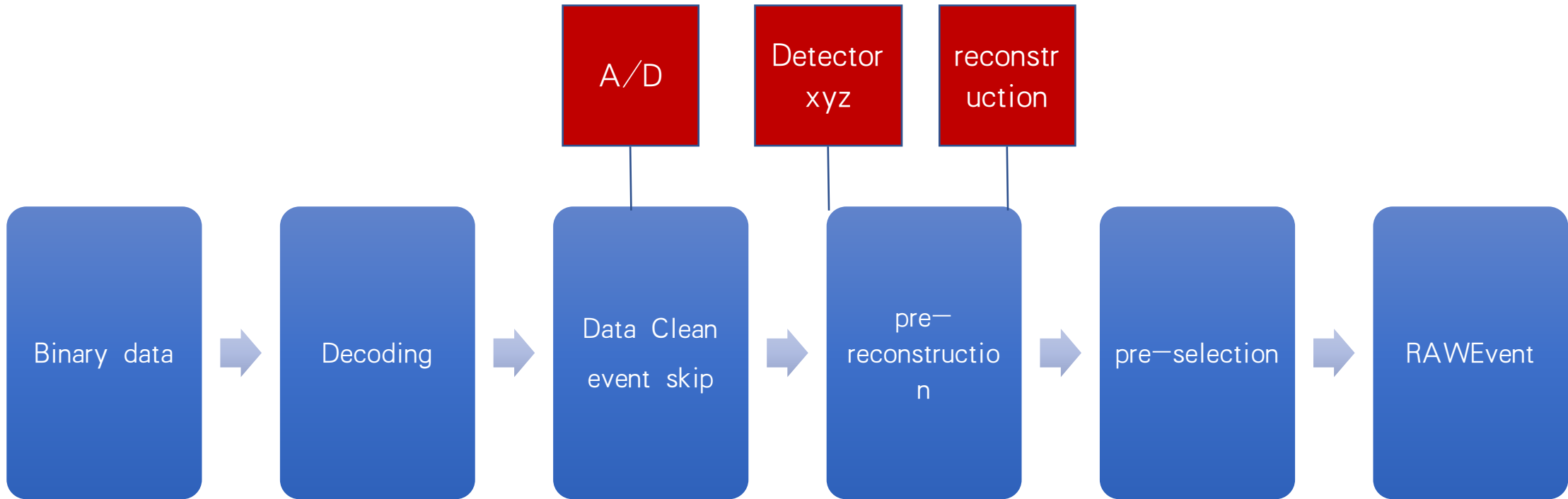


Branch analysis

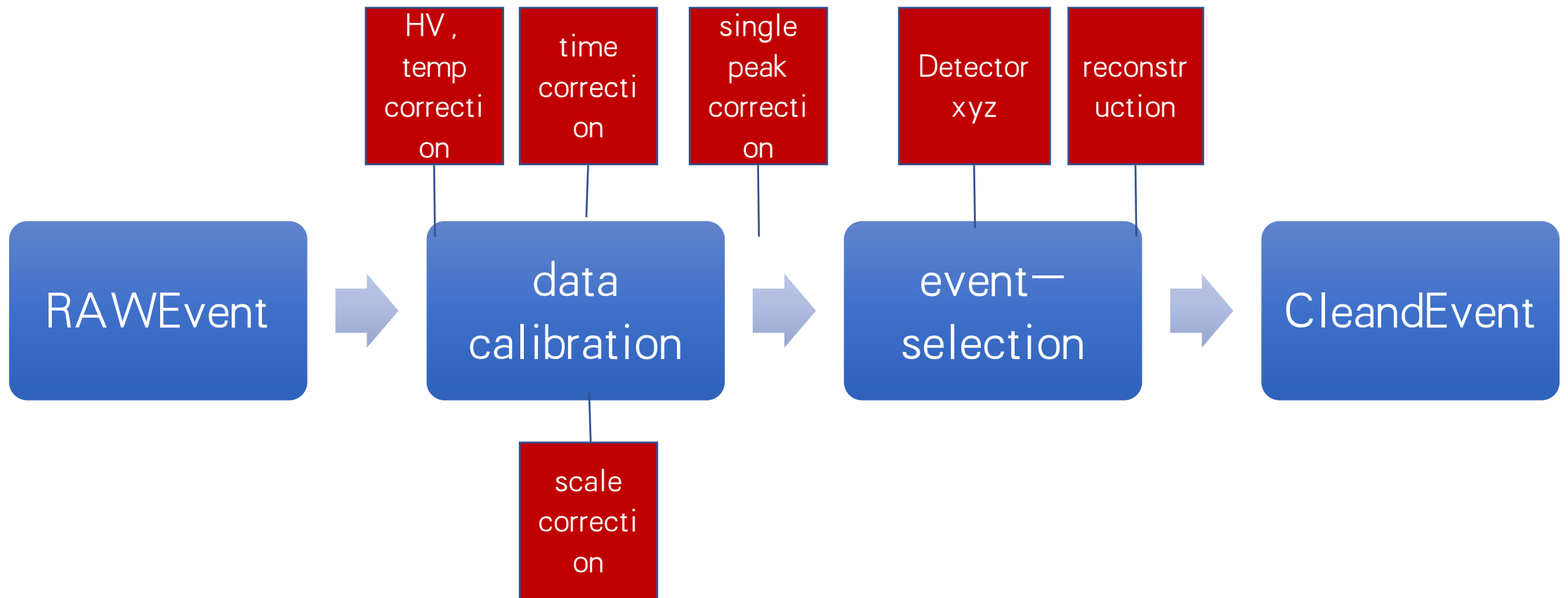


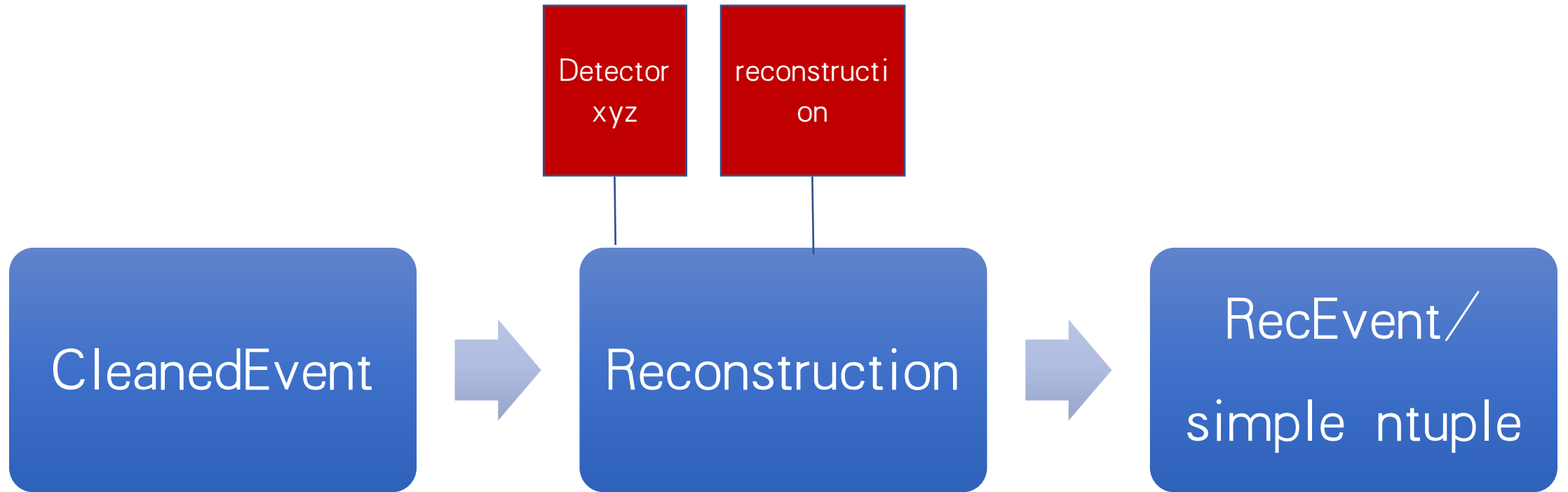
- Calibrations analysis producing cali-data and calibration service package maintaining can be assigned to specific person.
- Tools maintained by seperate person.





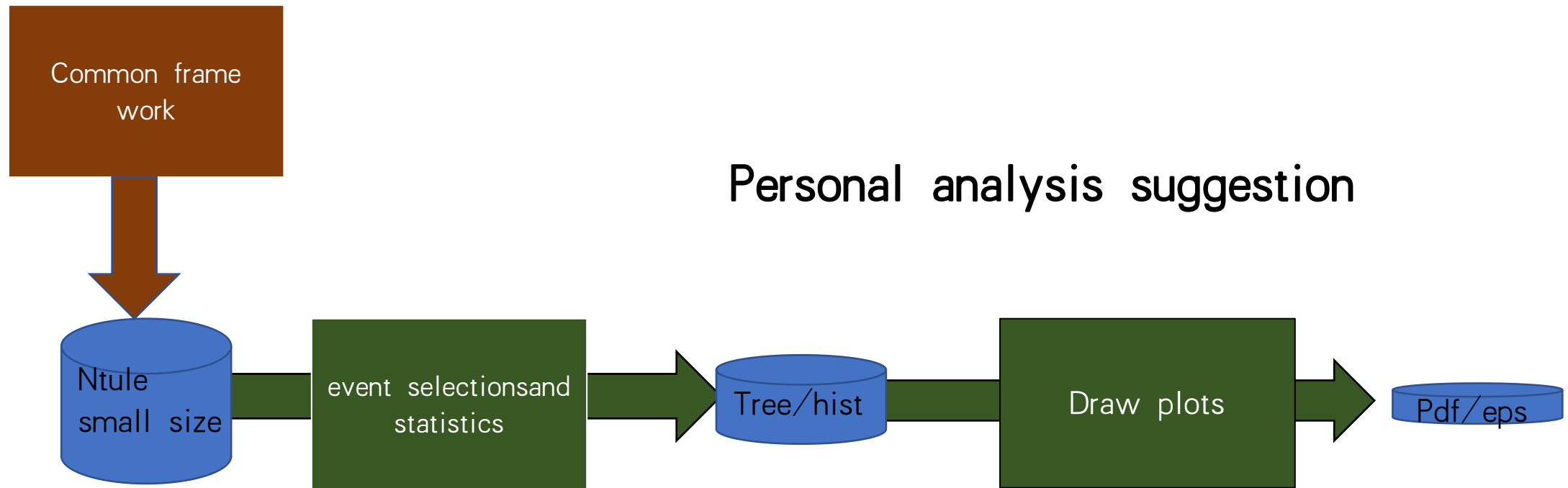
1. clean noise
2. A/D correction
3. remove double hits
4. saturation tag
5. magnitude
uncertainty tag
6. remove noise
triggered event





a list of reconstruction code switchable

1. for different quality data
2. for cross check
3. for calibration using



1. Small data copied to local farm or PC
2. code packages managed by CMT/ROOTCORE are favored
3. data maintained/used by each physics group
4. fast! fast! fast!

Thanks