

Offline Software for Combined TestBeams

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Combined 2004 TB software

PAST

Standalone packages used for TB analysis

2004

Use ATHENA for all TB monitoring and analysis

- Essential for full ATLAS commissioning/integration test

2002

ATHENA used for EMEC+HEC combined beam test

- Followed along work from Ghez et al. in LArTBEvent
- Bypasses some offline parts of ATHENA (LArROD) for testbeam related details
- Tested with older HEC testbeam data
- Used for quasi-online monitoring of EMEC+HEC run
- Now being used for EMEC+HEC combined run analysis

HEC+EMEC TB software in Athena

Basic packages (More..)

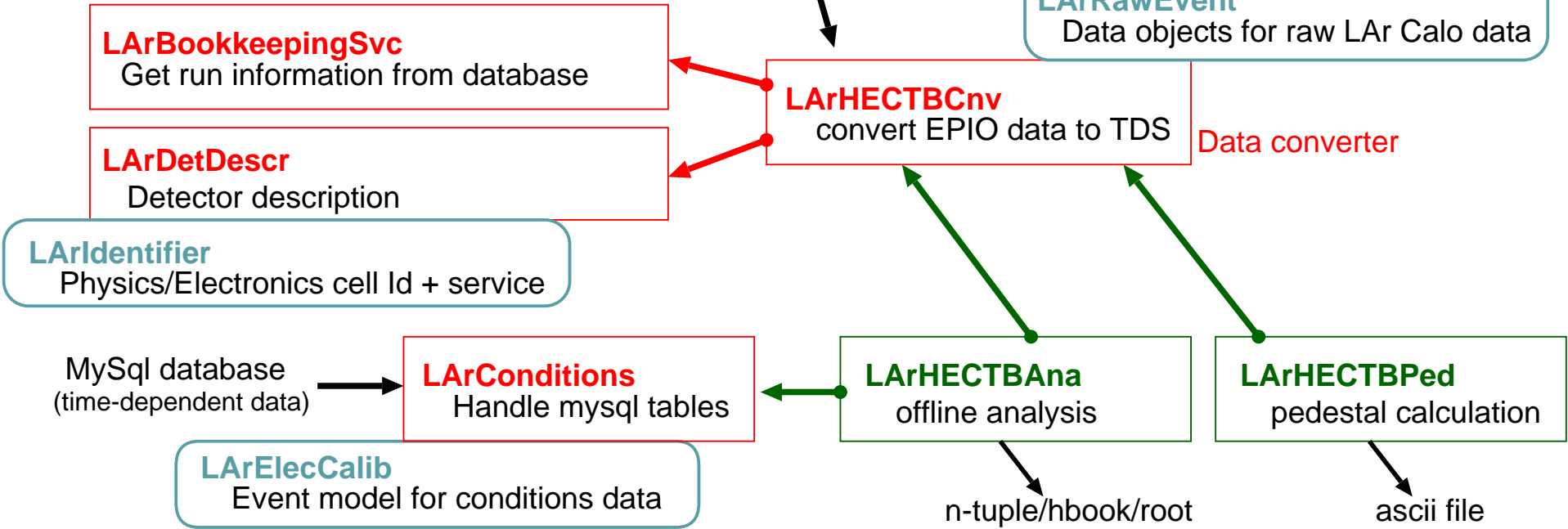
offline/Control	Gaudi	Other External
AthenaCommon athena.exe (executable)	JobOptionsSvc	ROOT
StoreGate Handle data transfer	MessageSvc	CLHEP
AthenaService manage event loop	HistogramSvc	MySQL
	NTupleSvc
	

Package is (a collection of) ...

- Algorithms
- Service
- Data objects

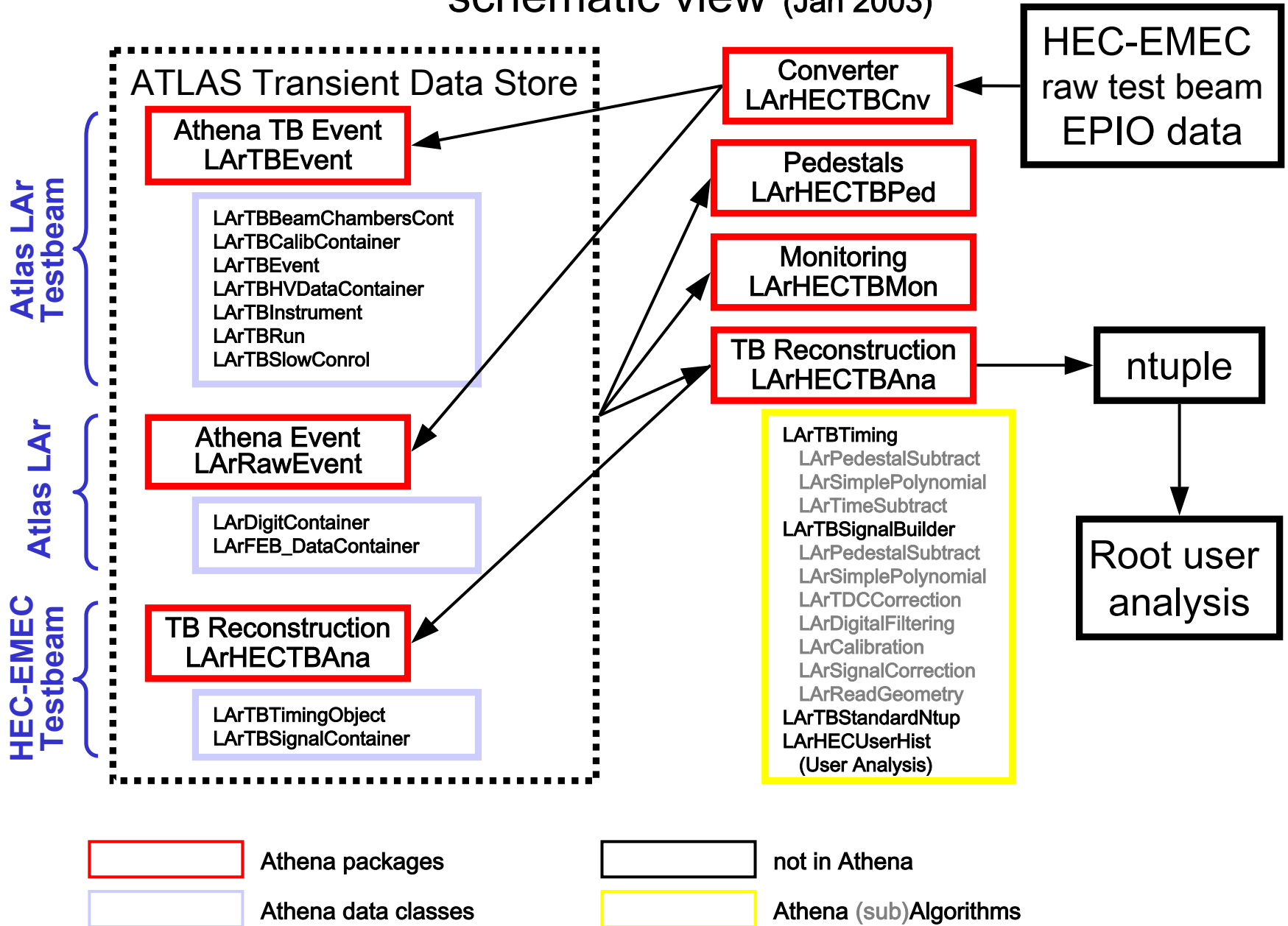
LAr TB related packages

offline/LArCalorimeter



HEC-EMEC Test Beam Software

schematic view (Jan 2003)



DataObject for LAr (TB)

offline/LArCalorimeter

LArTBEvent

- LArTBRun
- LArTBEvent
- LArTBInstrument
- LArTBSlowControl
- LArTBBeamChambers (per chamber (x,y))
- LArTBCalib (per calibration board)
- LArTBHVData (per detector)

Raw Data related to TestBeam
with simple set/get methods

+ container

LArRawEvent

FEC / ROC output

- LArDigit (per cell)
LArSignalChannelID , gain , time samples
- LArFEB_Data (per cell)
LArFBE_ID, capacitor address, control bits ...
- LArRawChannel (per cell)
LArSignalChannelID, energy (MeV), time, quality
- LArTTL1 (per trigger tower)
LArTTChannelID , Identifier , time samples
(elec ID) (LVL1 ID)

+ container

Reconstruction

offline/LArCalorimeter

LArRecEvent

- LArCell
Identifier, eta, phi, energy, time, quality
- LArCluster
eta, phi, energy, list of cells ...

Identifier in Athena

offline/DetectorDescription/Identifier

- Identifier, Identifier32 : universal for all detector
vector<short> unsigned int → contents and decoding way depends on subdetector system...

offline/LArIdentifier/LArIdentifier

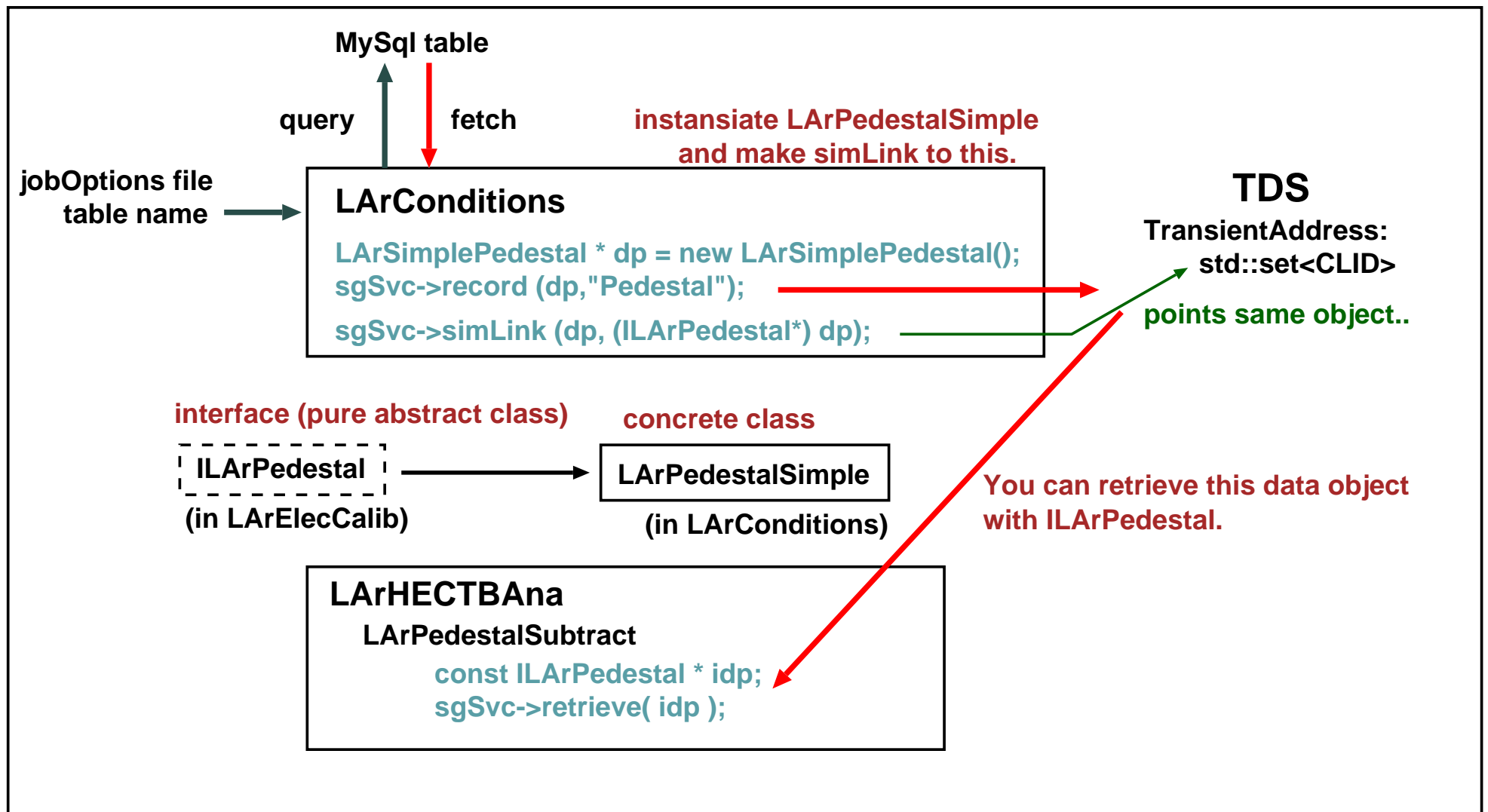
- Physics Identification (Base class : AtlasDetectorID)
LArEM_ID compact32 (= unsigned int)
LArHEC_ID detector id , eta , phi , sampling, region(innter/outer, tower) indices
LArFCAL_ID side(z+/z-), barrel_ec

- Electronics Identification (Base class : LArHardWareID) It depends on ID type....
LArSignalChannelID unsigned int
LArCalibChannelID tb (testbeam or not) , feedthrough , slot , channel
LArFEB_ID barrel_ec , side (z+ / z-)
LArTTChannelID

- Converter Service (access with LArCablingService)
LArSignalChannelService
LArCalibChannelService Identifier *createXXXID*
LArTTChannelService or ← ID
LArFEB_Service indices → *cnvTolIdentifier*

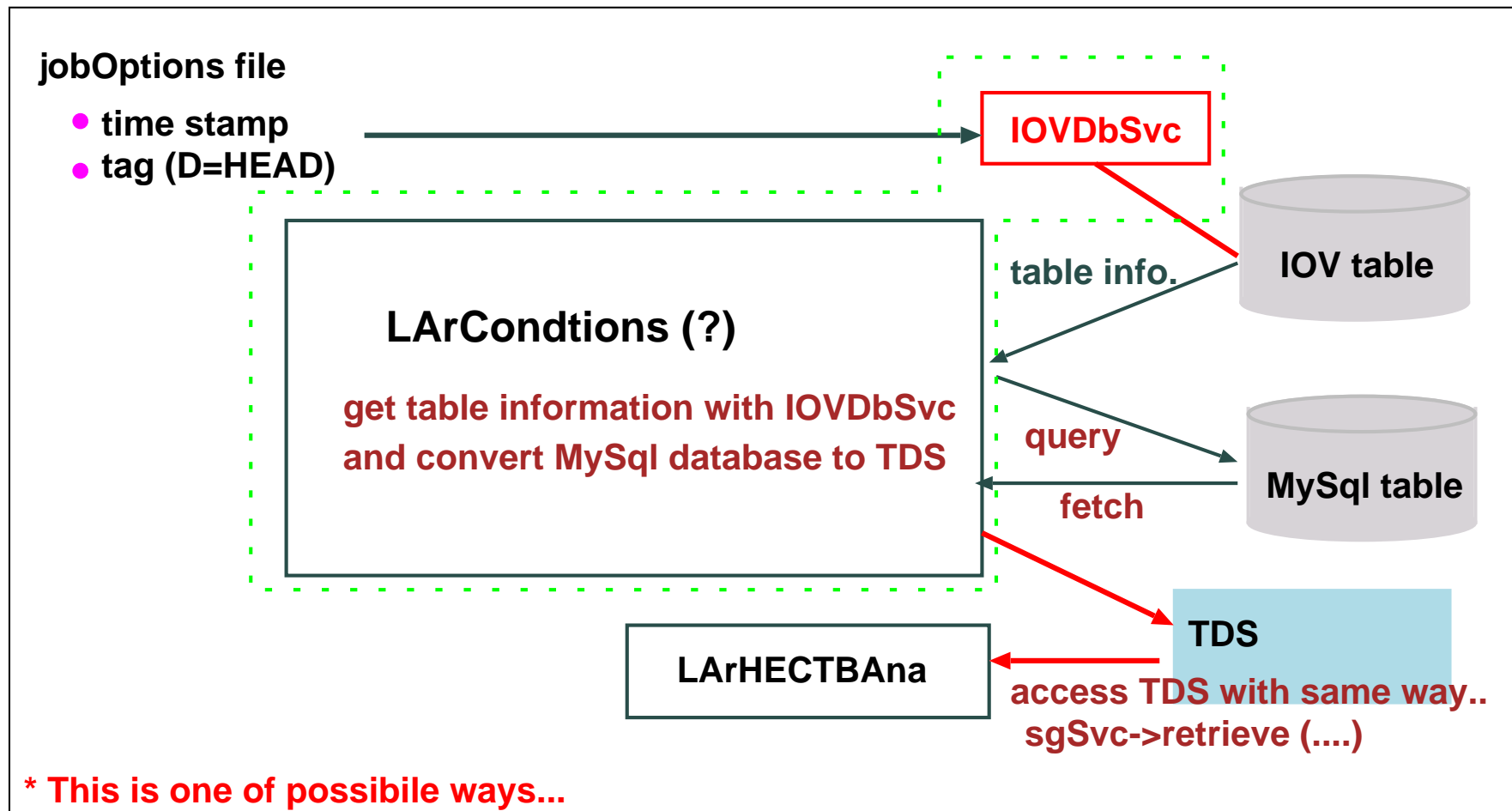
LAr Conditions Database

Current LArConditions package cannot handle time interval of validity..



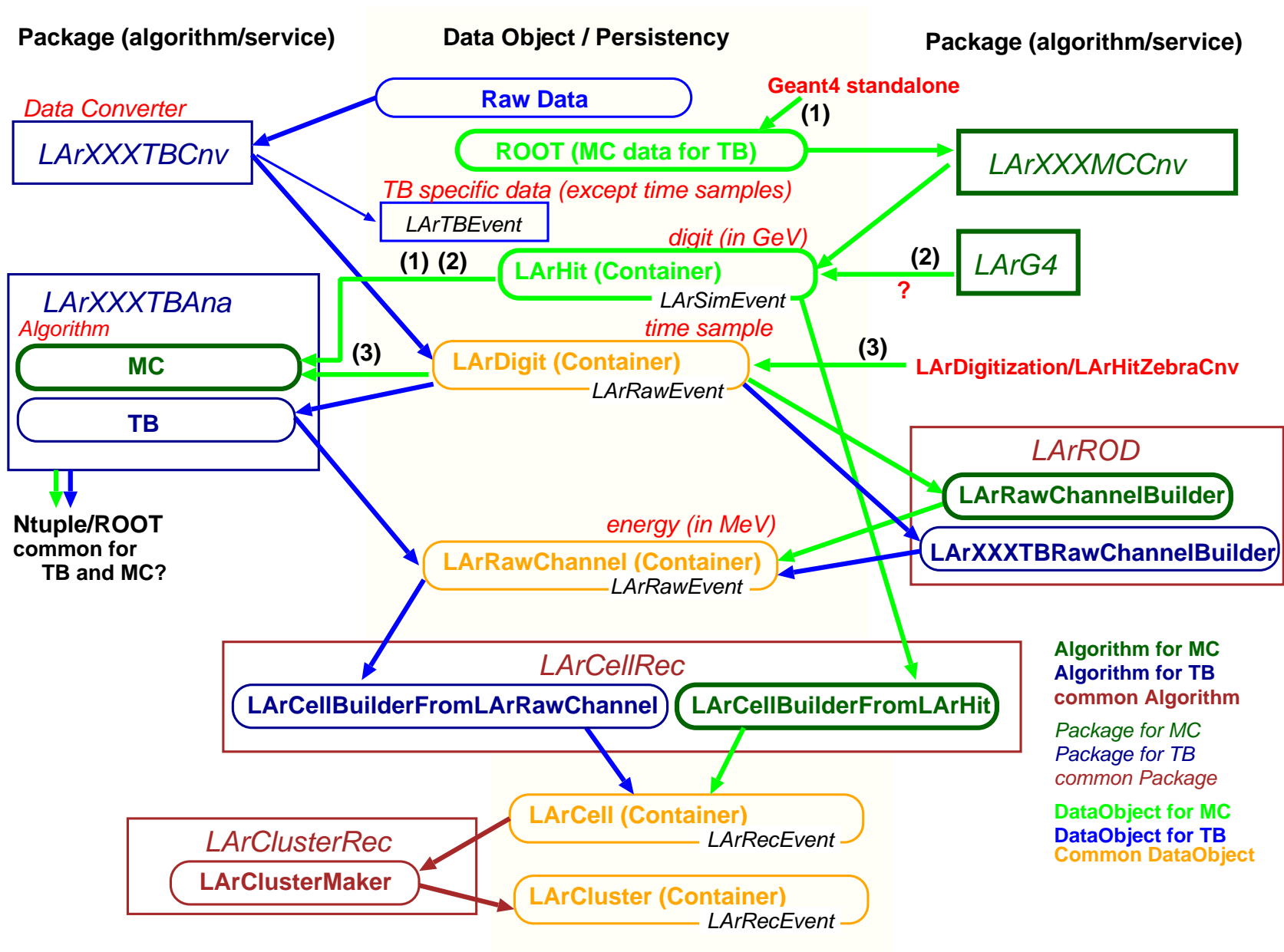
IOVDbSvc (Interval Of Validity)

One can obtain the desirable table reference from IOVDbSvc and IOV tables (using ConditionsDBMySQL).



You can find these packages under offline/Database.

Possible Overview (general)



Conclusions and Questions

- HEC + EMEC 2002 combined run already use this framework within ATHENA
- FCAL will use it for 2003 calibration run
→ thus expect a natural transition for 2004 combined EC run
- For both 2004 combined runs :
 - Need final data format for converters
 - Need to rationalize MC handling
→ ntuple level? ROD package???
- For barrel combined run in 2004 :
 - Need to complete LArEMTBAna etc.
 - What about Tiles ???