

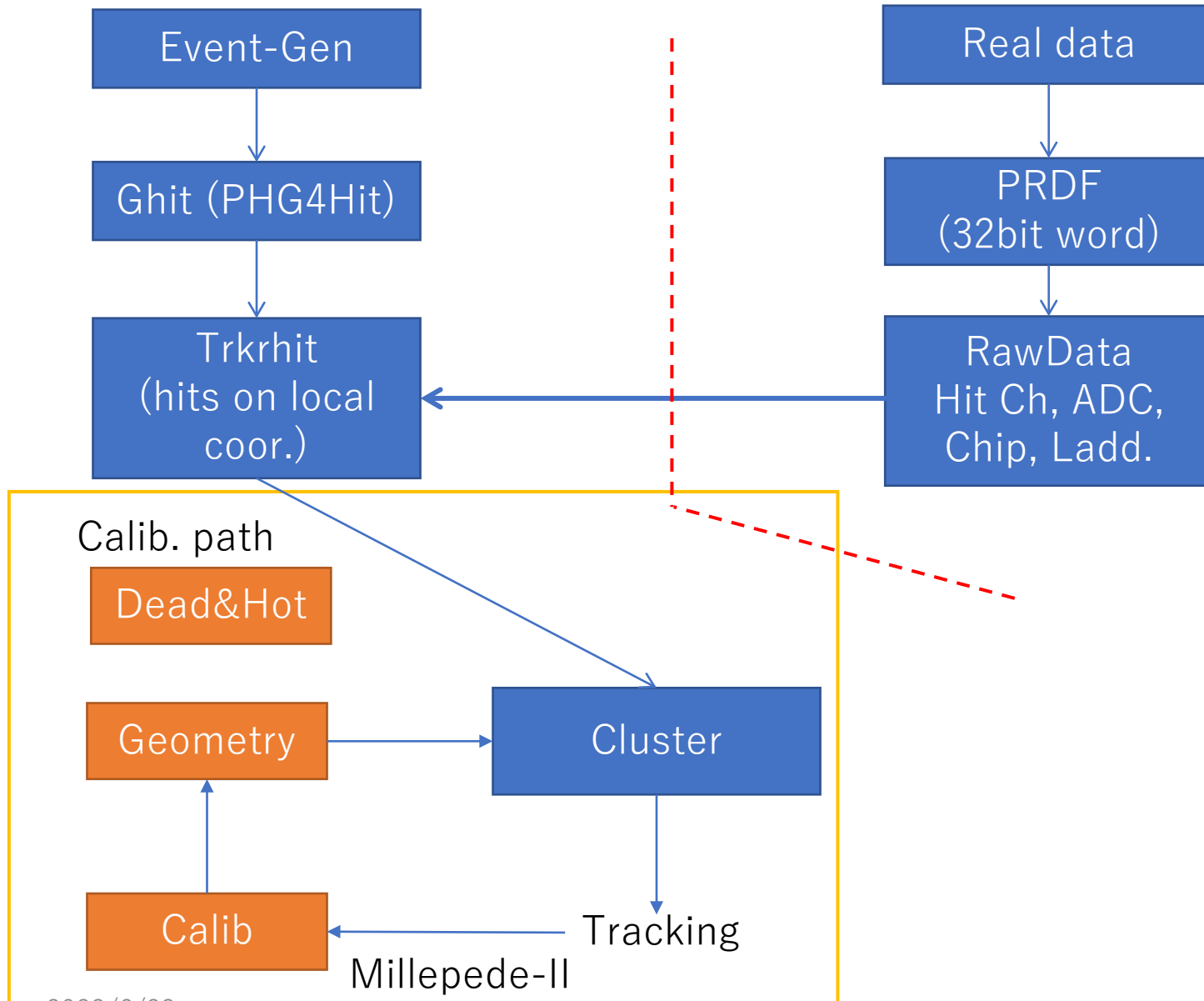
Software Updates

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Software tasks

Beam test and cosmic ray data analysis		Sugiyuka
QA with ladders at barrels [Assembly]		Namimo, Hata
Offline code (rawhit and I/F)		
Geometry calibration – millepede		(Namimo)
Unpacker	Purdue, Cheng-Wei	
Online monitor	Purdue	
INTT Event Display		Ru
Expert GUI for sPHENIX	: Imai, Rikkyo	
Standalone DAQ with FELIX: ???		
LV/Bias GUI		Watanabe, Shimo,
Temperature monitor:		

Data Flow for INTT clustering in real data



Online part

Decoder/Unpacker (iValue()) for INTT

- In online framework
- Data format is not known , ask online experts

After the discussion, we agreed to make “RawData” module and interface to “Trkrhit” by INTT group.

INTT module in GEANT4 macro

```
// Initialize the selected subsystems
G4Init(); // if (Enable::INTT) InttInit(); // set parameters to BlackHole parameters

//-----
// GEANT4 Detector description
if (!Input::READHITS) G4Setup(); // if (Enable::INTT) radius = Intt(g4Reco, radius);
//                                     // PHG4InttSubsystem* sitrack = new PHG4InttSubsystem("INTT", vpair);
//-----
// Detector Division
if (Enable::INTT_CELL) Intt_Cells();
// if (G4INTT::InttDeadMapOption != G4INTT::kInttNoDeadMap)
//     PHG4InttDeadMapLoader* deadMapINTT = new PHG4InttDeadMapLoader("INTT");
//
// PHG4InttHitReco* reco = new PHG4InttHitReco(); // // new storage containers
// PHG4InttDigitizer* digiintt = new PHG4InttDigitizer(); // // new containers

//-----
// SVTX tracking
if(Enable::TRACKING_TRACK) TrackingInit();
if(Enable::INTT_CLUSTER) Intt_Clustering(); // InttClusterizer* inttclusterizer = new InttClusterizer("InttClusterizer",
//                                     // G4MVTX::n_maps_layer, G4MVTX::n_maps_layer + G4INTT::n_intt_layer - 1);
if(Enable::TRACKING_TRACK) Tracking_Reco();
```

- **PHG4InttSubsystem**
 - **g4_hits (PHG4HitContainer)**
 - PHG4Hitv1
- **PHG4InttHitReco**
 - input: **g4_hits (PHG4HitContainer)**
 - Output: hitsetcontainer (TrkrHitSetContainerv1)
 - ヒット位置などChに変換するモジュール
- **PHG4InttDigitizer**
 - input: hitsetcontainer (TrkrHitSetContainerv1)
 - Output: hitsetcontainer (TrkrHitSetContainerv1)
 - Energy → ADC変換するモジュール
- **InttClusterizer**
 - Input: hitsetcontainer (TrkrHitSetContainer)
 - Output: TrkrCluster

PHG4Hitv1

```
float x[2] = {NAN, NAN};
float y[2] = {NAN, NAN};
float z[2] = {NAN, NAN};
float t[2] = {NAN, NAN};
PHG4HitDefs::keytype hitid = ULONG_LONG_MAX;
int trackid = INT_MIN;
int showerid = INT_MIN;
float edep = NAN;

//! container for additional property
prop_map_t prop_map;
```

データフォーマット

- TrkrHitSetContainer () :

- ヒットのあるラダー(センサー)配列、MapのFirst(配列Index)にLadder(センサー)情報

```
using Map = std::map<TrkrDefs::hitsetkey, TrkrHitSet *>;
```

```
// The hitset key includes the layer, the ladder_z_index (sensors numbered 0-3) and ladder_phi_index (azimuthal location of ladder) for this hit  
TrkrDefs::hitsetkey hitsetkey = InttDefs::genHitSetKey(sphxlayer, ladder_z_index, ladder_phi_index, crossing);
```

- TrkrHitSet : ラダー内ヒット配列、MapのFirst(配列Index)にCh情報

```
using Map = std::map<TrkrDefs::hitkey, TrkrHit*>;
```

```
TrkrDefs::hitkey hitkey = InttDefs::genHitKey(vzbin[i1], vybin[i1]);
```

- TrkrHit(v2) : ヒット毎の個々の詳細情報

```
unsigned short m_adc = 0;
```

- TrkrCluster(v3)

```
TrkrDefs::cluskey m_cluskey; //< unique identifier within container
TrkrDefs::subsurfkey m_subsurfkey; //< unique identifier for hitsetkey-surface maps

unsigned int m_adc;           //< cluster sum adc (D. McGlinchey - Do we need this?)

float m_local[2];            //< 2D local position [cm]
float mActsLocalErr[2][2];   //< 2D local error for Acts [cm]
```

現状クラスタサイズはインプリメントされていない。