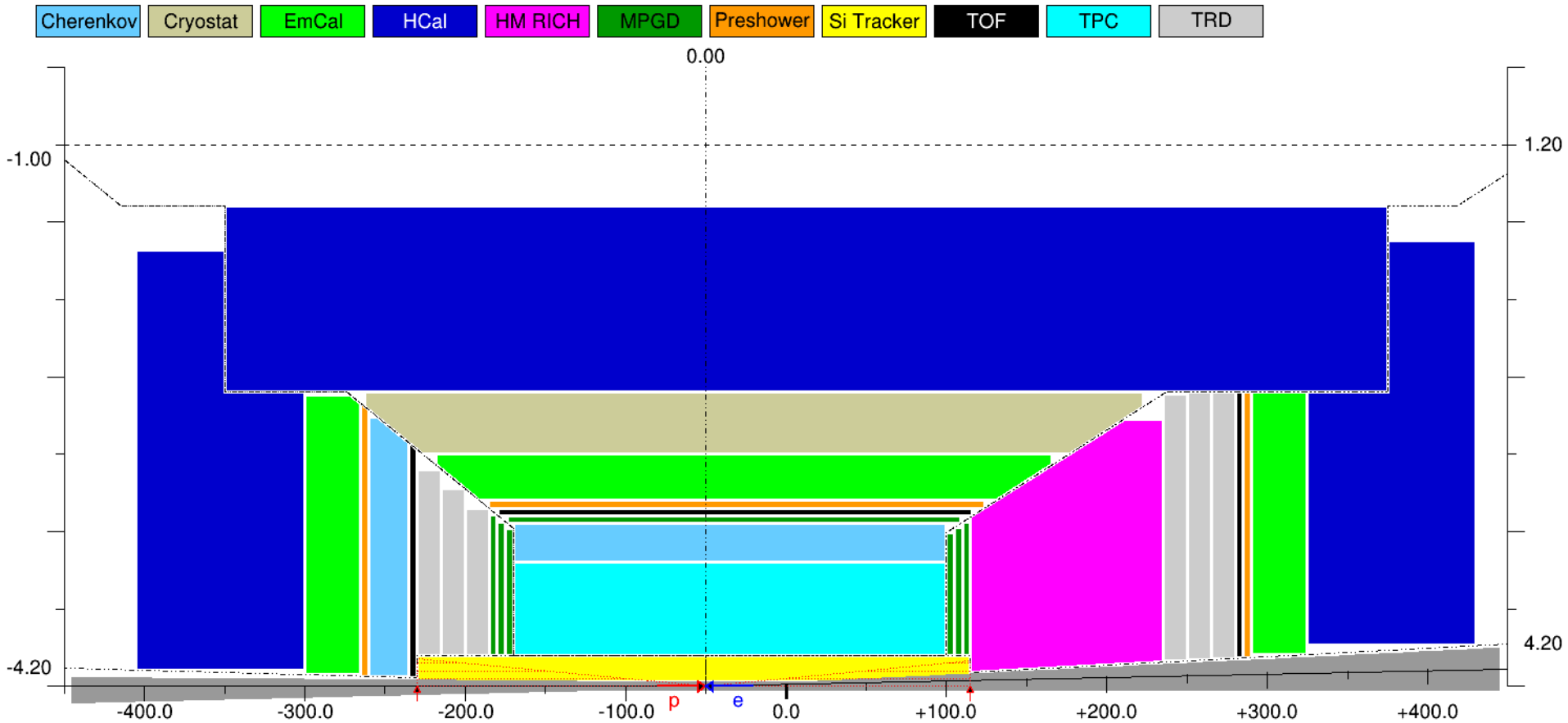# EicToyModel: integration into EIC software frameworks

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**EIC Software WG Meeting    July 8 2020**
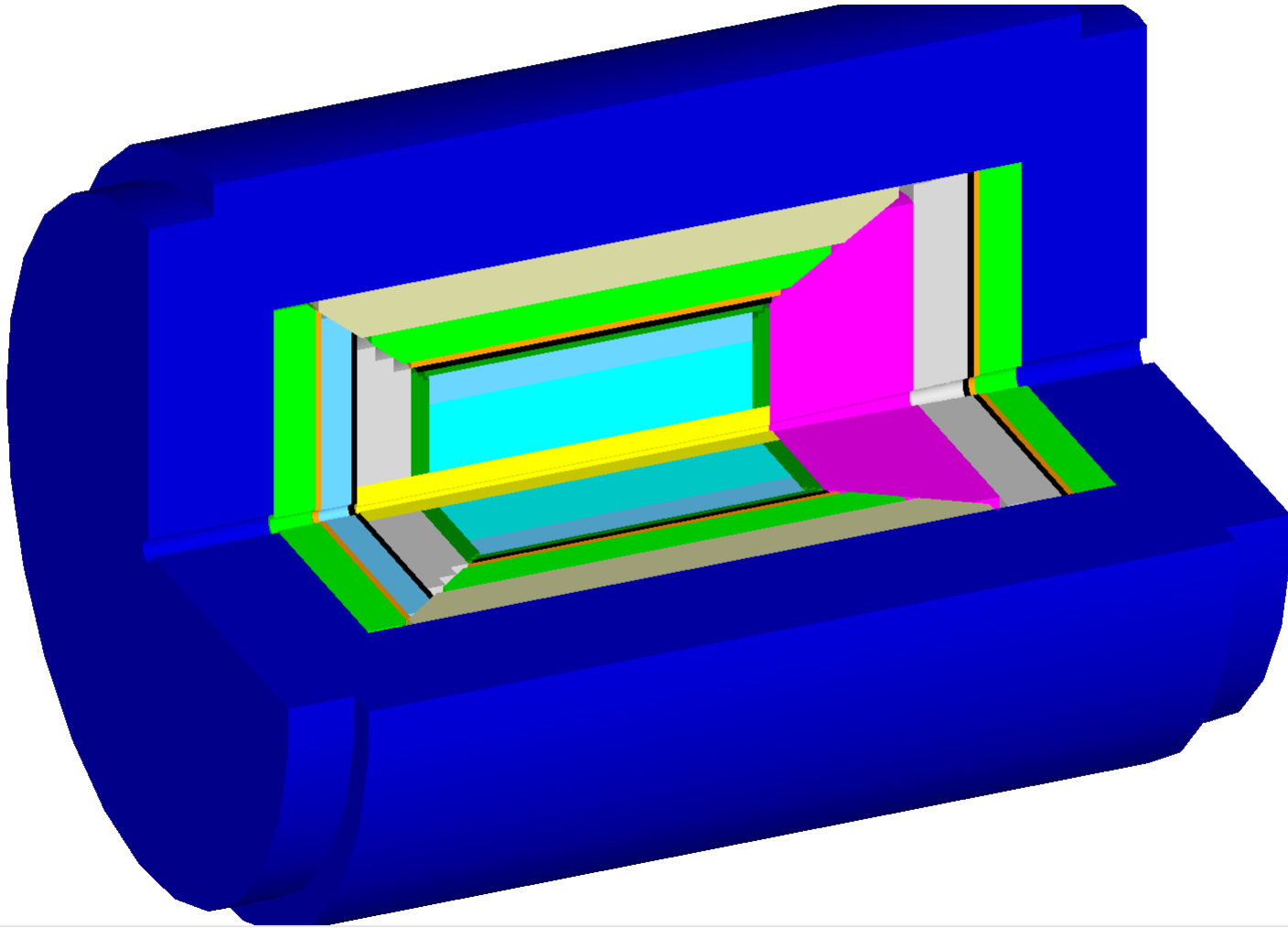
# Template



- Some random configuration, does not really matter

# Case#0: standalone G4 application



- Nothing new: EicToyModel own GEANT4 example code

# Case #1: *escalate*
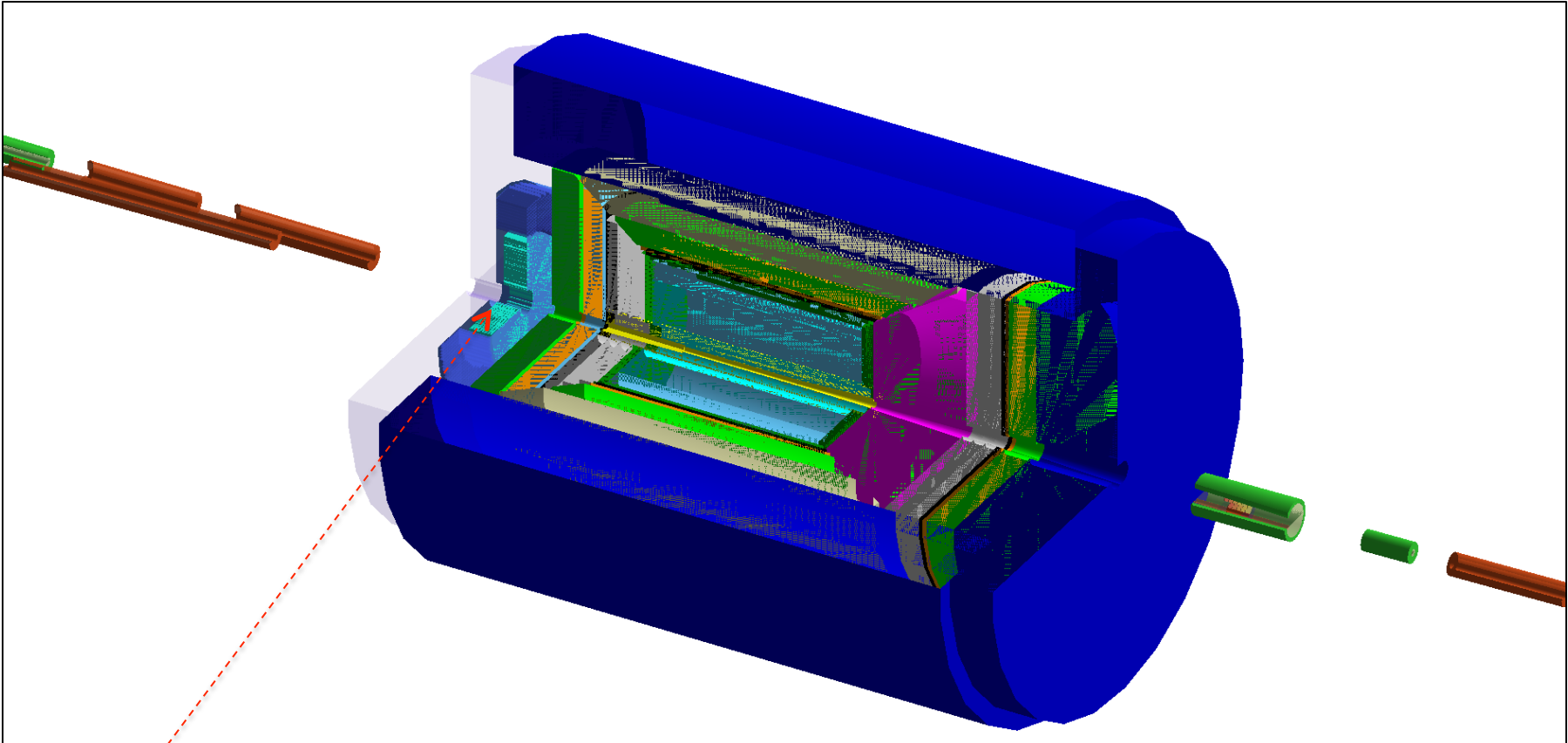
```cpp
1   void JLeicDetectorConstruction::Create_ce_Endcap(JLeicDetectorConfig::ce_Endcap_Config cfg)
2   {
3     // ...
4
5     // Import ROOT file with an "EicToyModel" singleton class instance;
6     auto eic = EicToyModel::Import("example.root");
7
8      // Construct the integration volumes geometry, internally;
9     eic->Construct();
10
11    // Place them as G4 volumes into the IR world volume all at once;
12    eic->PlaceG4Volumes(World_Phys);
13
14    // Get pointer to a particular G4VPhysicalVolume;
15    ce_ENDCAP_GVol_Phys = eic->bck()->get("HCal")->GetG4Volume();
16
17    // ...
18  }
```

- **Latest Docker container**
  - gcc 9.2.1
  - ROOT 6.20.04
  - GEANT 10.6.1
  - g4e JLEIC source code

# Case#1: *escalate*



This object is a "native" JLEIC EmCal placed into the respective container volume
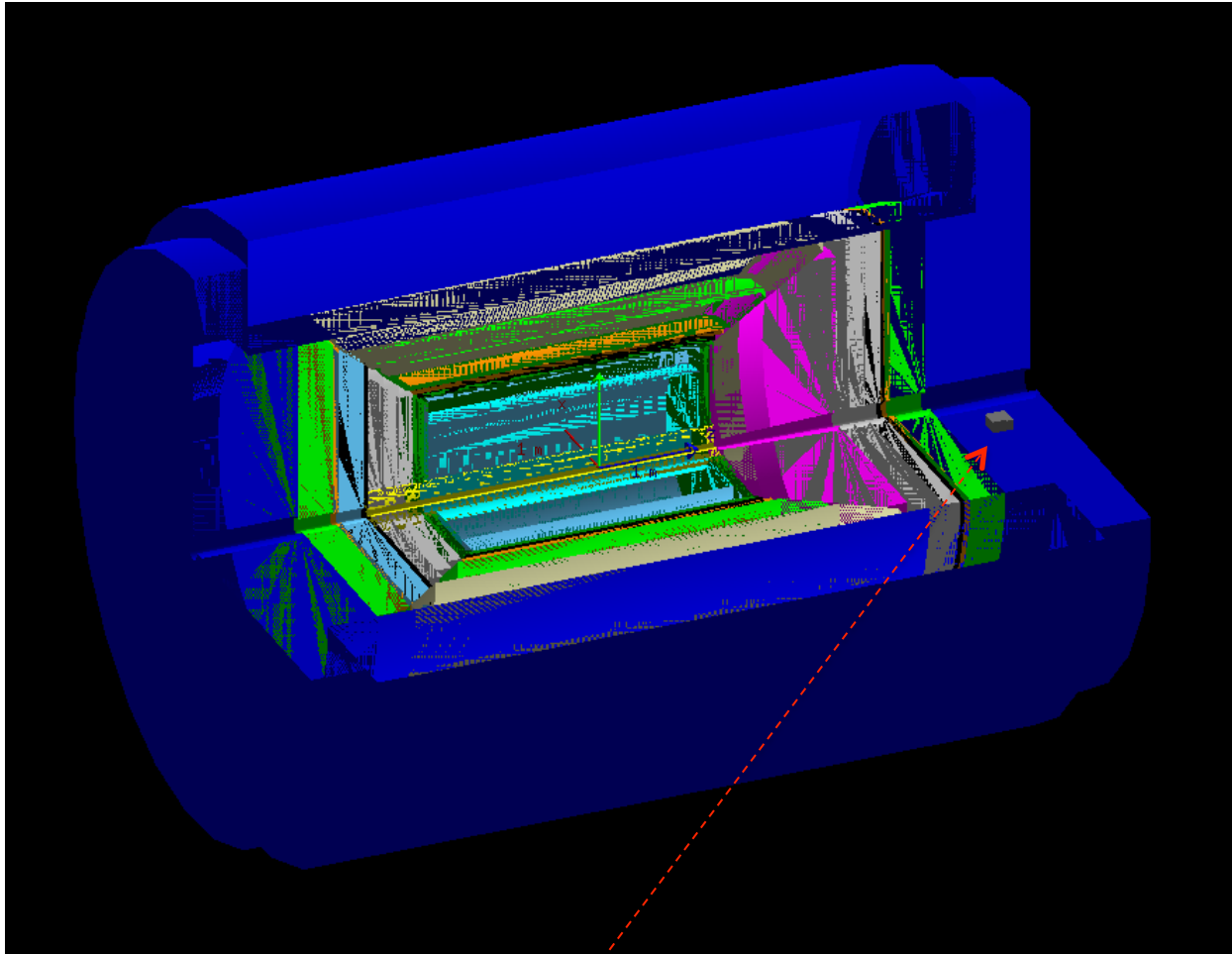
# Case#2: *fun4all*

```cpp
1   void MyDetectorDetector::ConstructMe(G4LogicalVolume *logicWorld)
2   {
3     // Import ROOT file with an "EicToyModel" singleton class instance;
4     auto eic = EicToyModel::Import("example.root");
5
6      // Construct the integration volumes geometry, internally;
7     eic->Construct();
8
9     // Place them as G4 volumes into the IR world volume all at once;
10    eic->PlaceG4Volumes(logicWorld);
11
12    // Singleton instance, no mess;
13    auto eic = EicToyModel::Instance();
14
15    // Get pointer to a particular G4VPhysicalVolume;
16    auto hcal = eic->fwd()->get("HCal")->GetG4Volume();
17
18    // ...
19
20    G4VPhysicalVolume *phy = new G4PVPlacement(
21        rotm,
22        G4ThreeVector(m_Params->get_double_param("place_x") * cm,
23                      m_Params->get_double_param("place_y") * cm,
24                      m_Params->get_double_param("place_z") * cm),
25        //logical, "MyDetector", logicWorld, 0, false, OverlapCheck());
26        logical, "MyDetector", hcal->GetLogicalVolume(), 0, false, OverlapCheck());
27
28    // ...
29  }
```

- **RACF**
  ‣ gcc 4.8.5
  ‣ ROOT 6.16.00
  ‣ GEANT 10.2.2
  ‣ One of the example codes

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# Case#2: *fun4all*



This object is a "template G4Box" placed into a container volume