

# C++ codes Integration / Status of new CATIA Geometry

Release 9

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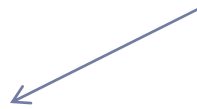
[www.cadcam.ge](http://www.cadcam.ge)

# Code organization has been Modified

## ▶ Tatsumi did entry point to AtlasSubsystem class

```
////////////////////////////////////  
//  
// File: CATIA.h  
// Author: Tatsumi Koi (SLAC)  
// Date: 20 July 2010  
//  
// Description:  
// CATIA is a pure virtual class representing a generic Atlas shielding  
// configuration.  
// Specific shielding geometries must be derived from this class and  
// implement the following methods:  
//  
// Build - build the shielding geometry and place it in the Atlas  
// mother volume  
//  
// DefineMaterials - define all elements and/or materials needed to  
// build the model  
//  
// Describe - print out information about the subsystem  
//  
// SetSensitivity - set up sensitive volumes for hit collection  
//  
////////////////////////////////////  
  
#ifndef CATIA_h  
#define CATIA_h 1  
  
#include "CEG_G4Util/AtlasSubsystem.h"  
  
class CATIA : public AtlasSubsystem {  
  
public:  
  
    CATIA(G4String name) : AtlasSubsystem("CATIA",name) {}  
    virtual ~CATIA() {}  
  
    virtual void Build(G4LogicalVolume* AtlasMother) = 0;  
    virtual void Describe() const = 0;  
  
private:  
  
    virtual void DefineMaterials() = 0;  
  
};  
  
#endif
```

CATIA.h



## ▶ Our main geo class GapRegion now inherit the AtlasSubsystem through the CATIA.h

- AtlasSubsystem -> CATIA -> GapRegion



# Code organization has been Modified

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- ▶ Now we can add our geo objects to global geo object G4LogicalVolume
- ▶ Material description has been also changed. Now we are using GCalorMaterials and GetMat()

```
//TK
//G4Material* Air = new G4Material("Air", density= 1.29*mg/cm3, nel=2);
Air = GCalorMaterials::GetMat("AIR");
Al = GCalorMaterials::GetMat("ALUMINUM");
```

- ▶ Thanks Tatsumi ! However we have questions:
  - ▶ We need additional objects for local compilation – G4CalorMaterials, CBG\_G4UTIL are not standard Geant4 classes
  - ▶ World system is now omitted, is it ok ?
  - ▶ Why do we need description of global material in GAPRegion.cc ?



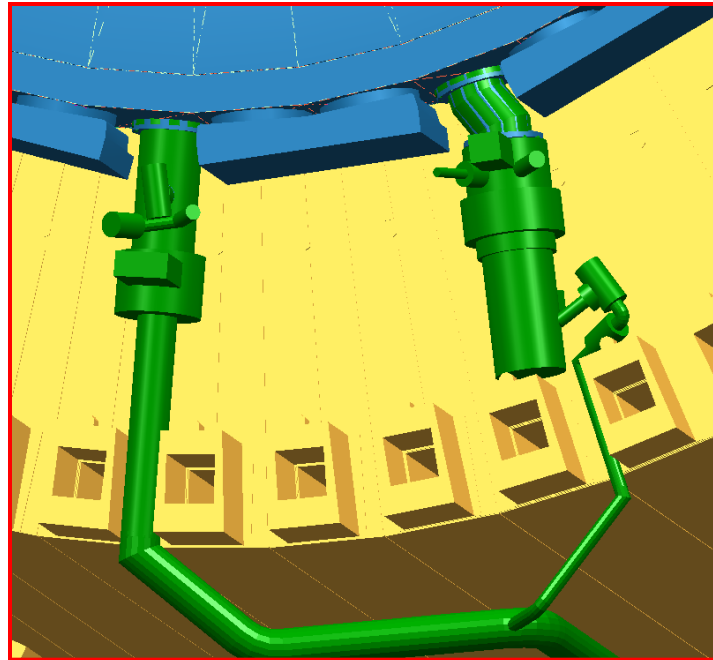
# New CATIA Geometry Status

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- ▶ We are fighting now with Cooling pipes (see R05) to convert them in C++
- ▶ However we are facing that task requires more time and effort as it was planning initially
- ▶ Geometry itself turned out much more complicated as it is presented in CATIA model database

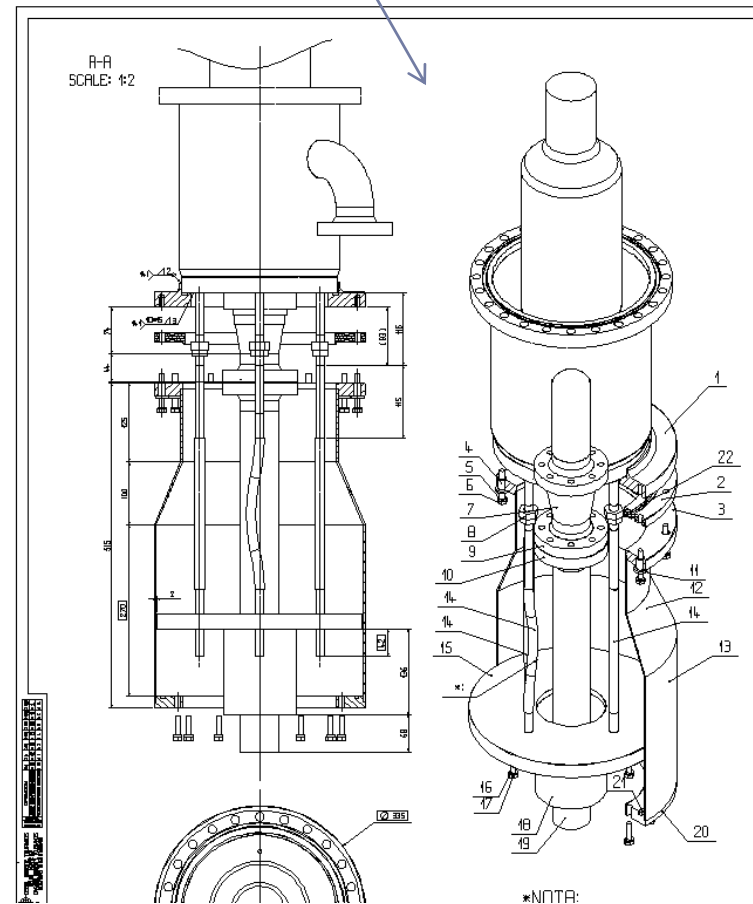


# New CATIA Geometry Status



CATIA DB Model

CDD Drawing



# Current Steps:

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- ▶ Getting detailed information from CDD and persons in charge
- ▶ Building the CATIA detailed models and definition of volumes by materials
- ▶ Simplification CATIA models keeping in same time amount of volumes
- ▶ Generation C++ codes according to rules described above
- ▶ Should be takes ~ 2 weeks

