Inner Detector Services

Release 16

“Support of Services – Segment 1”

24/05/2011

Alexander Sharmazanashvili

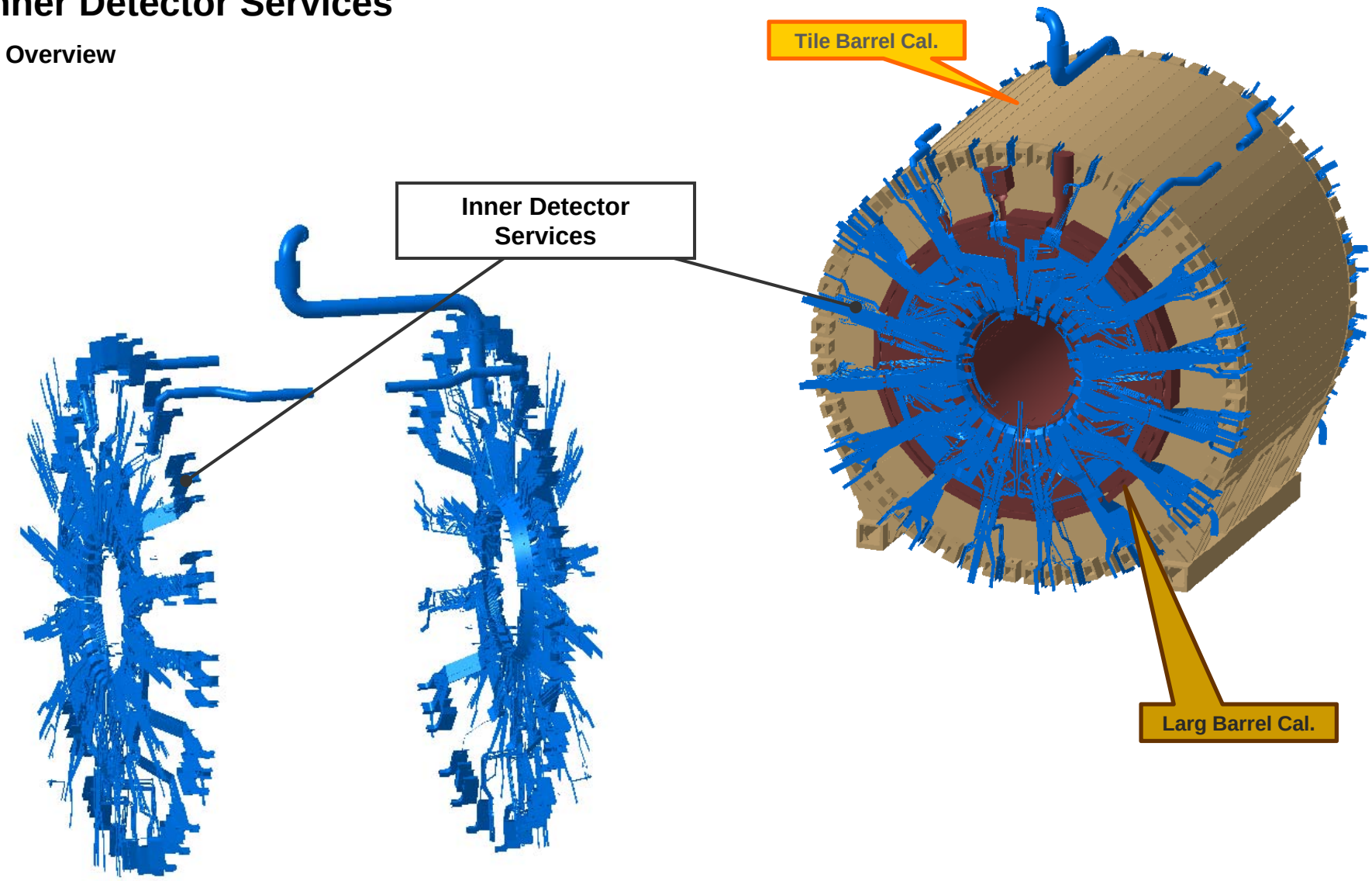
Archil Surmava

Besik Kekelia

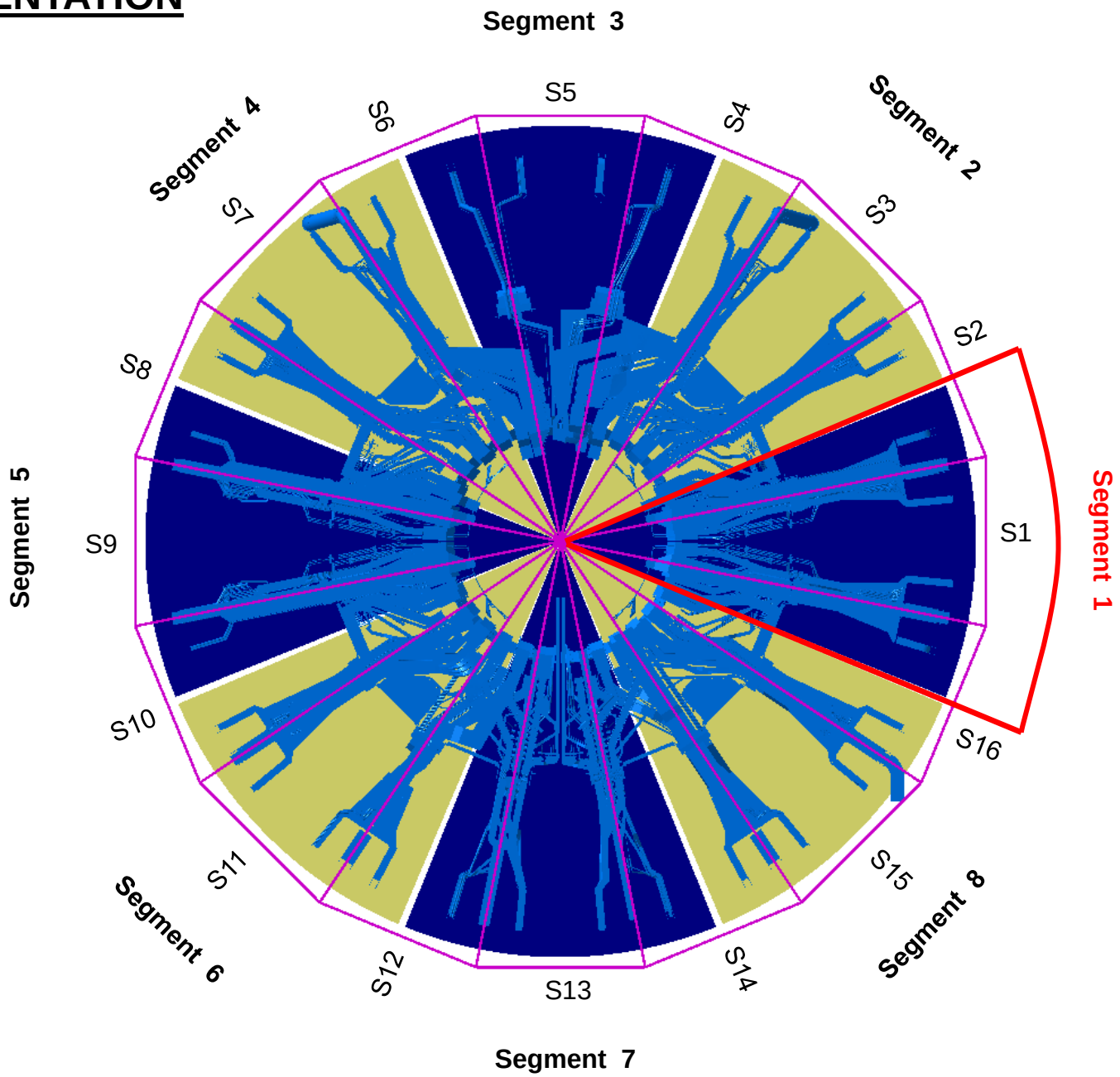
GCCEC www.cadcam.ge

Inner Detector Services

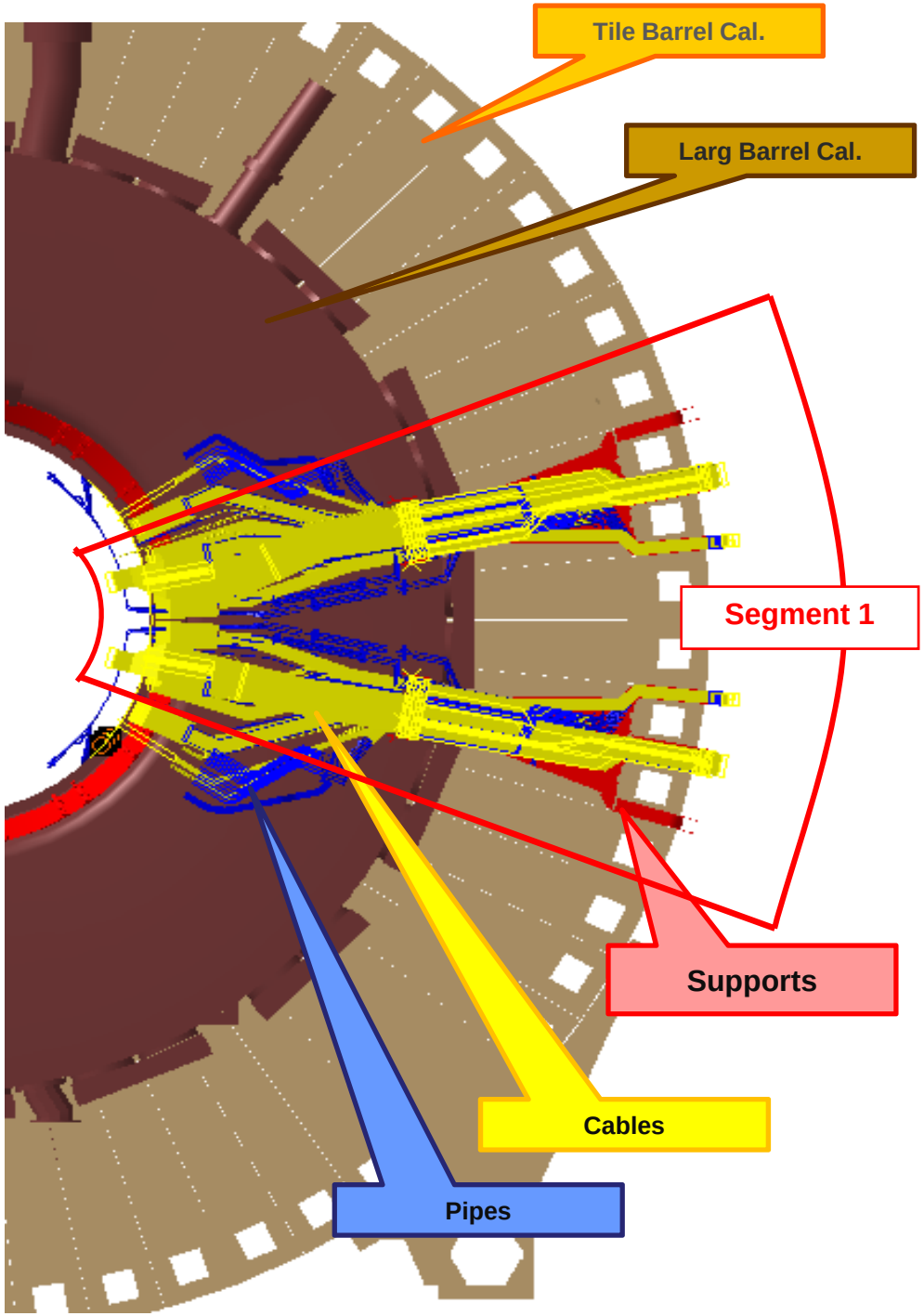
Overview



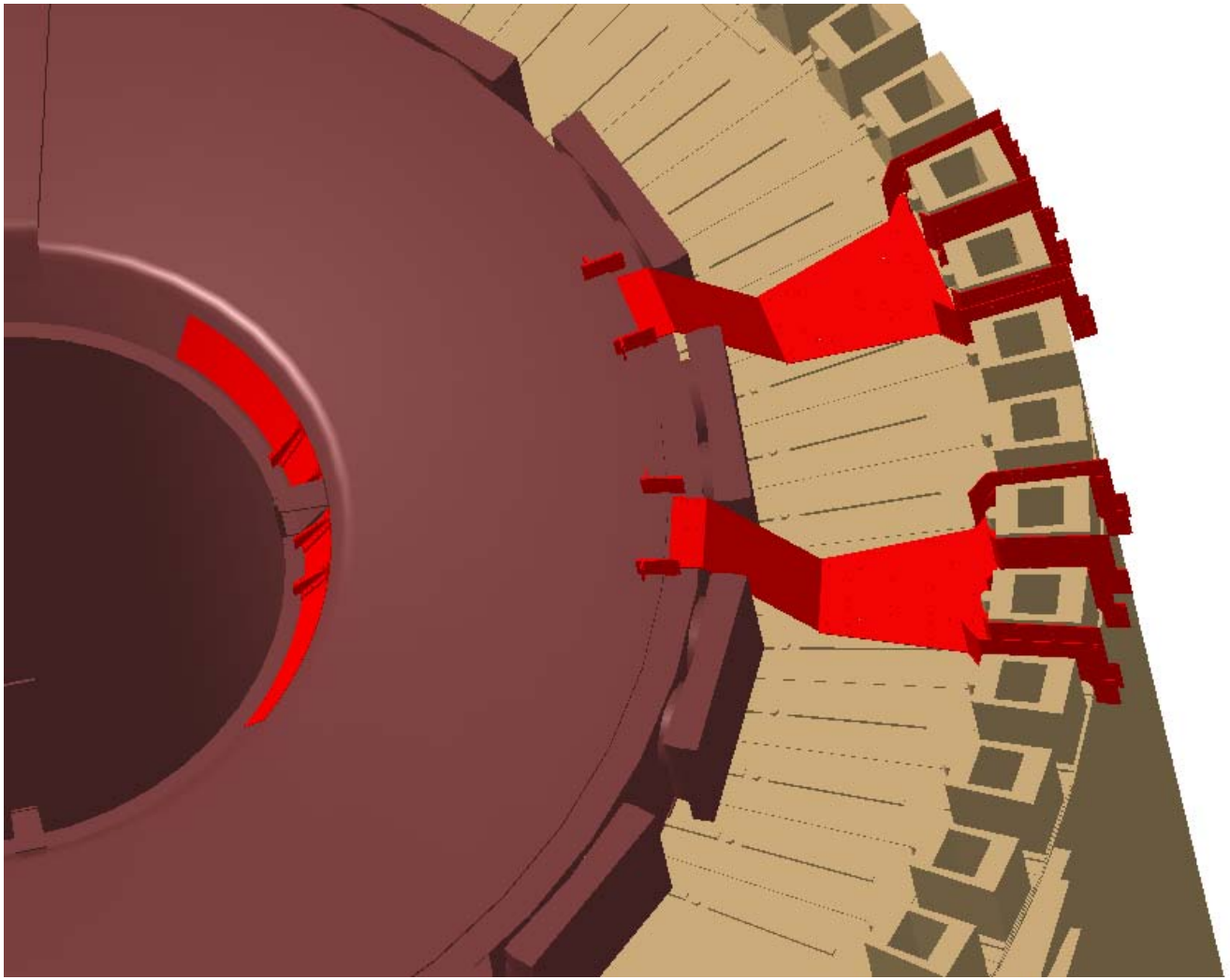
SEGMENTATION

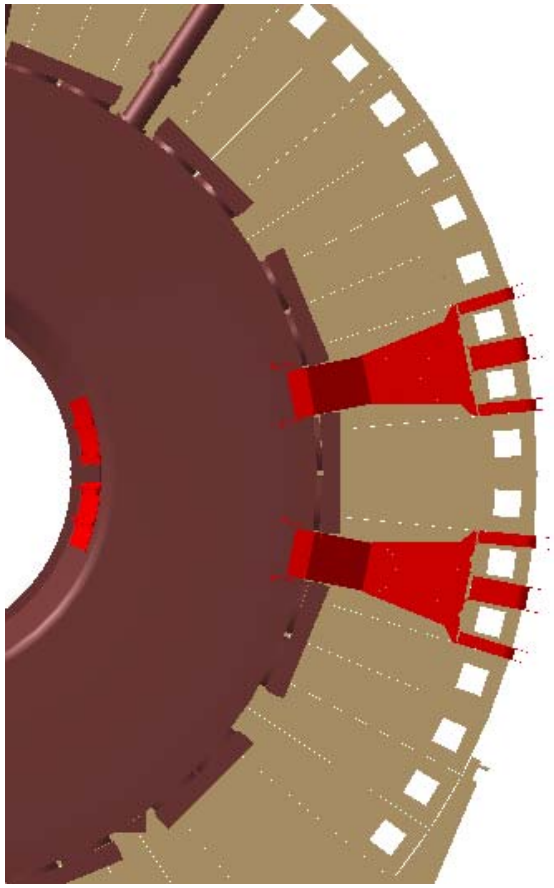


GROUP


Tile Barrel Cal.
Larg Barrel Cal.
Segment 1
Supports
Cables
Pipes

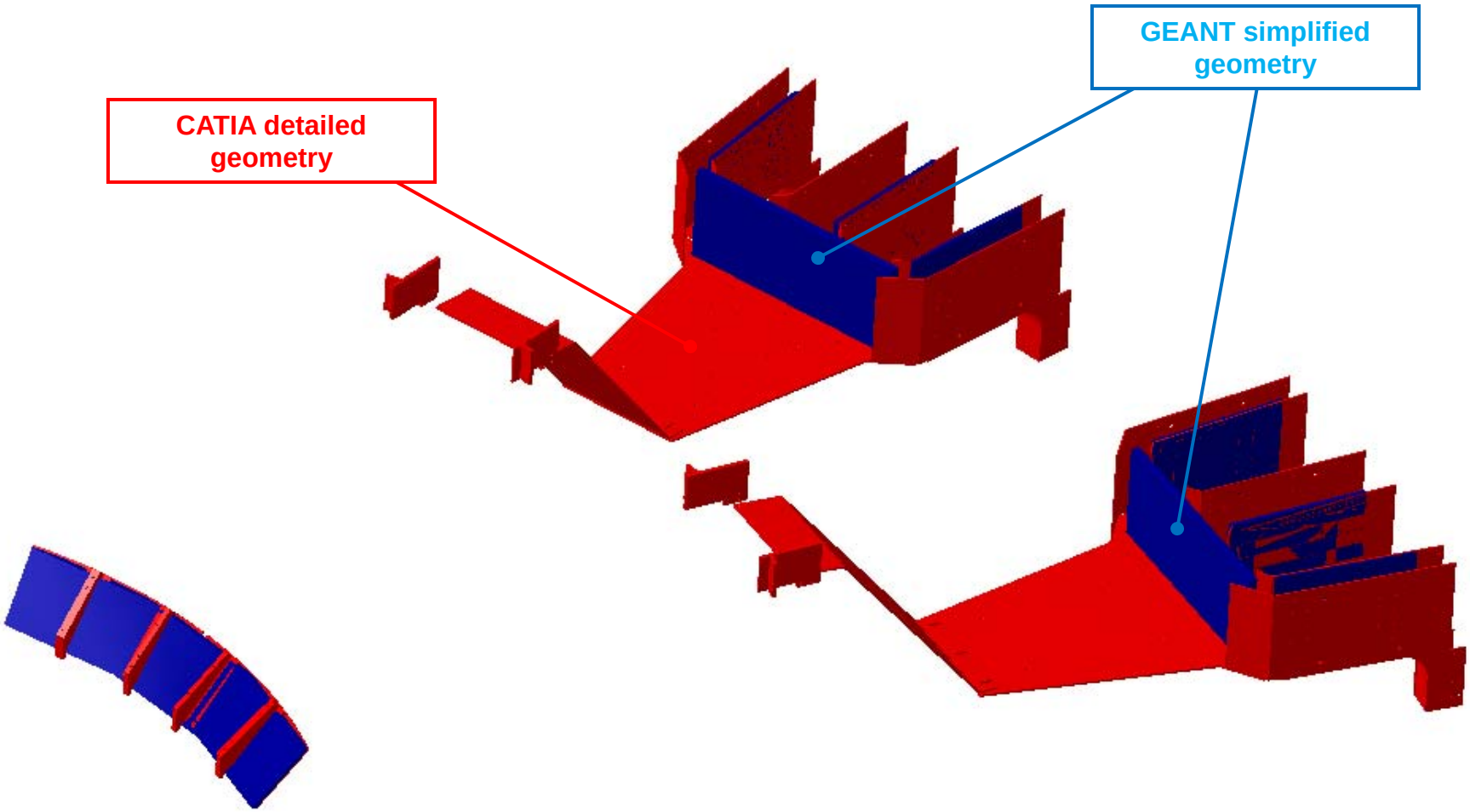
Services Supports / Segment 1





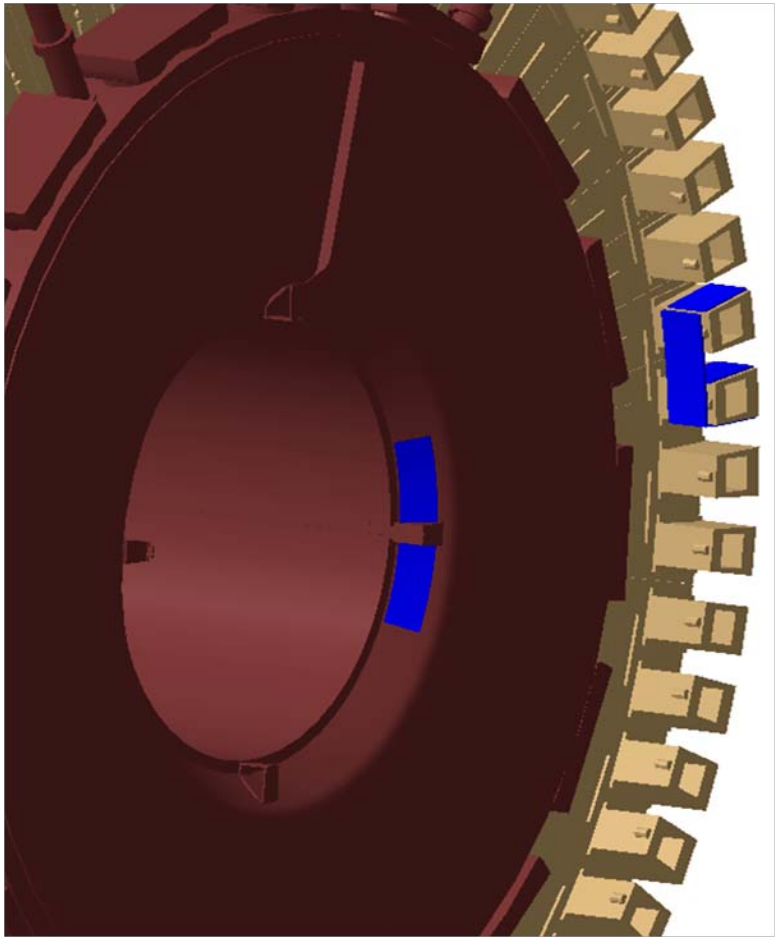
Material: Aluminum

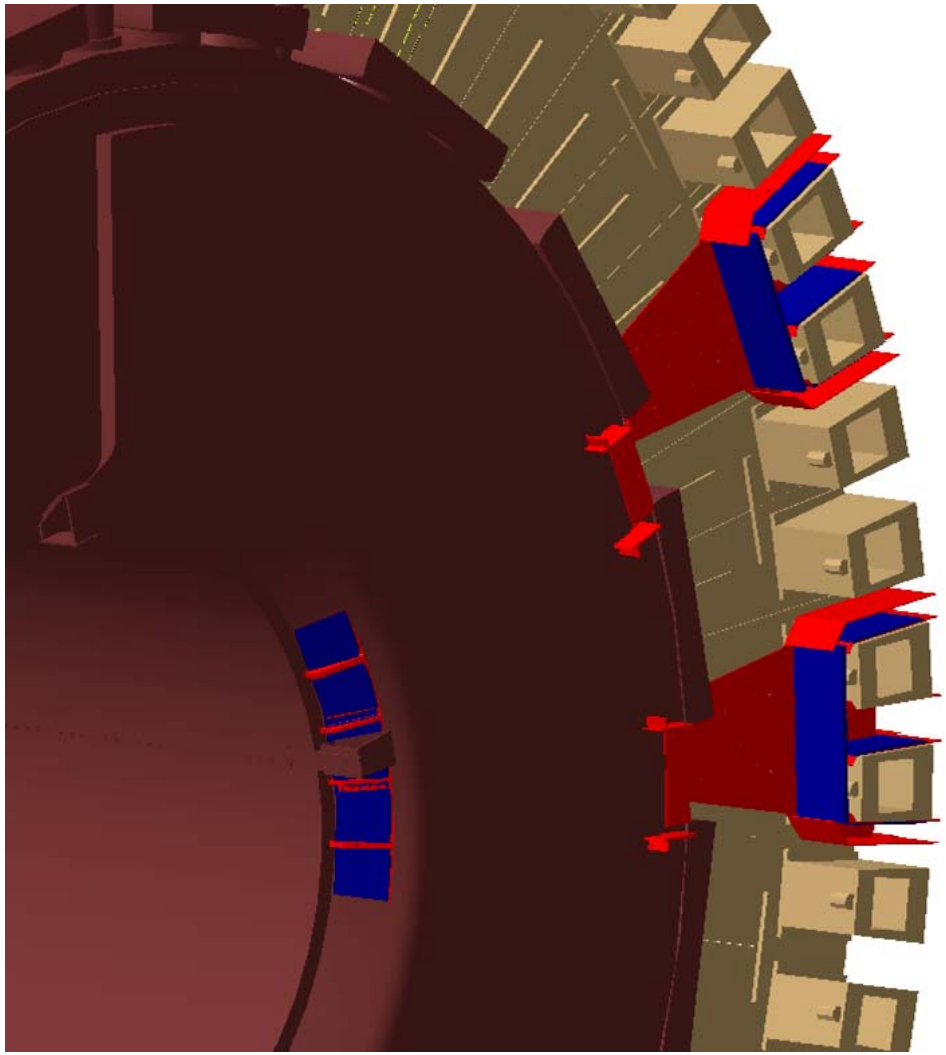
Services Supports / Segment 1



Material: Aluminum

Services Supports / Segment 1





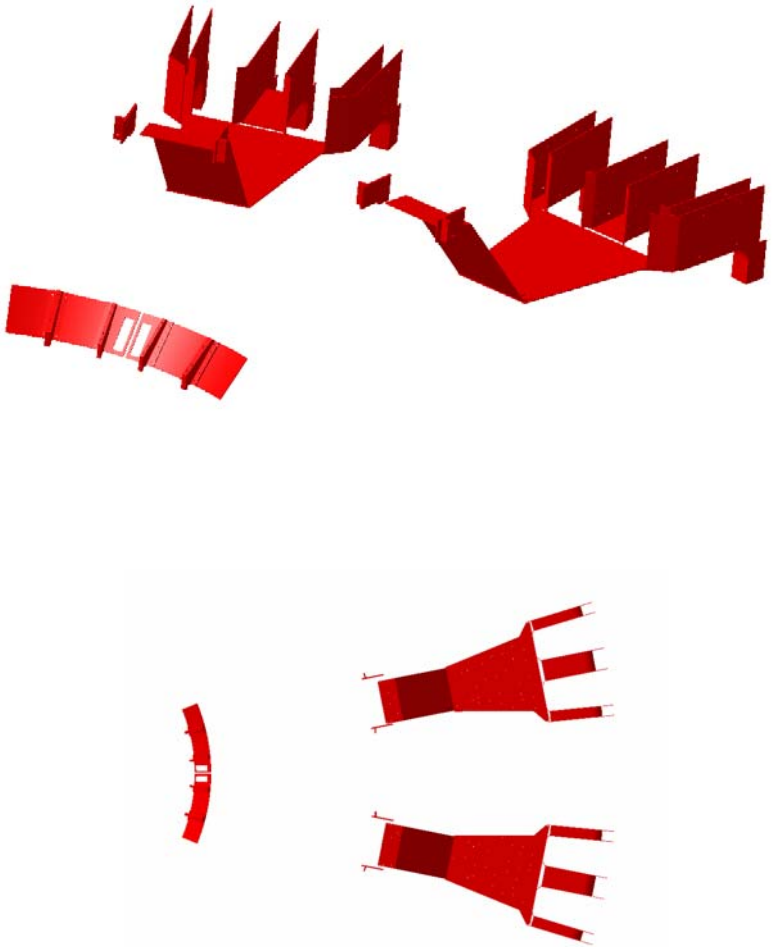
Supports of Services

Simplification

Material: Aluminum

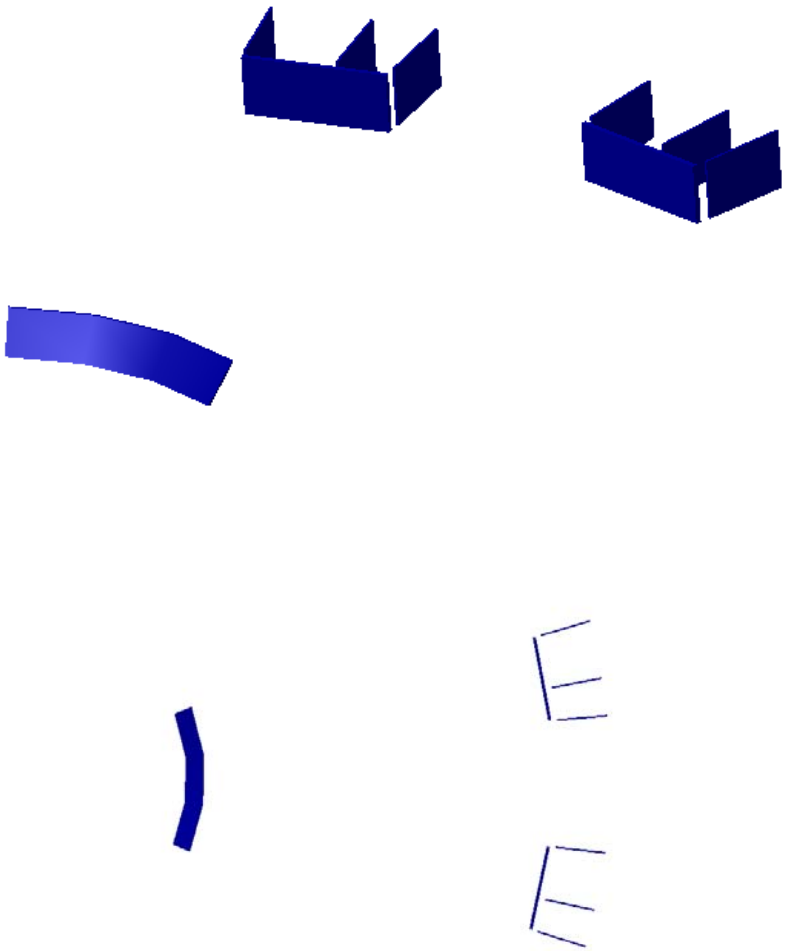
Detailed

Volume: ~14284cm^3



Simplified

Volume: ~14291cm3



Geant4 code

```
//-------------------------------------------------------------------------------------//
//@#$/////////////////////////////////  R16 - Support Serv Sector1  ////////////////////////////
//-------------------------------------------------------------------------------------//

 G4double r_inner;
  G4double r_outer;
  G4double z_half;
  G4RotationMatrix* RotObjG1 = new G4RotationMatrix(G4ThreeVector( 0*mm, 0*mm, 1*mm), 22.5*deg);
  G4ThreeVector GLVect(0.,0.,0.);
  G4ThreeVector DLVect(0.,0.,0.);
  G4ThreeVector PRVect_2(0.,0.,-135.5*mm);
  G4ThreeVector PRVect_31(3896.45*mm,1105.43*mm,0*mm);
  G4ThreeVector PRVect_32(4023.32*mm,469.87*mm, 0*mm);
  G4ThreeVector PRVect_33(3977.65*mm,716.63*mm, 0*mm);
  G4RotationMatrix* P3RotObj_2 = new G4RotationMatrix(G4ThreeVector( 1*mm, 0*mm, 0*mm), 0*deg);
  G4RotationMatrix* P3RotObj_31 = new G4RotationMatrix(G4ThreeVector( 0*mm, 0*mm, 1*mm), -16.875*deg);
  G4RotationMatrix* P3RotObj_32 = new G4RotationMatrix(G4ThreeVector( 0*mm, 0*mm, 1*mm), -5.625*deg);
  G4RotationMatrix* P3RotObj_33 = new G4RotationMatrix(G4ThreeVector( 0*mm, 0*mm, 1*mm), -11.25*deg);

  //------------ Space
  G4double Zplan[] = {0*mm,150*mm};
  G4double Riacc[] = {1213.8*mm,1334.4*mm};
  G4double Roacc[] = {1225.2*mm,1345.8*mm};
  G4Polycone* SuppS1_1 = new G4Polycone("SuppS1_1", -22.5*deg, 45.*deg, 2, Zplan, Riacc, Roacc);
  r_inner = 3807.9*mm;
  r_outer = 3830*mm;
  z_half = 122.5*mm;
  G4Tubs* SuppS1_2 = new G4Tubs("SuppS1_2",r_inner, r_outer, z_half, 6.75*deg, 9*deg);
  G4Box* SuppS1_31= new G4Box("SuppS1_31",180*mm,5.75*mm,122.5*mm);
  G4Box* SuppS1_33= new G4Box("SuppS1_33",180*mm,5.85*mm,122.5*mm);

  G4VSolid* SuppS1_S_Un1= new G4UnionSolid("SuppS1_S_Union1", SuppS1_2, SuppS1_31, P3RotObj_31, PRVect_31);
  G4VSolid* SuppS1_S_Un2= new G4UnionSolid("SuppS1_S_Union2", SuppS1_S_Un1, SuppS1_31, P3RotObj_32, PRVect_32);
  G4VSolid* SuppS1_S_Un3= new G4UnionSolid("SuppS1_S_Union3", SuppS1_S_Un2, SuppS1_33, P3RotObj_33, PRVect_33);
  G4VSolid* SuppS1_S_Un4= new G4UnionSolid("SuppS1_S_Union4", SuppS1_1, SuppS1_S_Un3, P3RotObj_2, PRVect_2);
  G4VSolid* SuppS1_S_Un5= new G4UnionSolid("SuppS1_S_Union5", SuppS1_S_Un4, SuppS1_S_Un3, RotObjG1, PRVect_2);

  G4LogicalVolume* SuppS1_S_log = new G4LogicalVolume(SuppS1_S_Un5,  GCalorMaterials::GetMat("AIR"), "SuppS1_S_log", 0, 0, 0);
  SuppS1_S_log->SetVisAttributes(airVisAtt);
  G4AssemblyVolume* SuppS1_S_AV = new G4AssemblyVolume(SuppS1_S_log, GLVect, 0);

  //--- Support. Sector 1 (Aluminium)
  G4LogicalVolume* SuppS1_1_log = new G4LogicalVolume(SuppS1_S_Un5, GCalorMaterials::GetMat("ALUMINUM"), "SuppS1_1_log", 0, 0, 0);
  SuppS1_1_log->SetVisAttributes(SSVisAtt);
  SuppS1_S_AV->AddPlacedVolume( SuppS1_1_log, GLVect, 0);

  DLVect.setZ(3188*mm);
  SuppS1_S_AV->MakeImprint(AtlasMother, DLVect, 0);
```