XML Geometry Data Description, GraXML

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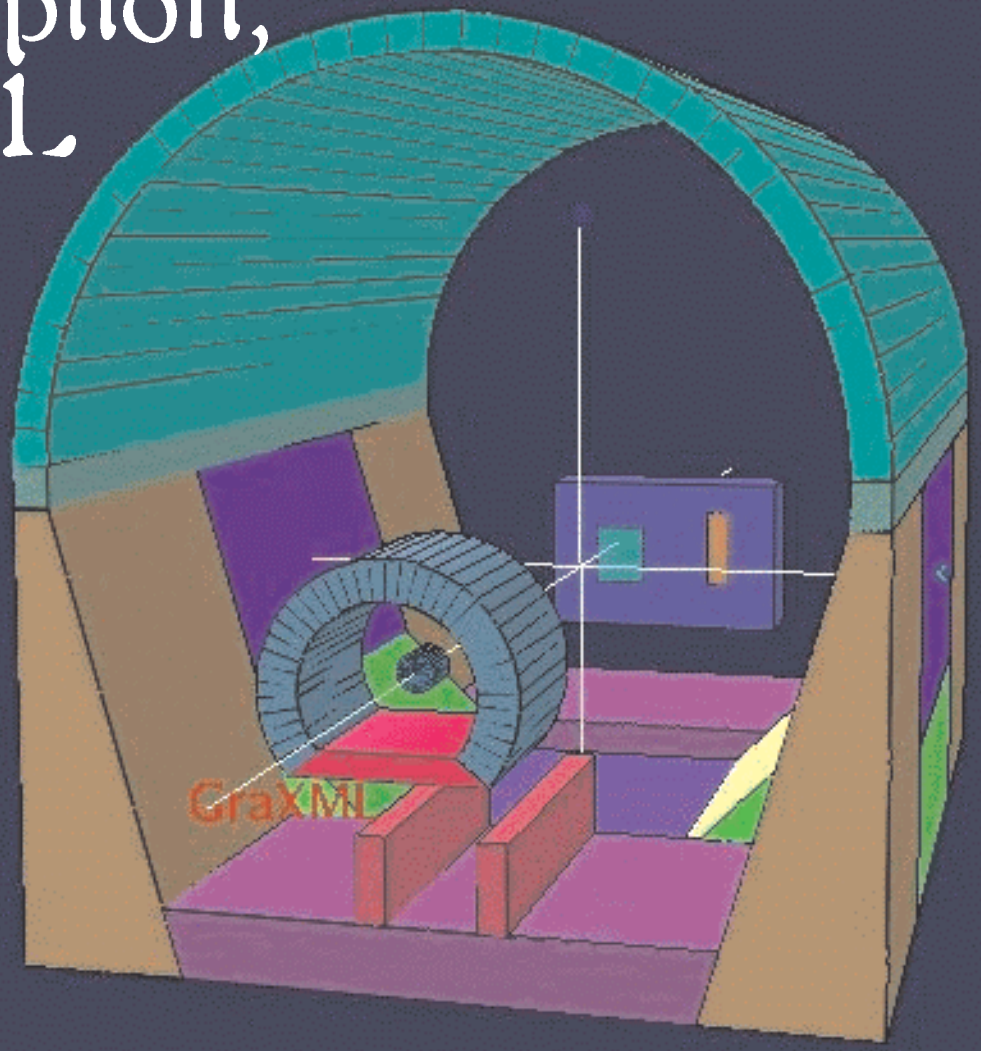


Geant4 Workshop, Orsay, 18.10.2000

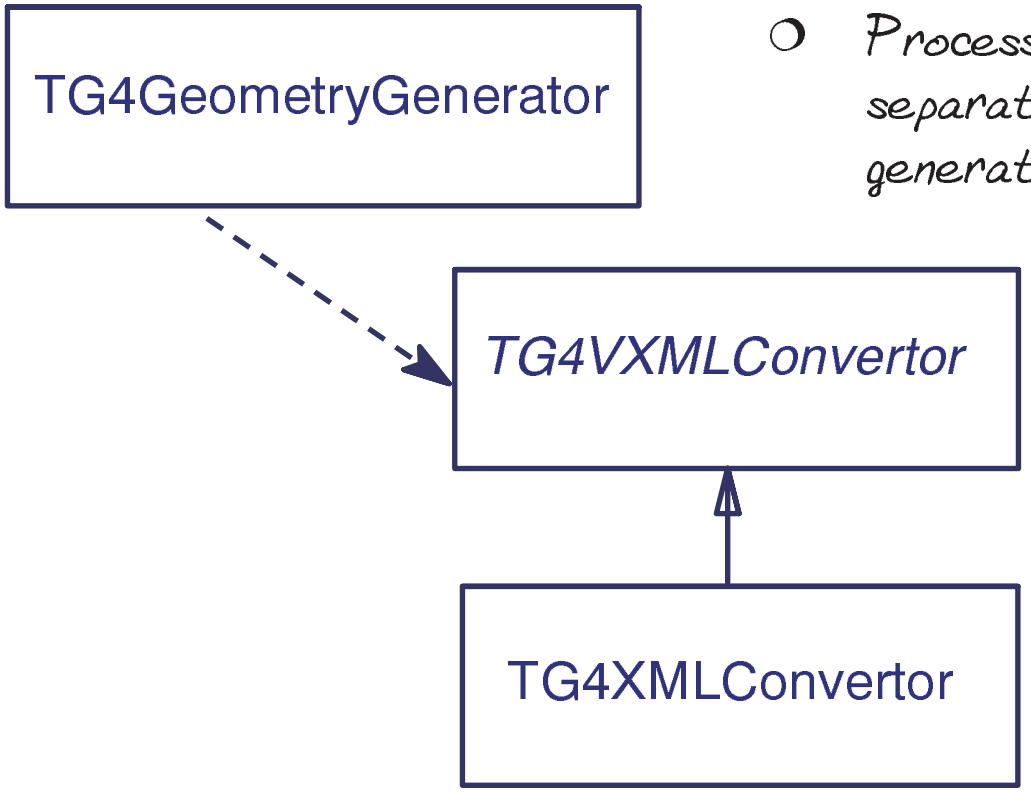
Motivation

- Geometry of ALICE subdetectors is defined in a C++ code using a Monte Carlo interface
- The Monte Carlo interface
  - a foundation of AliRoot framework
  - = abstract class AliMC
  - provides methods for geometry definition in a Geant3 style
    - Gsvolu(), Gspos(), Gsposp(), ...
- Implementation of AliMC: for both Geant3 and Geant4
- There is no interest and no plan to replace the primary source of geometry (C++ code) with XML
- Generation of XML files from the primary sources makes available many existing tools (parsers, browsers, ...)

Generation of XML files from Geant4

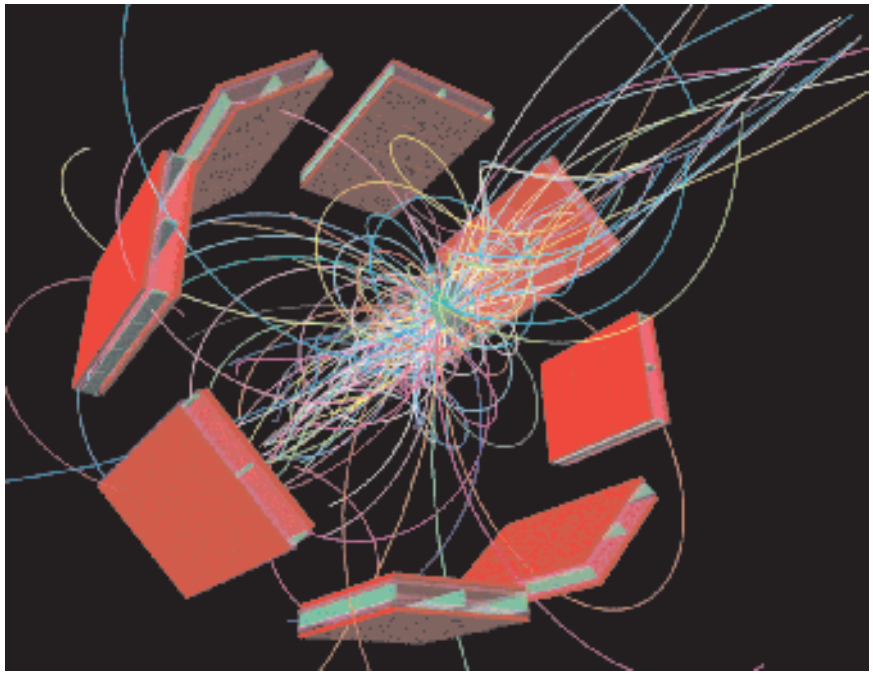
- XML file is generated from Geant4 geometry (in memory)
  - generation starts from a given logical volume and goes through the whole daughters tree
  - starting from world => the whole geometry is written
- Extended Atlas DTD -> AliDD.dtd
  - added "transform" element (placement with translation and rotation)
  - added solids ("trap", "phedra")
- Limitation:
  - Only G4PVPlacement, G4PVReplica physical volumes are supported
  - G4Parameterised -> exception (it is not used in ALICE geometry)

Generation of XML files from Geant4
Implementation



- Processing G4 geometry separated from XML generation
- Generalization of XML element generation -> flexibility for replacement of DTD

GraXML



- program for the 3D visualization of the Atlas Event and Detector data developed by J. Hrivnac (Atlas)
- can be used standalone (XML files) or integrated (framework)
- uses Java3D to create, render and manipulate SceneGraph
- reusable components of GraXML will be included in the FreeHEP library and integrated with Wired

Where to find more

- ALICE Geant4:

  http://alisoft.cern.ch/offline/geant4

- GraXML:

  http://atlas.web.cern.ch/Atlas/GROUPS/GRAPHICS/Texts/Documentation/GraXML