Bruno GDML packaging: a pragmatic approach

GDML packaging

- Why is it needed?

- What is the proposed solution?

- What I have to do in the future to modify my sub detector?

Why GDML repackaging?

- The Bruno source files must be decoupled by the GDML geometry description files

- We need to split the GDML files into packages (directories) that represents sub-sytems

- Each sub-system will be responsible for its own package

Bruno workdir now

```
[paoloni@bbr-ui Bruno_CIPE_mkII]$ ls
BaBar_IFR.gdml                                  FTOFnewGeometry04022011.gdml            onlyIFR.gdml
Backward_external_Stopper.gdml                  FTOFnewGeometry16032011.gdml            OpticalProperties.mac
bar_originale.gdml                              gdml_core.xsd                           out
bin                                             gdml_define.xsd                         RadBhaBha.Prod.mac
BrehmStralung.mac                               gdml_extensions.xsd                     readROOTEvents.mac
Bruno.cc                                        gdml_materials.xsd                      RegionsConfig.mac
BrunoFIScoring.gdml                             gdml_parameterised.xsd                  RegionsConfig.mac~
BrunoRoot.so                                    gdml_replicas.xsd                       RootBkgAnal
ChangeLog                                       gdml_solids.xsd                         singleparticle.mac
DAFNE                                           gdml.xsd                                singleparticle.Prod.mac
dawn.mac                                        Geometry_CIPE                           Solenoid_DCH_etal.gdml
DCH_container_fTOF-Test.gdml                    geometrytest.mac                        Solenoid.gdml
DCH_container.gdml                              GNUmakefile                             src
DCH_geom                                        IFR_barrel.gdml                         SuperB_Bosi_constants.xml
DIRC.gdml                                       IFR_barrel_scint.gdml                   SuperB_CIPE.Prod.gdml
DRCMOM.gdml                                     IFR_bwd_endcap.gdml                     SuperB_constants.xml
EM1S_back_aligned_fwd.gdml                      IFR_bwd_endcap_scint.gdml               SuperB.gdml
EM1S.gdml                                       ifr_bwd_solids.gdml                     SuperB_IFR.gdml
EMCA.gdml                                       IFR_fwd_endcap.gdml                     SuperB_minimal.gdml
EMC_backward_PbScint.gdml                       IFR_fwd_endcap_scint.gdml               SuperB.Prod.gdml
EMC_barrel_shape_xtals.gdml                     ifr_fwd_solids.gdml                     SuperB_unshielded.Prod.gdml
EMC_barrel_structure.gdml                       IFR_geom                                SuperB_Wolf_shielded.Prod.gdml
EMC_barrel_structure_no_tubes.gdml              include                                 SuperB_Wolf_shielded_V00-01-12.gdml
FinalFocus                                      inner_detector_assembly_constants.xml   SuperB_Wolf_shielded_V00-01-12.Prod.gdml
final_focus.gdml                                inner_detector_assembly_envelope.xml    SuperB_Wolf_v12_sf10_fTOF_FF_shieldings.gdml
final_focus_short_Bosi.gdml                     inner_detector_assembly.gdml            SuperB_Wolf_v12_sf10.G4_9.2.gdml
final_focus_short_Bosi_Plug_Horseshoe.xml       inner_detector_Bosi_constants.xml       SuperB_Wolf_v12_sf10.G4_9.2.Prod.gdml
final_focus_short_Bosi.xml                       inner_detector_Bosi.gdml               SuperB_Wolf_v12_sf10.gdml
final_focus_short.gdml                          inner_detector_fTOF-Test.gdml           SuperB_Wolf_v12_sf10.Prod.gdml
final_focus_short_P3.gdml                        IP_datacard_P3_layout.txt              SVT_Bosi.gdml
final_focus_short_P3_unshielded.gdml             IP_datacard_P4_layout.txt              SVT.gdml
final_focus_short.xml                            IP_datacard_v12_layout.txt             SVT_L0_Bosi.gdml
final_focus_V12_SF10_ExtentShield_Plug_Horseshoe.gdml  IP_datacard_v12_sf10_layout.txt   SVT_L0_container.gdml
final_focus_V12_SF10.gdml                        materials.gdml                         tmp
final_focus_V12_SF11.gdml                        MCConfig.mac                           TOF.gdml
final_focus_V12_SF11.xml                         newgeo2.gdml                           tou.mac
Forward_external_Stopper.gdml                    novis.mac                              vis.mac
fTOF.gdml                                        oglix.mac
[paoloni@bbr-ui Bruno_CIPE_mkII]$
```

As it ideally should be

Geometry_CIPE*

```
bin                     dawn.mac              MCConfig.mac            RadBhaBha.Prod.mac    singleparticle.Prod.mac
BrehmStralung.mac       Geometry_CIPE         novis.mac               readROOTEvents.mac    src
Bruno.cc                geometrytest.mac      oglix.mac               RegionsConfig.mac     tmp
BrunoRoot.so            GNUmakefile           OpticalProperties.mac   RootBkgAnal           tou.mac
ChangeLog               include               out                     singleparticle.mac    vis.mac
```

*CIPE: Comitato Interministeriale Programmazione Economica

Geometry directory

- Each SuperB configuration will reside in a dedicated directory

- The naming convention of the directory will be: Geometry_<insert here the nick name>

- Geometry_ <insert here the nick name> will contains the IPdatacard & Magnetic dataCard too

- The Web_UI will reuire to specify only the Geometry_<insert here the nickname> , i.e. mixed specification of MagCard / IPdatacard / Geometry will not be allowed by the User Interface

Geometry_ content

```
DCH.gdml                        IFR_geom
DIRC.gdml                       inner_detector_assembly_constants.xml
EMC                             inner_detector_constants.xml
EMCA.gdml                       inner_detector.gdml
EMC_backward_PbScint.gdml       root_check.cc
ETD.gdml                        SuperB_CIPE.Prod.gdml
FinalFocus                      SuperB_constants.xml
final_focus_V12_SF11.gdml       SuperB.gdml
FTOF                            SVT.gdml
IFR_barrel.gdml                 SVT_L0.gdml
IFR_bwd_endcap.gdml             TOF.gdml
IFR_fwd_endcap.gdml
```

- The Subsytem.gdml file will be very simple:

  - Unique material explicitly defined: air

  - Unique volume explicitly defined: envelope

  - It will include from the subsytem directory all the needed xml / gdml files

GDML path issue pragmatical solution

```
[paoloni@bbr-ui Bruno_CIPE_mkII]$ cd Geometry_CIPE/
[paoloni@bbr-ui Geometry_CIPE]$ ../bin/Linux-g++/Bruno -g SuperB.gdml -o SuperB.
prod.gdml
```

- Bruno will assemble for you from the whole gdml hierarchy described in SuperB.gdml a single file: SuperB.prod.gdml suitable for batch processing

- Instead of a fragile collection of files as delicate as a "Mont Blanc" you will have a single sturdy file you can carry with you everywhere you like as robust as a "Sacher torte" (Nanni Moretti, Bianca)

Conclusions

- A pragmatic approach was presente to deal with the GDML path issue

- Each subsystem have to migrate her/his/its gdml code into the corresponding sub directory

- The datacards will reside in FinalFocus and their names will be *fixed and simple*

- The WEB_UI must implement a simpler interface in which the user specify only the Geometry directory