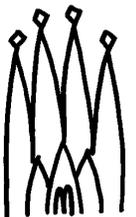




## 2 Getting Started



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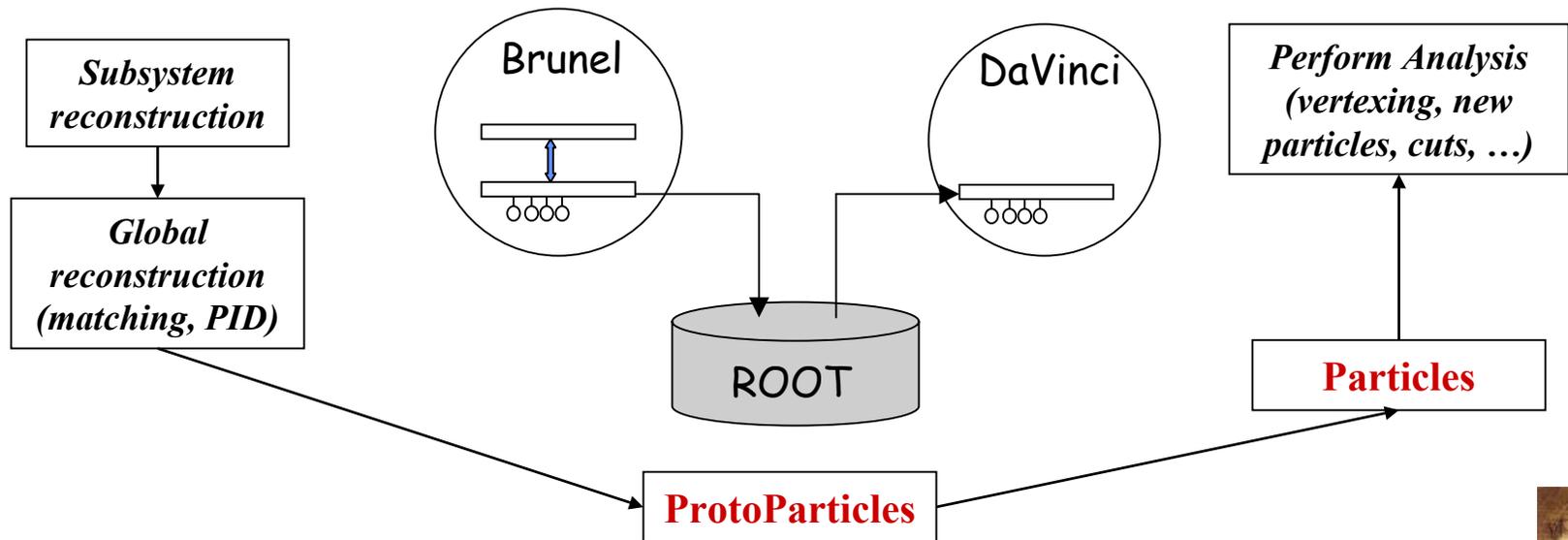
# DaVinci Package(s)

- **DaVinci is a “shell” of Gaudi like, for example, Brunel.**
  - All package and directory structure is familiar.
  - The “end-user” just programs **Algorithms and Tools**.
  - All “familiar” services are available
    - Job options.
    - Histograming.
    - Messaging.
    - .....
- **DaVinci takes care of data reading and package initializations that are of common use.**
- **DaVinci contains a library of tools that are of common need**
  - See next talks.....



# Interface with Brunel

- Brunel writes a OO-DST (currently a ROOT file).
  - DaVinci reads the OO-DST.
    - It is programmed fully in C++
    - It is based on the Physics Event Model (the whole LHCb Event model is available as necessary)
    - Generic tools (vertexer, Kinematic Filter, etc...) are in C++
- ➔ “Everybody” should learn C++ (or at least a little)



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# ProtoParticles

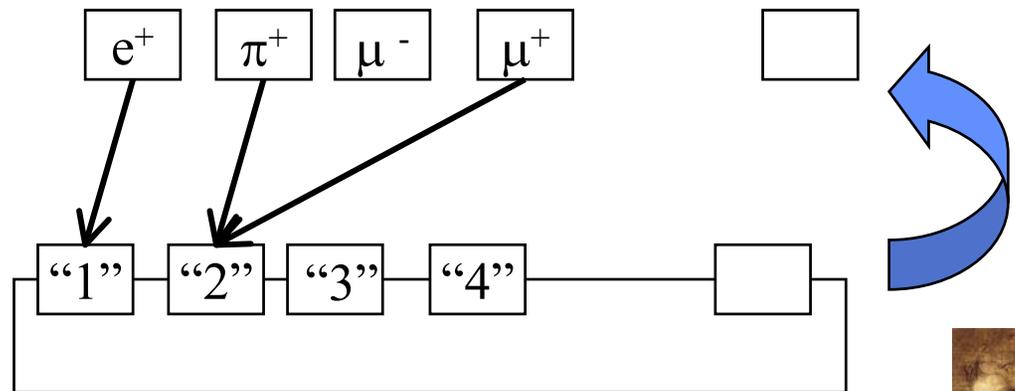
- **ProtoParticles are the starting point of the Physics Analysis**
- **ProtoParticles are the end product of the reconstruction**
  - They cannot be changed by the physics analysis
- **ProtoParticles have all the links to the reconstruction information used to produce them**
  - They are LHCb specific and via this link can know about all detector related information
  - They are heavy and most likely a moving class
- **ProtoParticles have a list of valid particleID hypothesis with their probability.**
  - No particle ID is chosen at this point
  - different analysis will want to do it differently
- **ProtoParticles have charge and measured kinematic information**
  - A specific particleID is necessary to have all the four momentum components.



# Particles and ProtoParticles

- A physics analysis does not interact “directly” with a ProtoParticle but with a Particle
  - It is possible to navigate back to the originating ProtoParticle
- A Particle has ONE chosen particle ID
- A physics analysis starting from DST files have a pre-processing stage to make Particles from ProtoParticles according to some “picking” criteria.
  - Different particles can originate from the same ProtoParticle

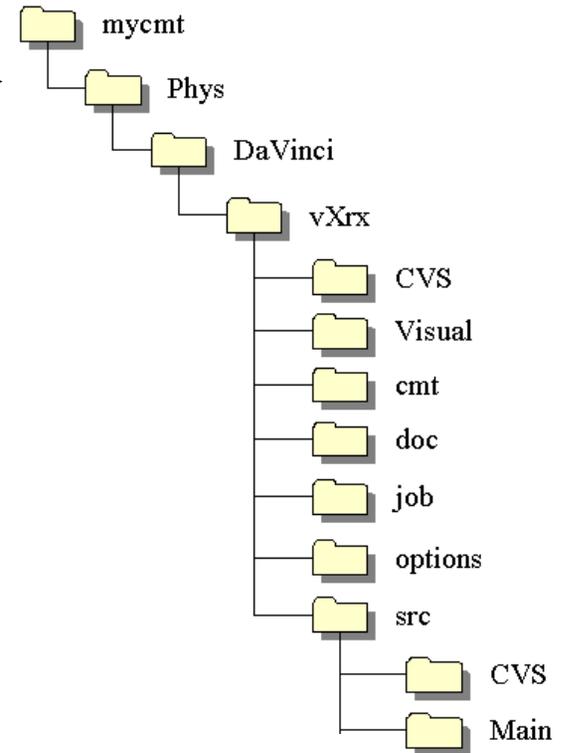
For ex: all pions with  
CL > 40% and all  
muons where  
muonID has the  
highest CL



# First Try

- **Get the Gaudi Package (once)**

```
getpack Phys/DaVinci v6r0
```



- **Go to the cmt directory**

- **Execute (always)**

```
source setup.csh
```

- **Make the executable (once)**

```
gmake
```

- **Go to the job directory**

- **Execute (always)**

```
DaVinci.job
```

**(the current version will run the J/Psi K0s selection algorithm)**



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# Options File

- **Important lines in DaVinci**
  - `EventSelector.Input= ...`, which selects the input file
  - `NTupleSvc.Output= ...`, which selects the output ntuple file
  - `HistogramPersistencySvc.OutputFile= ...`, which select the output histogram file
  - `ApplicationMgr.TopAlg+= ... lines`, which configure the algorithms to run.
- **Selection cuts and other variables are steered by the corresponding algorithms**



# Phys packages

