



2 Getting Started



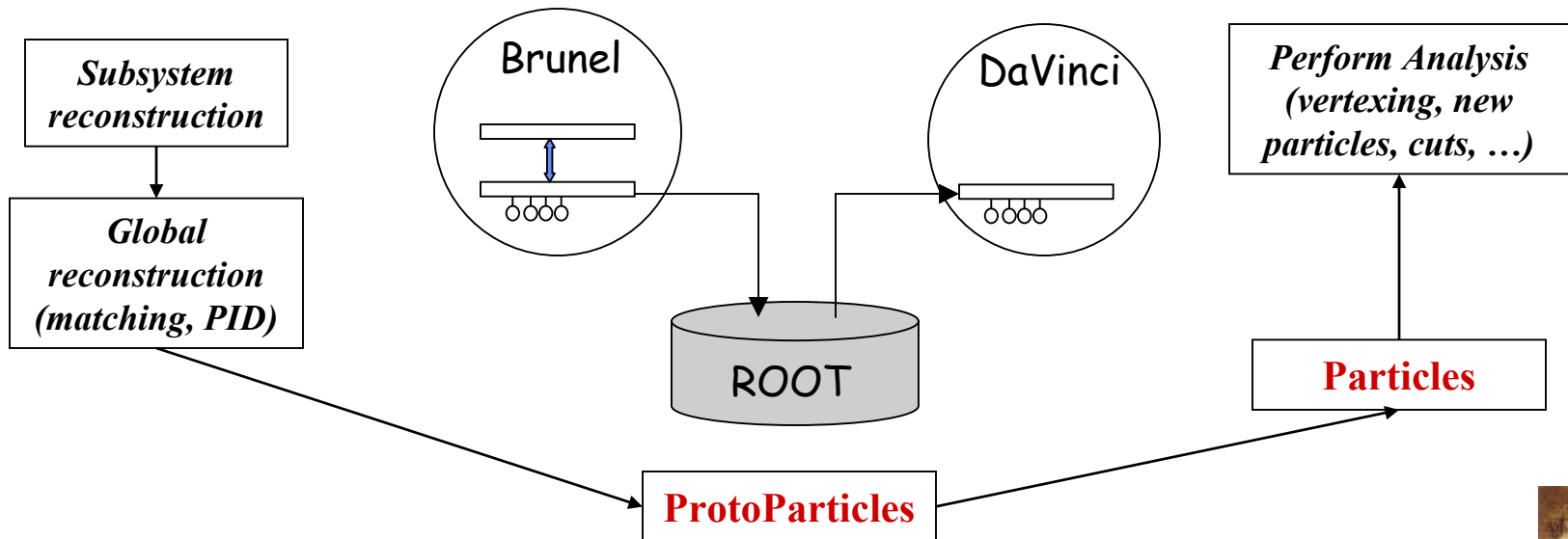
DaVinci Package(s)

- **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)



ProtoParticles

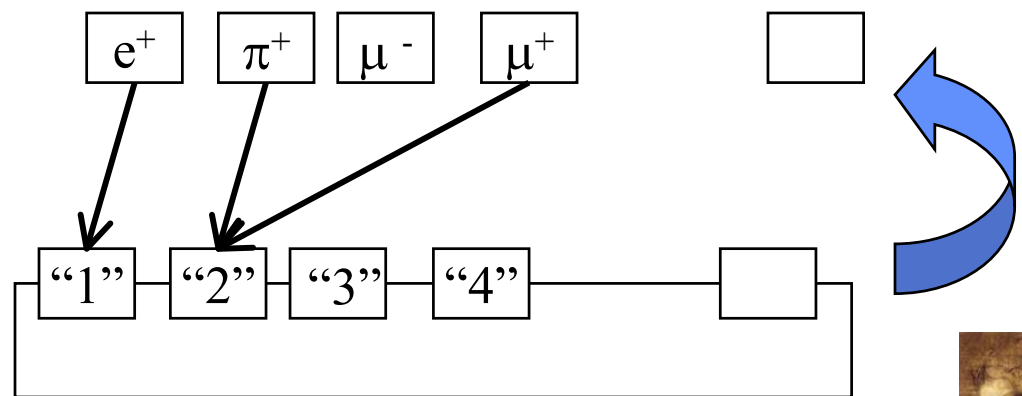
- **ProtoParticles are the starting point of the Physics Analysis**
- **ProtoParticles are the end product of the reconstruction**
 - They cannot be changed by the physics analysis
- **ProtoParticles have all the links to the reconstruction information used to produce them**
 - They are LHCb specific 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

- **Set the DaVinci environment for the version you want to use (always)**

```
DaVinciEnv v7r3
```

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

```
getpack Phys/DaVinci v7r3
```

- **Go to the cmt directory**

- **Execute (always)**

```
source setup.csh
```

- **Make the executable (once)**

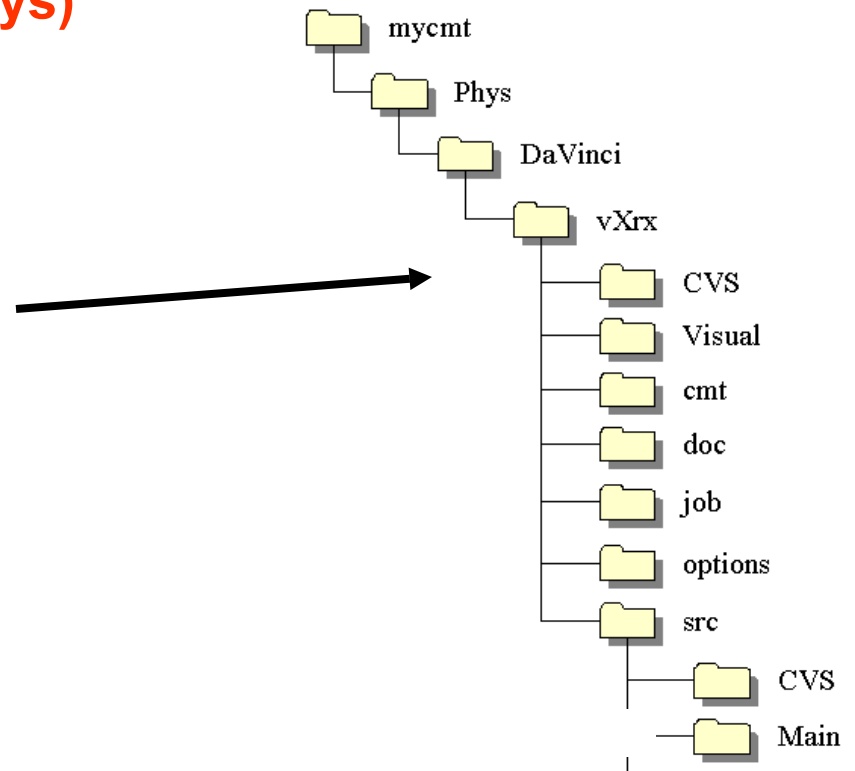
```
gmake
```

- **Go to the job directory**

- **Execute (always)**

```
DaVinci.job
```

(the current version will produce charged ProtoParticles and Primary Vertices)



Options File

- **Important lines in DaVinci.opts**
 - `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

