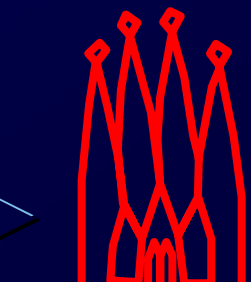
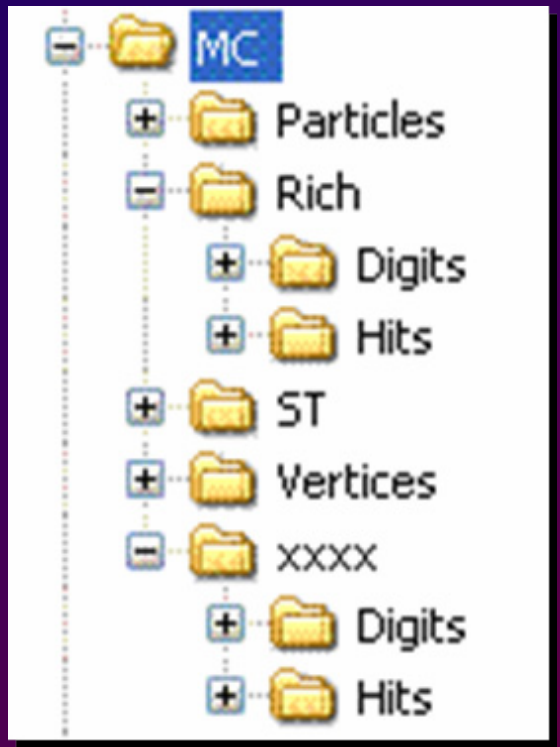
4

Accessing Event Data



Event Data Reside In Data Store



Tree - similar to file system

Identification by path
"/Event/MC/Particles"
LHCb::MCParticleLocation::Default

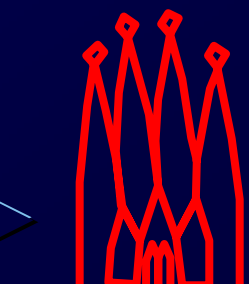
Objects or

Containers of objects
KeyedContainer<Type>

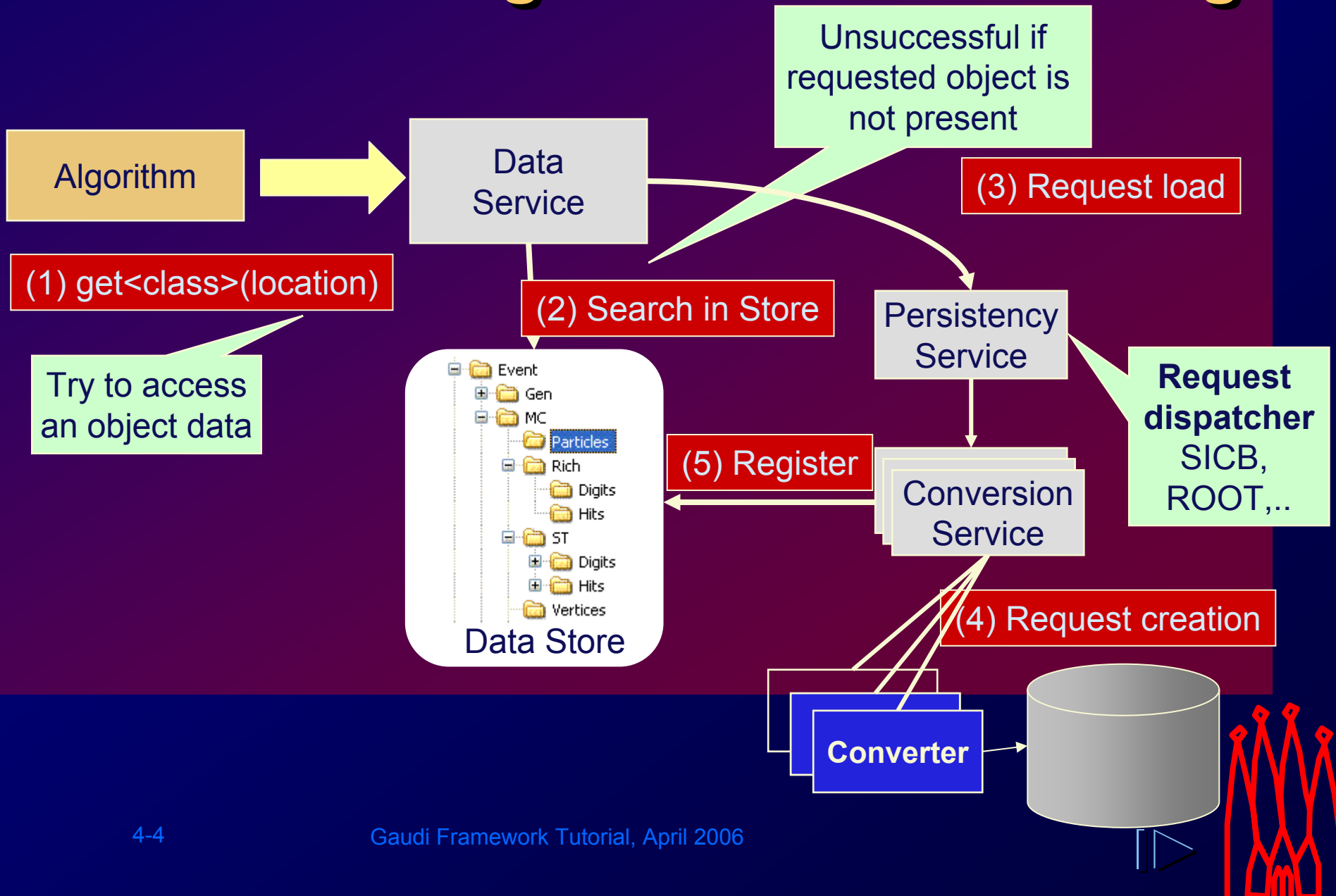
Containers: e.g. KeyedContainer

- **Templated class**
  - *Usually hidden to end-user code by typedefs in header file*
- **Iteration like any STL vector**

```
//note LHCb:: namespace
LHCb::MCParticle::Container* parts = … ;
LHCb::MCParticle::Container::const_iterator i;
for( i=parts->begin(); i != parts->end(); i++ )
{
  info() << (*i)->particleID().pid() << endmsg;
}
```

Understanding Data Stores: Loading



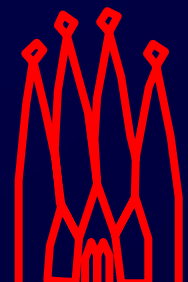
Caveats

Consider Objects on the store as READ-ONLY

- Do not modify existing objects!
- Do not destroy existing objects!

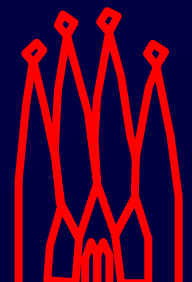
Never, never delete an object which is registered to the store

- It's not yours!
- It will only screw up others!



Data Access In GaudiAlgorithm

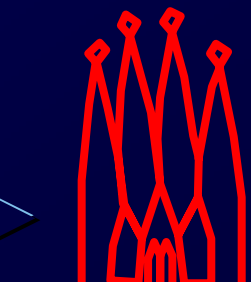
```
const LHCb::MCHeader* evt =
get<LHCb::MCHeader>( LHCb::MCHeaderLocation::Default );

// No need to test a return code, this method throws
// an exception if data is not found
```



Conventions

For Event Model objects of type `TYPE`:

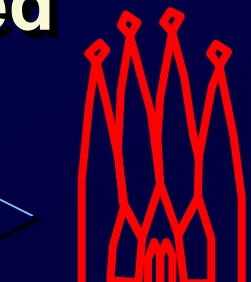
- **The actual type stored in TES**
  - **`LHCb::<TYPE>::Container`**
- **Vector of pointers `[ std::vector<TYPE*> ]`**
  - **`LHCb::<TYPE>::Vector`**
- **Vector of "pointers-to-const" `[ std::vector<const TYPE*> ]`**
  - **`LHCb::<TYPE>::ConstVector`**
- **"default" location in TES :**
  - **`LHCb::<TYPE>Location::Default`**



Specify Event Data Input

```
EventSelector.Input = {
   "DATAFILE='a_filename' [Spec]"
[,"DATAFILE='another_filename' [Spec]"]
 };
```

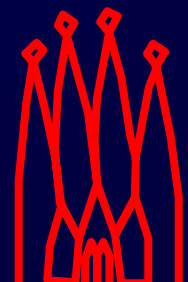
- Event data input is specified in the *job options*
- [Spec] is an array of qualified strings: *KEY1='VALUE1' ... KEYn='VALUEn'*
- Several files can be specified, separated by a comma



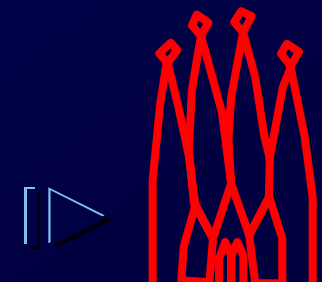
Specify POOL Event Input

```
EventSelector.Input = {"DATAFILE='PFN:castor:
/castor/cern.ch/grid/lhcb/production/DC06/v1-lumi2/00001284/SIM/00001284_00000001_1.sim'
 TYP='POOL_ROOTTREE' OPT='READ'"
}
```

- PFN: keyword tells POOL this is a *physical file name*
- castor: keyword selects data transfer protocol (rootd in this case)
  omit for a disk file
- OPT='READ' is read only file



Specify POOL Event Input

- *For simple file on disk*

```
EventSelector.Input ={

"DATAFILE='/software/lhcb/BenderData/Bs2PsiPhi/00001395_00000005_5.dst'
 TYP='POOL_ROOTTREE' OPT='READ'"
}
```