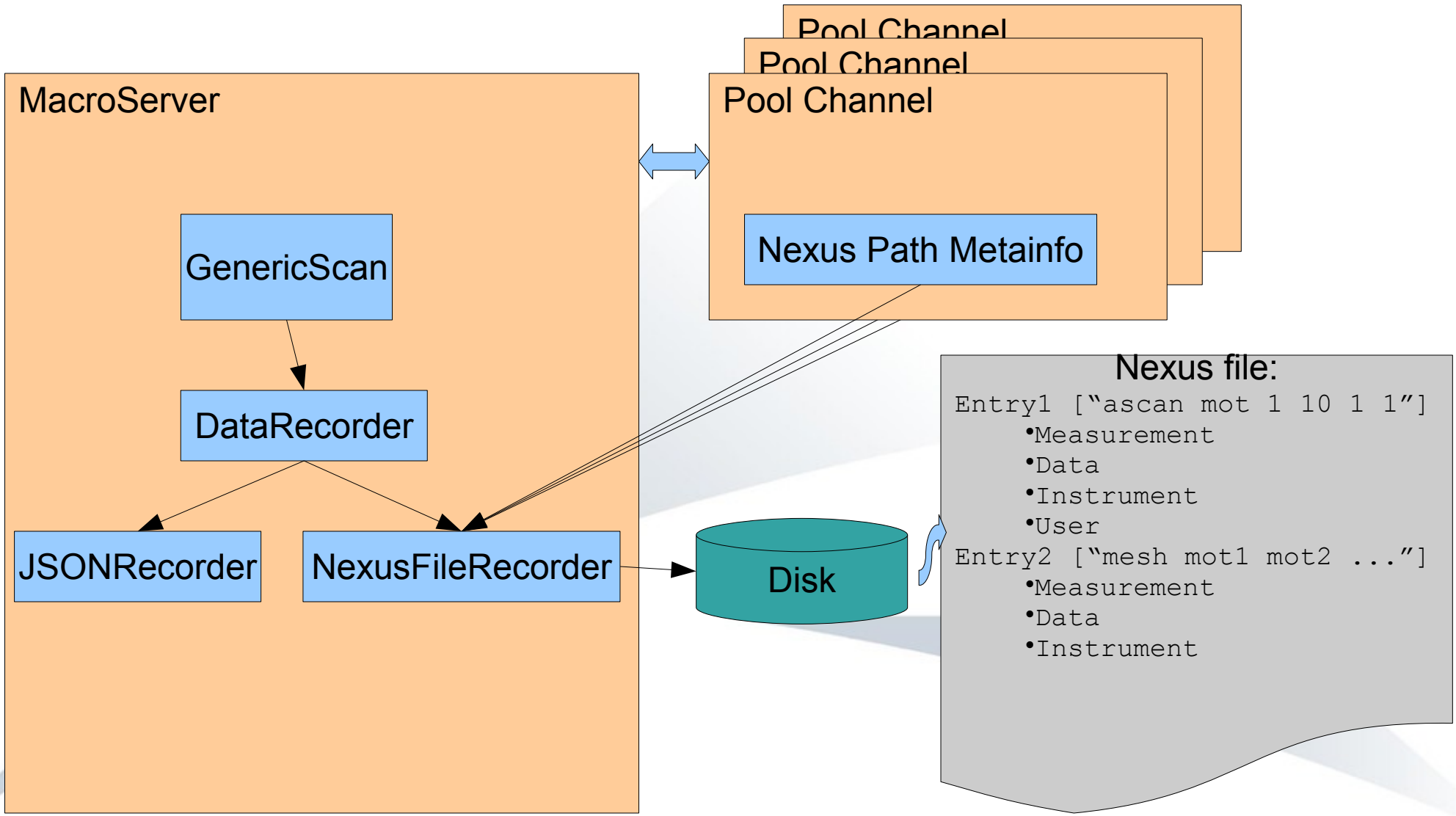
Macro Server
Data management

WP10, 13-14th Jan, 2011

MS data management

- MacroServer uses “Recorders”
  - OutputRecorder (e.g. CLI stdout)
  - JSONRecorder (e.g. plotting in a GUI)
  - SharedMemRecorder
  - SpecFileRecorder (uses separate EDF files for images)
  - ...
  - **NexusFileRecorder**

MS data management



Simple scan: OutputRecorder

Simple scan of a mono recording a scalar, a spectrum and a image at each step

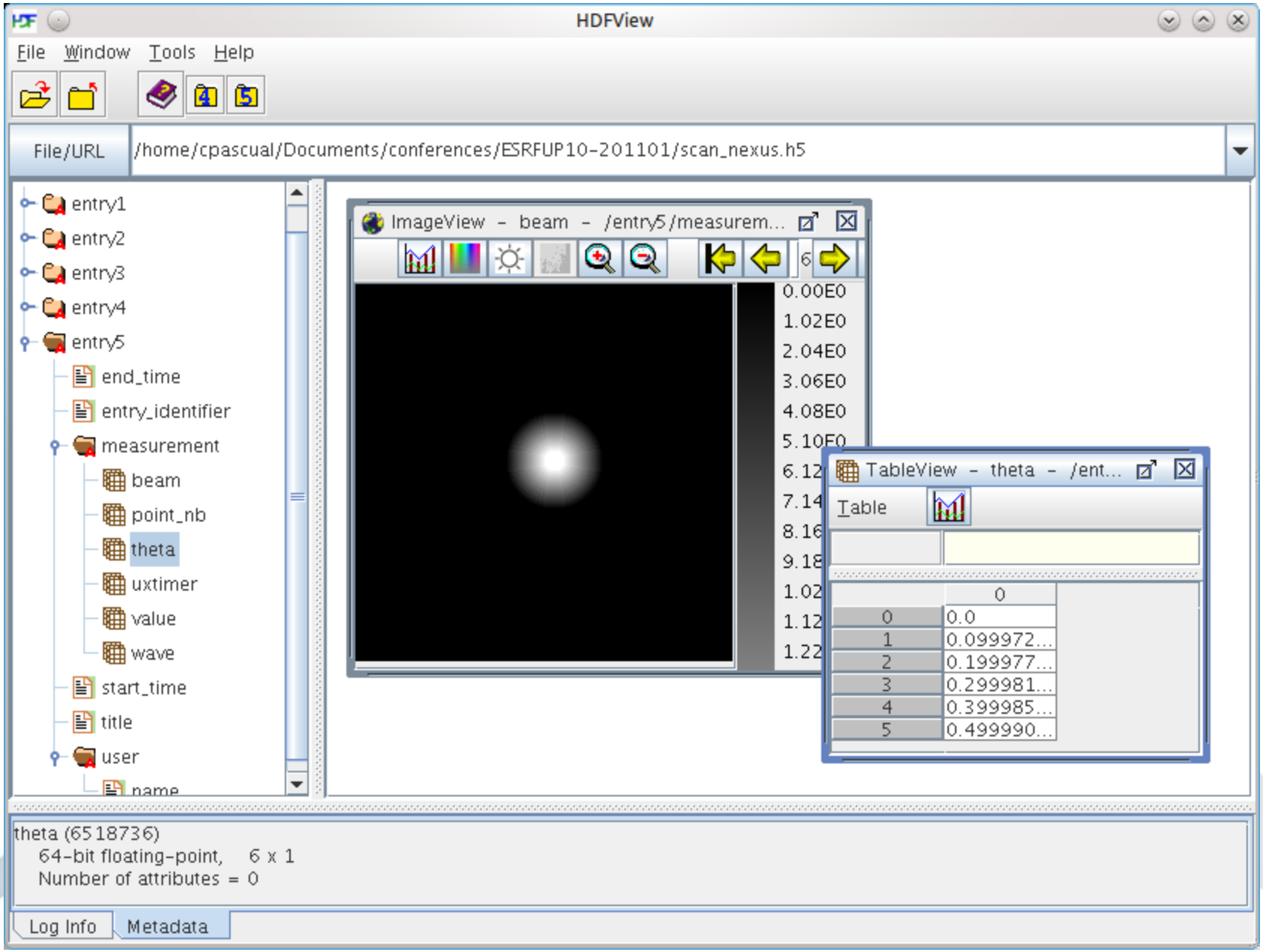
```
sats [1]: %ascan theta 0 0.5 5 1
JsonRecorder is not defined. Use "senv JsonRecorder True" to enable it
SharedMemory is not defined.
Scan started at Tue Jan 11 17:49:34 2011.. It will take at least 0:00:00
  #Pt No   theta   uxtimer   value     wave     beam
      0      0        1     11.8177   (256,)  (251, 251)
      1   0.0999727     1     11.7795   (256,)  (251, 251)
      2   0.199977     1     11.7378   (256,)  (251, 251)
      3   0.299981     1     11.6924   (256,)  (251, 251)
      4   0.399986     1     11.6436   (256,)  (251, 251)
      5   0.49999     1     11.5911   (256,)  (251, 251)
Scan ended at Tue Jan 11 17:49:47 2011, taking 0:00:12.127825
```

Simple scan: SpecFileRecorder

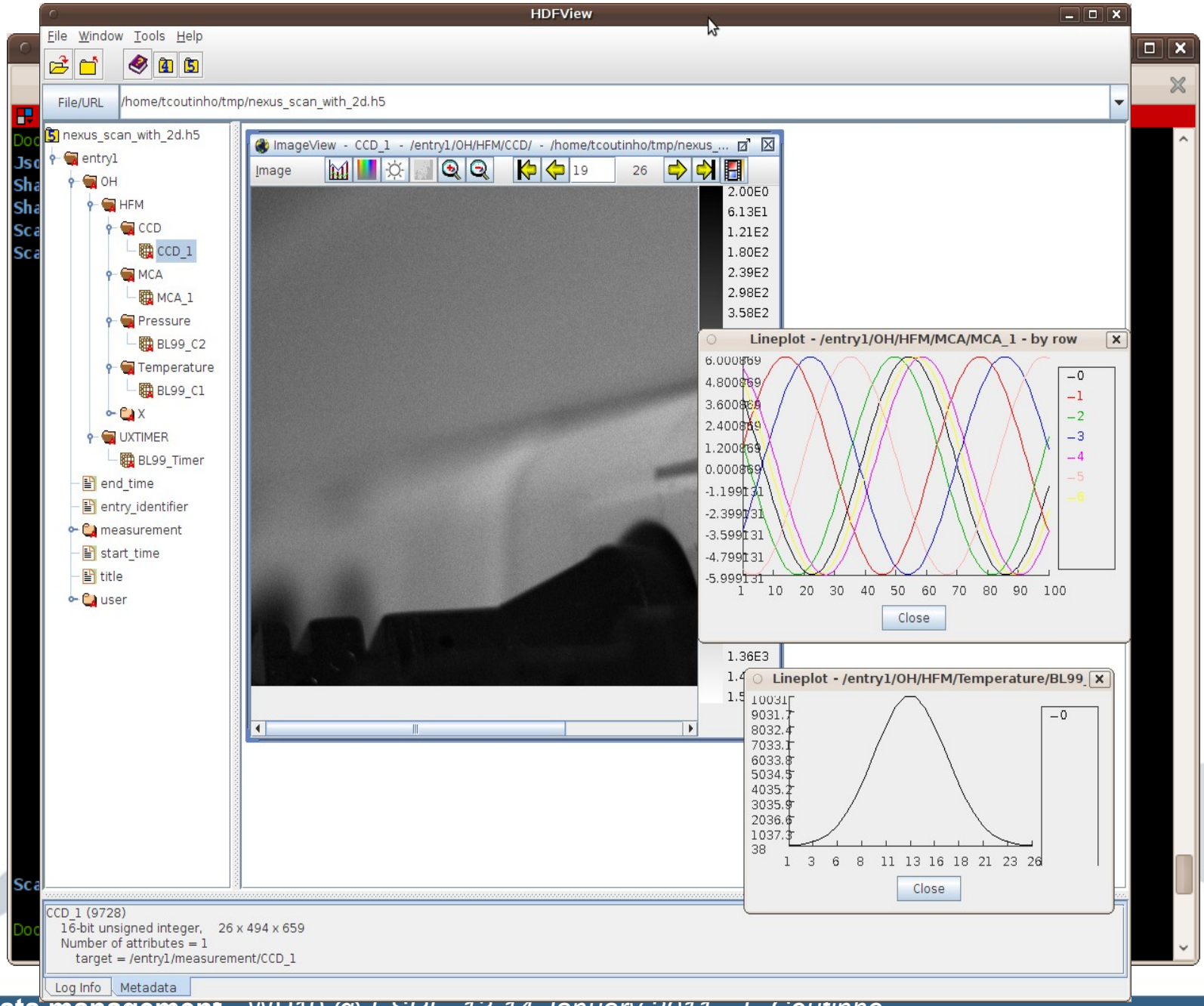
Simple scan of a mono recording a scalar, a spectrum and a image at each step

```
#S 4 ascan theta -4.5 -5.0 5 1.0
#U None
#D 1294762811.0
#C Acquisition started at Tue Jan 11 17:20:11 2011
#N 6
#L point_nb  theta  uxtimer  value  wave
0 -4.49997391304 1.0 -8.77628218266 [ -7.31356849e-01 ...]
1 -4.59997826087 1.0 -8.63211619119 [ -7.19343016e-01 ...]
2 -4.6999826087 1.0 -8.48532077795 [ -7.07110065e-01 ...]
3 -4.79998695652 1.0 -8.33594065816 [ -6.94661722e-01  ...]
4 -4.89999130435 1.0 -8.33594065816 [ -6.94661722e-01  ...]
5 -4.99999565217 1.0 -8.18402133439 [ -6.82001778e-01  ...]
#C Acquisition ended at Tue Jan 11 17:20:24 2011
```

Simple scan: NexusFileRecorder



More complex scan: NeXusFileRecorder



Challenges

- Data is written in the machine where the Macroserver DS is running, and by the user that launched the DS (privileged account)... how to provide the user with access to the data while enforcing access permissions?
- High throughput data acquisition may require dedicated machines/disks... how to integrate that data with the NeXus file? (post-acquisition merging or external links in NeXus files?)
- Metadata for NeXus files is currently stored as properties of each pool channel/motor and the MS... this may be clumsy. A dedicated metadata manager DS may be a better solution?
- Legacy data formats support... should we rely on specific recorders or convert from NeXus? ...or trust that CDM will solve our problems? ;-)