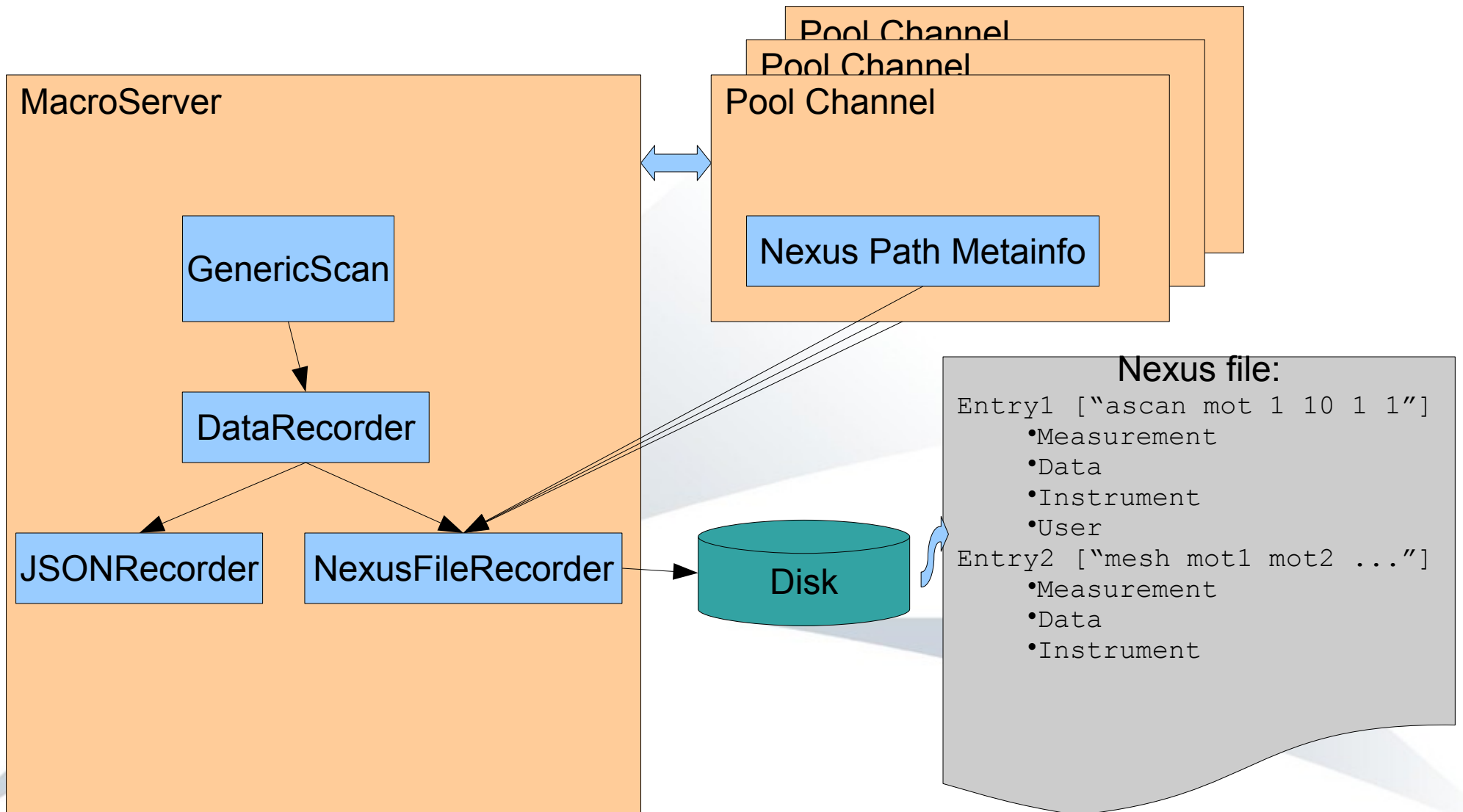


Macro Server Data management

WP10, 13-14th Jan, 2011

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



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 "setenv 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 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
```

The screenshot shows the HDFView application window. The main window title is "HDFView" and the file path is "/home/cpascual/Documents/conferences/ESRFUP10-201101/scan_nexus.h5". The left sidebar shows a tree view of the file's contents, with "entry5" selected. Under "entry5", the "theta" dataset is highlighted. The main pane displays a beam image with a central bright spot. A "TableView" window is open, showing a table of data for the "theta" dataset. The table has 6 rows and 2 columns. The first row is highlighted in yellow. The bottom status bar shows "theta (65 18736) 64-bit floating-point, 6 x 1 Number of attributes = 0".

Table	
	0
0	0.0
1	0.099972...
2	0.199977...
3	0.299981...
4	0.399985...
5	0.499990...

The screenshot displays the HDFView application interface. The main window shows a tree view of a NeXus file structure for a scan. The selected node is 'entry1/Measurement/CCD_1', which is displayed as a grayscale image in the 'ImageView' window. The 'Lineplot' windows show data extracted from the file.

File Structure (Left Panel):

- nexus_scan_with_2d.h5
 - entry1
 - OH
 - HFM
 - CCD
 - CCD_1 (Selected)
 - MCA
 - MCA_1
 - Pressure
 - BL99_C2
 - Temperature
 - BL99_C1
 - X
 - UXTIMER
 - BL99_Timer
 - end_time
 - entry_identifier
 - measurement
 - start_time
 - title
 - user

ImageView - CCD_1

Image: 26 x 19. A grayscale image showing a dark, irregular shape against a lighter background.

Lineplot - /entry1/OH/HFM/MCA/MCA_1 - by row

Y-axis: 6.000E0, 4.800E0, 3.600E0, 2.400E0, 1.200E0, 0.000E0, -1.199E-01, -2.399E-01, -3.599E-01, -4.799E-01, -5.999E-01. X-axis: 1, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100. Legend: -0 (red), -1 (blue), -2 (green), -3 (cyan), -4 (magenta), -5 (yellow).

Lineplot - /entry1/OH/HFM/Temperature/BL99

Y-axis: 1.36E3, 1.4, 1.5. X-axis: 1, 3, 6, 8, 11, 13, 16, 18, 21, 23, 26. Legend: -0 (black).

Metadata (Bottom Panel):

```

CCD_1 (9728)
16-bit unsigned integer, 26 x 494 x 659
Number of attributes = 1
target = /entry1/measurement/CCD_1
    
```

- ❑ 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? ;-)