REX Data Handling
Project Planning

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NUCOMP
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“Plan till we drop” meeting May 3

We have lots of important projects going on at lots of experiments

Most projects are for many experiments

Then need to tailor for specific experiments

Need to wrap our heads around all that the group is doing

Need project documentation

Important for understand the future of SAM

Important for adding people to help

What is project documentation?

Before: Useful for planning the project
During: Useful for guiding the project
After: Useful for remembering what we did

Consists of:
Business case (why we have to do the project)

Task list (what we need to do, when to do it, who will do it, how long will it take)

Risk list (what can go wrong? what do we do about it?)

Conclusion (what happens after the project)

https://indico.fnal.gov/conferenceDisplay.py?confId=5528

Attempt to separate core product from integration with experiment

REXDH Project Planning

Thursday 03 May 2012 from **09:30** to **16:30** (US/Central)
at FCC

Description Writing project documents
Participants Adam Lyon

Thursday 03 May 2012

09:30 - 09:40 Introduction *10'* (FCC117)
Speaker: Adam Lyon (Fermilab)
Material: **Slides**

09:40 - 10:00 File Transfer Service (FTS) and SAMWeb [mostly completed] *20'* (FCC117)
Speaker: Robert Illingworth (Fermilab)
Material: **Document**

10:00 - 10:30 Dimensions Language, parsing, editing *30'* (FCC177)
Speaker: Robert Illingworth (Fermilab)
Material: **Document**

10:30 - 11:00 IFData *30'* (FCC117)
Speaker: Marc Mengel (Fermilab)
Material: **Slides**

11:00 - 11:30 SAM, IFDATA, Metadata and ART integration *30'* (FCC117)
Speaker: Adam Lyon (Fermilab)
Material: **Slides**

11:30 - 12:00 REX Monitoring *30'* (FCC117)
Speaker: Marc Mengel (Fermilab)
Material: **Slides**

12:00 - 13:00 Lunch ()

13:00 - 13:20 Disk Purchase Investigation *20'* (FCC2B)
Speaker: Arthur Kreymer (Fermilab / CD / REX / Minos)
Material: **WEB PAGE** **document**

13:20 - 13:40 CVMFS or something like it Integration *20'* (FCC2B)
Speaker: Andrew Norman (Fermilab)
Material: **Slides**

13:40 - 14:20 SAM Infrastructure *40'*
Speaker: Robert Illingworth (Fermilab)
Material: **document**

14:20 - 15:00 SAM @ Minerva (introducing FTS, SAMWeb for production, small files aggregation, SAM for analysis) *40'* (FCC2B)
Speaker: Robert Illingworth (Fermilab)
Material: **document**

15:00 - 15:40 SAM @ NOvA (FTS integration, metadata, small files aggregation, SAMWeb for production and analysis) *40'* (FCC2B)
Speakers: Robert Illingworth (Fermilab), Andrew Norman (Fermilab)
Material: **Slides**

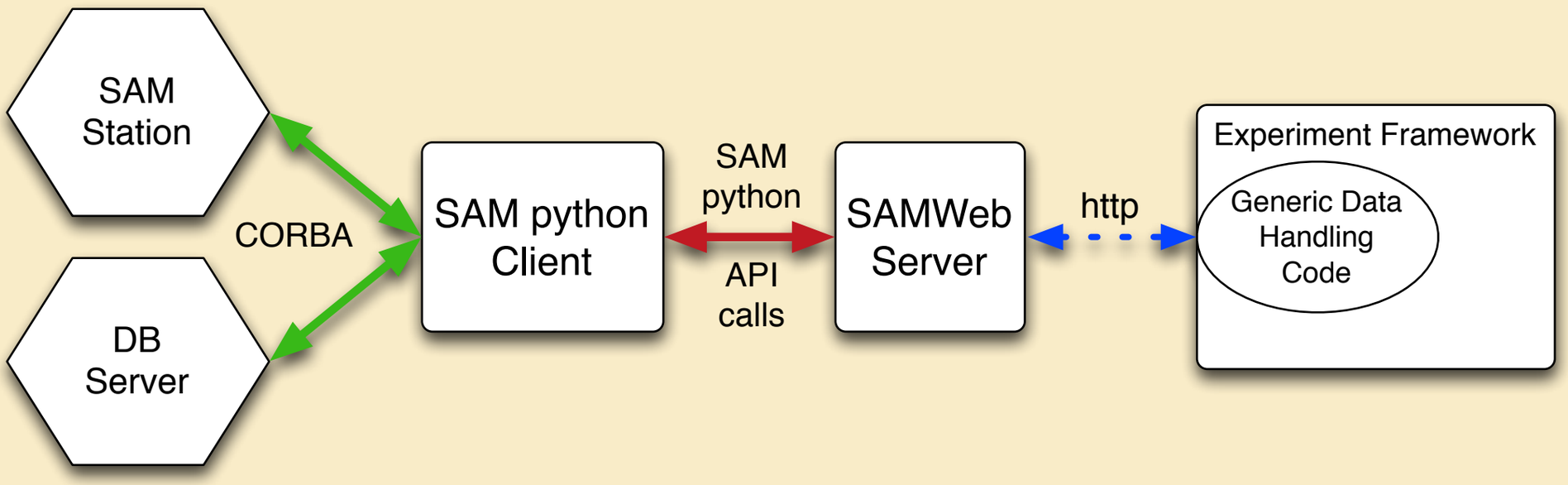
15:40 - 16:10 SAM for Run 2 and MINOS *30'* (FCC2B)
Speakers: Robert Illingworth (Fermilab), Arthur Kreymer (Fermilab / CD / REX / Minos)
Material: **document**

16:10 - 16:30 Future ideas and SAM for other experiments (mu2e, g-2, microboone, lbne) *20'* (FCC2B)
Speaker: Adam Lyon (Fermilab)
Material: **Slides**

FTS and SAMWeb (Robert)

File transfer system – easy and robust uploading files to SAM. Already in use by NOvA

SAMWeb – deploymentless integration between SAM and experiment's framework. Prototypes at NOvA and Minerva.



Dimensions Language Parsing and Editing (Robert)

Current dimensions code is buggy, primitive, incomprehensible, unmaintainable (e.g. "Artisanal" parser)

Past attempts to re-do the dimensions language was hampered by having to replicate mistakes and bugs

For IF - start over. Use modern parser and python tools

Web based dimensions editors (prototypes for NOvA, Minerva)

Integrate with SAMWeb

IFDATA Handling (Marc)

Handles the local movement of files from cache to your node (e.g. “the last mile” of data movement)

Necessary since SAM no longer has caches on worker nodes

Embodies cpn, gridFtp, srmcp, ...

Enforces policies

Deliverable is a shared object your code can use. Python bindings and CLI are included

Design and prototype completed

SAM, IFDATA, Metadata and ART integration (Adam)

Full data handling integration into ART

Many meetings with CET group

Design documents in place

Division of labor established (e.g. REX writes a service for IFDATA)

REX Monitoring (Marc)

Design and implement a REX–wide monitoring system for grid jobs, data handling, and some REX specific hardware tracking.

Goal is to have one unified monitoring system with visualization. The visualization is not coupled with the data collection.

Integrate with a downtime database

Implement data “slurpers”

Lots of progress and a prototype system exists

Disk Purchase Investigation (Art)

Investigate open hardware storage

e.g. Backblaze

How do they compare to the enterprise system we are currently purchasing?

CVMFS (or something like it) (Andrew)

A solution for distributing application and auxiliary files to jobs

Perhaps supported by OSG

In initial discussions

SAM Infrastructure (Robert)

Ensure that SAM continues to function for Run II and everyone else

Port some D0 SAMGrid changes back to mainline SAM (e.g. deliver files to multiple nodes)

Separate tracking of file movement and file processing

One stager per disk is not appropriate for cache on Bluearc

Consider dCache with parallel NFS

Convert code to python 2.7

Kerberized Oracle access

What to do about CORBA

SAM @ Minerva

Minerva specific metadata

New dimensions language and DDE

Introduce FTS

Integrate SAMWeb with job wrapper and, perhaps, Gaudi

Small file aggregation

Migrate legacy small files to enstore small file aggregation

SAM @ NOvA (Robert, Andrew)

At this time, the following is in progress

- **Raw data are cataloged and uploaded to SAM to tape and Bluearc via FTS. Files to tape are handled by enstore small files aggregation. This activity is in production.**

- **Cataloged Monte Carlo into SAM – this task is still in development. The metadata is not complete and not integrated with ART.**

- **Reco production metadata is still in development. Reco data is derived from Raw or MC, and so the ART support is necessary to inherit the Metadata. So files are cataloged into SAM, but the metadata is incomplete**

Adoption of enstore small file aggregation is automatic since NOvA uses the FTS.

SAM for Run II & MINOS (Robert, Art)

Legacy SAM

Plan is to maintain a common SAM core for everyone. So we will not freeze SAM code for Run II unless absolutely necessary. New functionality, however, will not be directed at Run II

Run II can take advantage of some infrastructure changes
e.g. run on worker nodes that don't have cache (unlike CAB)

Won't propagate the new Dimensions language to Run II

Migrate MINOS to SAMWeb and IFData for MINOS+

Potential Future projects (Adam)

DES Data Management

SAMfs – Navigate SAM metadata like you are a file system; directly access one or two files in SAM

Integrate SAM with other experiments (mu2e, g-2, lbne, microboone)

Deploy SAM and FTS with relocatable UPS

Conclusion

Intensity Frontier work encompasses: DH, Grid, database application, and collaboration tools… and integration with ART

Come up with a name for the overall project within REX

Conclusion

Intensity Frontier work encompasses: DH, Grid, database application, and collaboration tools… and integration with ART

Intensity Frontier + Art = IFART

Conclusion

Intensity Frontier work encompasses: DH, Grid, database application, and collaboration tools... and integration with ART

FIFE - ~~Fermilab~~ Intensity Frontier Environment

Lots to DO!