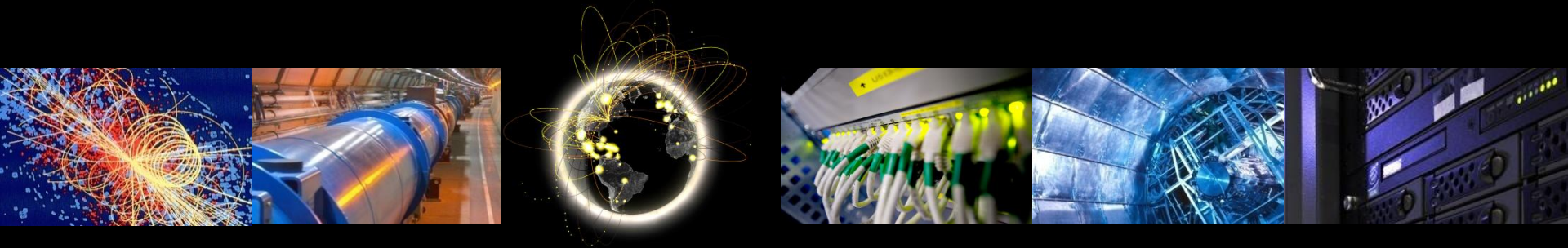


# CERN Data Management Middleware Plan 2010

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On behalf of the IT-GT-DMS team

Hepix 2010



# CERN Data Management

- The components
  - FTS
  - DPM/LFC
  - gfal/lcg\_util
- Now have a dedicated section at CERN
  - IT-GT-DMS
  - Includes development, integration & testing
  - 'Product Team' in EGI speak
- All represented in EMI

# The people

- Alejandro ALVAREZ AYLLON
  - Jean-Philippe BAUD (Technical Lead)
  - Ricardo BRITO DA ROCHA
  - Rosa Maria GARCIA RIOJA
  - Oliver KEEBLE
  - Todor MANEV
  - Andrea MANZI
  - Zsolt MOLNAR
  - Pedro RODRIGUES DE SOUSA ANDRADE
  - Adam ZABROCKI
- 
- **Not everyone is full time on DM!**

# The plan

- 2010 Program of Work has been published
- <https://twiki.cern.ch/twiki/bin/view/LCG/DMPProgramOfWork>
- This represents a statement of intent based on current knowledge
  - Will be revised as appropriate
    - Feedback encouraged
  - Includes a lot of info beyond 2010

# The input

- EMI proposal (paragraph 1.6.1.1.2)
- WLCG Technical Forum
- Direct input from experiments
- Direct input from sites
- EGEE JRA1 work plan tracking (Savannah)

# Themes

- Manageability
- Performance
- Standards (and therefore interoperability)
  - SSL
    - sessions
  - NFSv4.1
  - HTTP/HTTPS
    - SRM
    - Data Transfer
      - Enabling standard clients, eg curl

# FTS

- Release on SL5 (2.2.3)
- FTS 2.2.4
  - SRMless endpoints
  - Removal of dependency on VOMS server certs
  - Bugfixes
    - [bug #62395](#): [FTA]: No timeout on blocked database operations
    - [bug #65664](#): SRM status update/timeout problem
- FTS 2.3
  - Web admin interface
  - Improved admin tools
    - Rationalised configuration
- FTS 2.4
  - Access to logs
  - Monitoring
    - Available from a web interface on each server
    - Integration with Nagios/SAM
    - Still gathering requirements

# FTS management tool



Grid File Transfer Service

## FTS MANAGEMENT TOOL

Channels VOs Transfers

- ✓ CERN-DESY
- ✓ CERN-INDIACMS
- ✓ CERN-INFNAPOLIATLAS
- ✓ CERN-INFNROMA1
- ✓ CERN-JINR
- ✓ CERN-KI
- ✓ CERN-KOLKATA
- ✓ CERN-MICHIGAN
- ✓ CERN-MUNICH
- ✓ CERN-PROTOVINO
- ✓ CERN-SINP
- ✓ CERN-STAR
- ✓ DESY-CERN
- ✓ INDIACMS-CERN
- ✓ JINR-CERN
- ✓ KI-CERN
- ✓ KOLKATA-CERN
- ✓ PROTOVINO-CERN
- ✓ SINP-CERN
- ✓ STAR-CERN

Name	CERN-DESY	State	Active	Type	Dedicated
Source	CERN-PROD				
Destination	DESY-HH				
Contact email					
Streams	0	Files	5	Block Size	0
0	0	TCP Buffer		Max Bandwidth	20
VO: Name	dteam	Share	100	Limits	100
Message	Start service				
Last Active Time	May 18, 2009 4:37:18 AM	Last Modification Time	Aug 3, 2009 10:07:25 AM		
Last Modifier DN	/DC=ch/DC=cern/OU=computers/CN=fts205.cern.ch				
Transfer Type					
<input type="radio"/> URL Copy					
<input checked="" type="radio"/> SRM Copy					
URL Copy Timeouts					
Get	180	Put	180	Transfer	
GetDone	180	PutDone	180	No Progress	
Tx Markers		First Tx mark		Tx Timeout/MB	



# July: Review of FTS

- A review of FTS and its role will be conducted around July. Issues to be considered:
  - Store SE endpoints in the FTS DB to be able to store SE state
  - Get rid of channels and only configure SEs and maximum number of transfers for each Storage Element
  - Change architecture to use a single daemon instead of one daemon per channel
  - Use messaging to receive requests and update statuses
  - Distributed FTS servers using messaging
  - Python API – python versions to be determined
  - Multi-hop support
  - Input from WLCG data strategy workshop

# DPM/LFC 1.7.4

- DPM/LFC 1.7.4 is in certification
- Tuning of RFIO read ahead buffers (bug 56166)
- Multiple bug fixes
- Packing split of libraries/executables/docs etc.
  - Will aid in dual 32/64bit installs
- Cleaning of historical entries in DPM request DB
- [Allow file replication in parallel for improved performance of dpm-drain]

# DPM/LFC 1.7.5

- DPM: Short term improvements to RFIO mainly to better handle analysis jobs
  - space tokens
  - checksums
- DPM: Support for ROOT syntax: head node hostname in file names
  - DPM\_HOST://xxx
  - This would contribute to the harmonisation with other SE implementations (CASTOR and dCache)
- DPM: Better performance for file replication/drain using rfio instead of GridFTP (bug 60109).
- LFC: Bulk lookup of SURLs (bug 60796)

# DPM/LFC mid-term

- Features for  $\geq 1.8$  typically require a schema change
- Internal monitoring of disk servers
  - → Nagios plugins
  - Collaboration with ScotGrid
- Usage information
  - → Quotas
- With LFC:
  - Banning users / FQANs
    - → Argus
  - Access to logs

# DPM longer term

- VO admin role (bug 42676)
- Quotas
- Accounting
  - How much space is used, but also how many of the files were read, written, replicated locally and remotely and how many bytes were accessed for each file.
- Replace HTTPG by HTTPS for SRM servers
  - Needs coordination between implementations
- NFS 4.1 interface
  - Prototype by August
- Glue2 support
- Request prioritisation
  - Based on roles
- Add GUIDs to file entries to be able to use DPM as local LFC
  - suppress synchronisation problems (bug 60797).

# gfal/lcg\_util

- Bugfixes
  - Gfal/lcg\_util 1.11.15 now entering certification
  - Savannah Patch #3754
- Longer term
  - Separation of SRM logic (from gfal/lcg\_util and FTS) into a common library
    - Existing interfaces maintained
    - Could be extended (eg for InfoSys interface)

# Further ahead

- The PoW contains a number of issues which do not yet have effort committed
- Messaging
  - Still awaiting clarity on technologies to use
    - Data Management could operate independently
  - Asynchronous notification from FTS
  - Distributed FTS servers
    - Server managing a channel automatically picks up the relevant requests

# Conclusions

- FTS, DPM/LFC & gfal/lcg\_util are fully supported by CERN
- Development plan has been published
- Feedback always appreciated