# Distributed Data Management

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# Introduction

- ATLAS Project

- Distributed Data Management Group

- Don Quijote 2

  - DQ2 End-User Tools

- Python Programming

- Django Web Development

- Comparison/Progression

# ATLAS Project

- An experiment at the Large Hadron Collider (LHC) at CERN Laboratories

- Uses high energy collisions of protons that are propelled around the radius of the accelerator

- General purpose detector that aims to study the basic forces of the universe

# Group

- Distributed Data Management Group manages access to ATLAS data that is distributed to different locations around the world

- Ultimate goal is to make the search and download of datasets as simple and efficient as possible

- Numerous possibilities

  - Further development of current tools

  - Peer-To-Peer (P2P)

# Don Quijote 2 (DQ2)

- Developed by the Distributed Data Management Group

- The ATLAS Experiment Data Management System

  - Bookkeeping system that stores data as datasets

- Its goal is to integrate all Grid data management services used by the ATLAS Experiment

- Provides physicists access to file-resident event data

# DQ2 Clients
# End-User Tools

- **DQ2-Ls** -- Search for Datasets

  - [ -f ] -- List Files in Dataset

- **DQ2-Get** -- Download Datasets

  - [ -f ] -- Download a single File

- DQ2-Put

# project goal

- To develop a prototype for a dataset search and retrieval system using a web interface



DON QUIJOTE

# Python Script

- Python

- Developed a Dataset Search Engine

- Through terminal, you can run the program to find any dataset produced by the ATLAS experiment

- Aims to reduce the repetition of issuing commands

# Django web development

- Web Framework tool that implements the Python programming language to create web pages

- Main components

  - urls.py

  - views.py

  - templates (HTML)
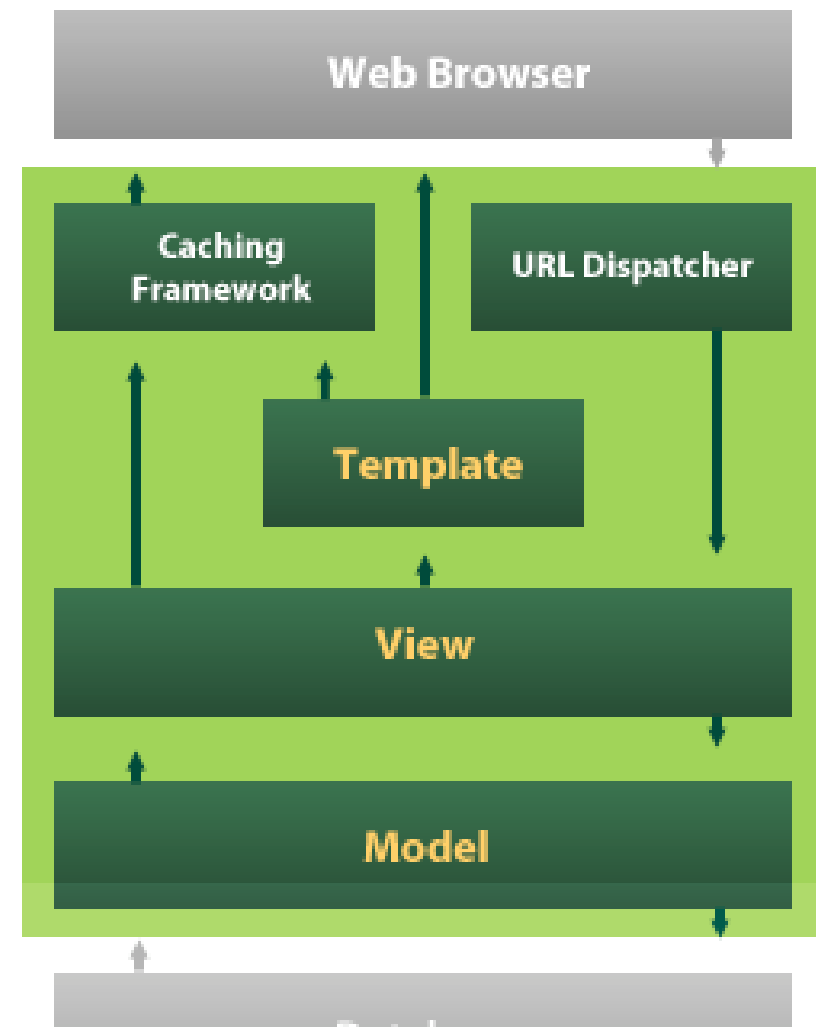
# Comparison/ progression

- This is a prototype of one method of obtaining access to the datasets

- It will be used to determine if this is a viable option for the searching and retrieving datasets

- DQ2 ------------> Python ------------> Web Interface

# Setup

```
                                                           *
                                                           *
ch/plus            : Information on the usage of LXPLUS/LXBATCH  *
ch/ComputingRules : Govern the use of CERN computing facilities *
                                                           *
****************************************************************

as been enhanced to provide an IT Service Status Board

e from the IT Home Page to Useful links.

: http://it-div.web.cern.ch/it-div/
: http://it-support-servicestatus.web.cern.ch/it-support-servicestatus/


*************************************************************


*************************************************************
                                            *WARNING*
                                                *
ly 22 2008 ATLAS Information Protection will be activated!      *
                                                *
at you are properly registered in the ATLAS Authorship database *
                                                *
f problems mail to:  atlas.info-protection@cern.ch              *
                                                *
                                            *WARNING*
*************************************************************
17]~% source /afs/cern.ch/atlas/offline/external/GRID/ddm/DQ2Clients/setup.sh

ent AFS CERN GRID UI
on 2.5
ocal site
Clients



17]~% voms-proxy-init -voms atlas
e or dir: /afs/cern.ch/user/j/jticey/.glite/vomses
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17]~% voms-proxy-init -voms atlas
e or dir: /afs/cern.ch/user/j/jticey/.glite/vomses
 phrase:
```
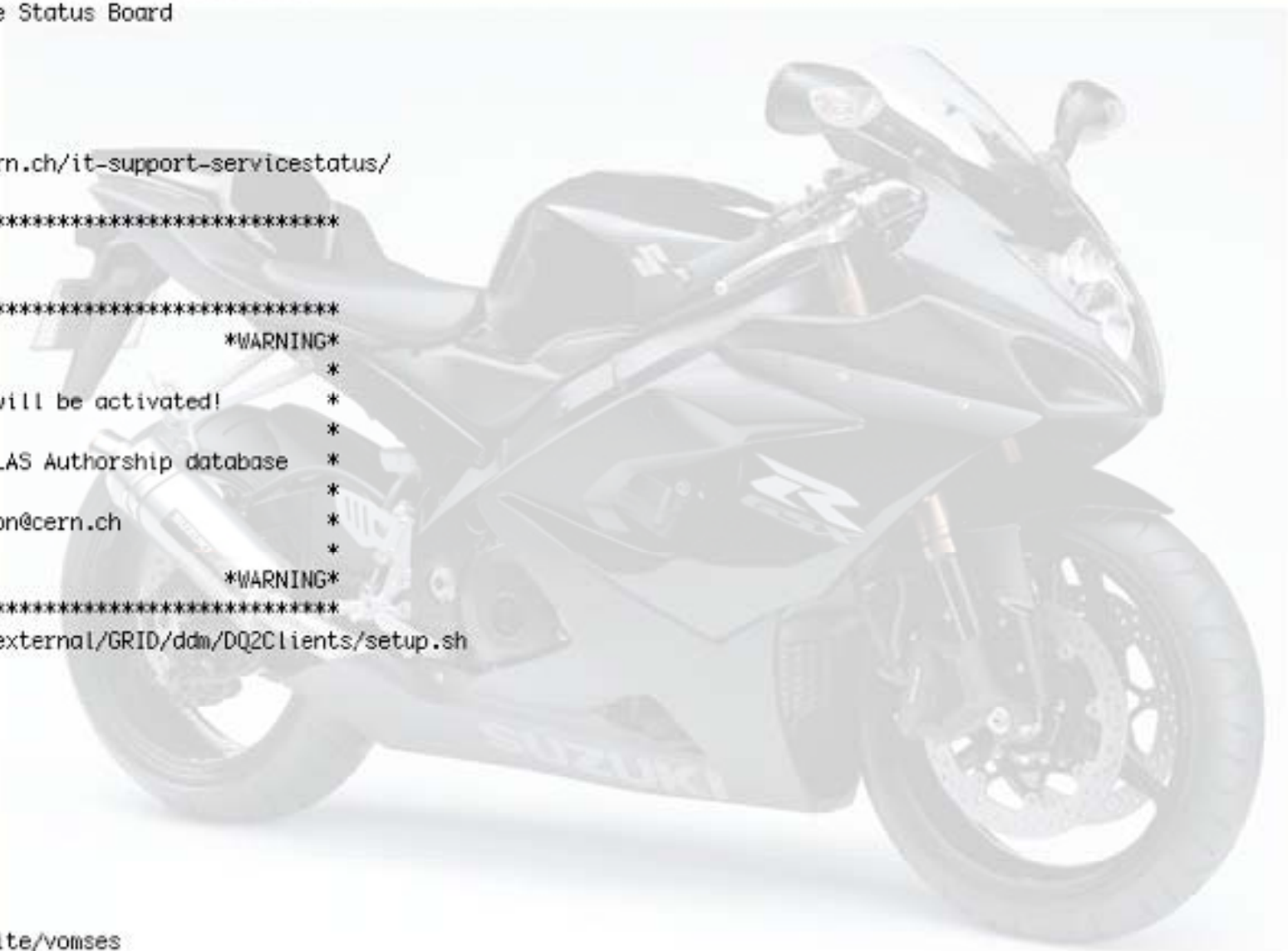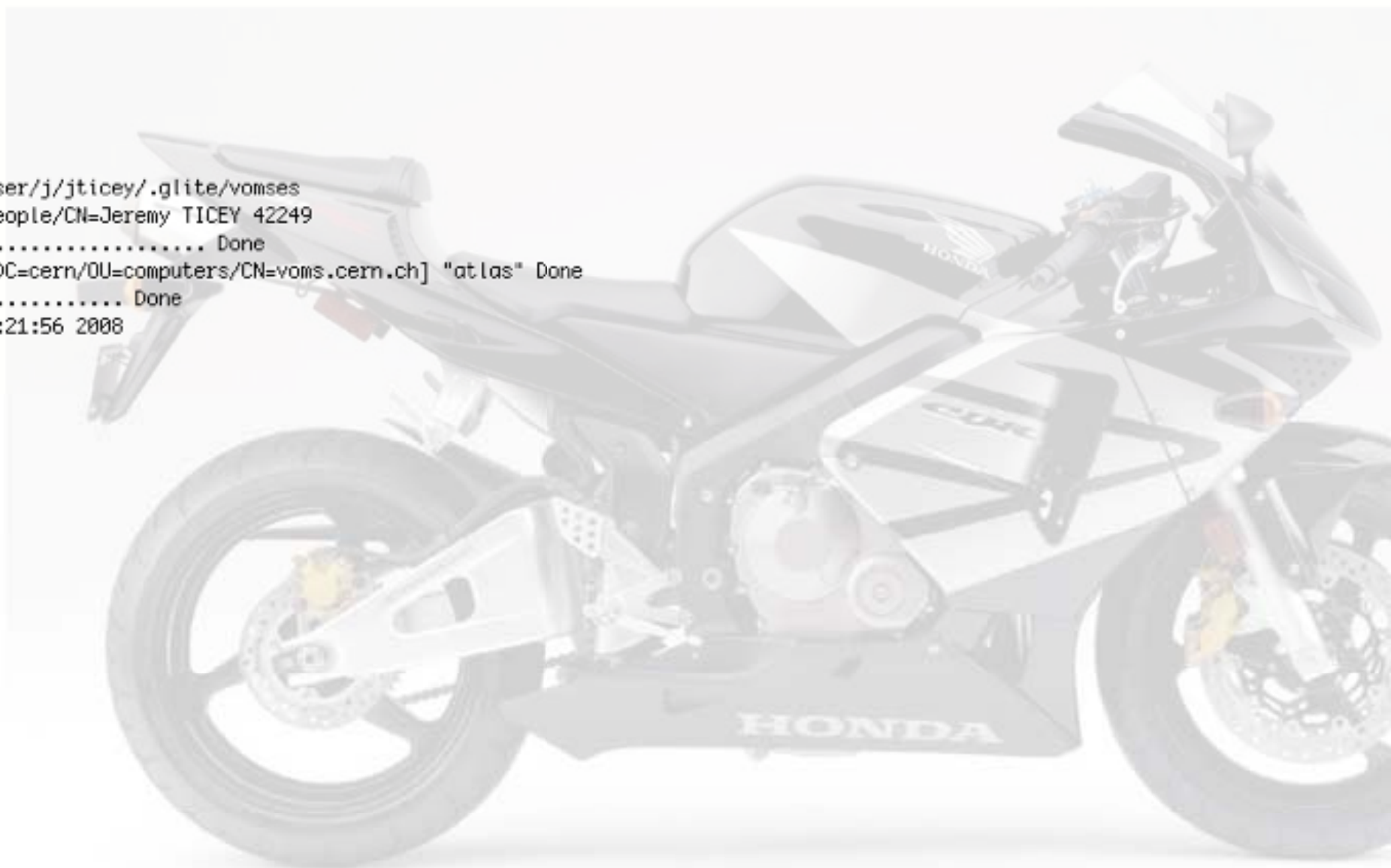
```
rent AFS CERN GRID UI
non 2.5
local site
Clients

s phrase:

e or dir: /afs/cern.ch/user/j/jticey/.glite/vomses
/DC=org/DC=doegrids/OU=People/CN=Jeremy TICEY 42249
rary proxy ............................... Done
s.cern.ch:15001 [/DC=ch/DC=cern/OU=computers/CN=voms.cern.ch] "atlas" Done
.................................... Done
valid until Thu Aug 14 08:21:56 2008
are you looking for?
```

# Sancho Panza

Search

# Search

```
31]~% voms-proxy-init -voms atlas
e or dir: /afs/cern.ch/user/j/jticey/.glite/vomses
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ary proxy ................................. Done
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31]~% dq2-ls user.MiguelBranco*
 found: user.MiguelBranco*
31]~% dq2-ls user.MiguelBranco
31]~% dq2-ls user.MiguelBranco.test*
 found: user.MiguelBranco.test*
31]~% dq2-ls user.MiguelB*
 found: user.MiguelB*
31]~% dq2-ls user.mlassnig.*
 found: user.mlassnig.*
31]~% dq2-ls user.mlassnig.
31]~% dq2-ls 'user.mlassnig.*'
c3198b11f084f1193f32ab2414360ad
ernprod.001
dmd.05
374bec59bbe438fb82b21c5e73cbcad
y.happy.dataset.7
y.happy.dataset.6
y.happy.dataset.5
y.happy.dataset.4
dmd5.9
dmd5.8
estmssput.06
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dmd5.1
5beb24779eb4dfda172e2cd1e8fgg0d
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2644e29d32a47c3b6f75a3ec8ff9da1
egtest.001
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DOUBLE-CLICK TO

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anco.subscription.test.1208519247

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# File Results

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estmssput.05
ttest.001
67607ccf45b4954b00c82e9fd1a7d6e
8fa007720ef4da2a856ff12929010af
395332c52124d65b673f06c644b05a5
estmssput.12
estmssput.11
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ataset.18
ataset.19
ataset.14
ataset.15
ataset.16
estprod01
ataset.10
ataset.11
ataset.12
ataset.13
ataset.CERNPROD.2
ataset.CERNPROD.1
astor.001
astor.002
d4
atadisk.01
y.happy.tier0.dataset.01
estput.01
e966991924f462081738512301faf71
ernprod.put.002
ernprod.put.001
e0b106767164fbbbebbb72c150df24c
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31]~% dq2-ls -f user.mlassnig.usr.test.1

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assnig.usr.test.1._dummy2          b6c85475-22db-401b-8a13-bbcded39efcf      ad:1f85c9eb        10485760

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like to do?                                                         user.MiguelBranco.subscriptio
number (1-4)                               user.MiguelBranco.subscription.test.1208518795    user.MiguelBranco.test12084
whole Dataset  1208424704
part of the Dataset                        user.MiguelBranco.test1208433643    user.MiguelBranco.test12084

6ee880e9-229a-4445-9001-6d68d41da690

0

d: 2008-04-17 12:03:33

c06c0563-b932-41cb-a0e3-26134794ebdc

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d: 2008-04-17 12:03:33

download the whole dataset:   user.MiguelBranco.test1208433798

## Sancho Panza

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user.MiguelBranco.test1208439943

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user.MiguelBranco.bookkeeping.test.1209038756

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# Download

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d4
atadisk.01
y.happy.tier0.dataset.01
estput.01
e966991924f462081738512301faf71
cernprod.put.002
cernprod.put.001
e0b106767164fbbbebbb72c150df24c
fntest.04
case.4.0
ataset.17
231]~% dq2-ls -f user.mlassnig.usr.test.1

usr.test.1
lassnig.usr.test.1._dummy2        b6c85475-22db-401b-8a13-bbcded39efcf      ad:1f85c9eb      10485760
lassnig.usr.test.1._dummy1        6d86eee3-1411-434d-aadf-ccae2de2dd36      ad:ed6e435f      10485760

971520
14 08:05:43
231]~% dq2-get user.mlassnig.usr.test.1
entral catalogues to resolve datasetname user.mlassnig.usr.test.1
 1
usr.test.1: Querying DQ2 central catalogues for replicas...
entral catalogues for files in dataset...
usr.test.1: Using site CERN-PROD_USERTAPE
usr.test.1: Querying local file catalogue of site CERN-PROD_USERTAPE...
usr.test.1/user.mlassnig.usr.test.1._dummy1: Getting metadata for srm://srm-atlas.cern.ch:8443/srm/managerv2?SFN=/castor/cern.ch/grid/atlas/tzero
nig.usr.test.1._dummy1
usr.test.1/user.mlassnig.usr.test.1._dummy2: Getting metadata for srm://srm-atlas.cern.ch:8443/srm/managerv2?SFN=/castor/cern.ch/grid/atlas/tzero
nig.usr.test.1._dummy2
usr.test.1/user.mlassnig.usr.test.1._dummy1: is cached at source.
usr.test.1/user.mlassnig.usr.test.1._dummy1: Starting transfer: lcg-cp -v --vo atlas srm://srm-atlas.cern.ch:8443/srm/managerv2?SFN=/castor/cern.
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usr.test.1/user.mlassnig.usr.test.1._dummy1: 0/10485760 transferred
usr.test.1/user.mlassnig.usr.test.1._dummy2: 0/10485760 transferred
usr.test.1/user.mlassnig.usr.test.1._dummy1: 10485760/10485760 transferred
usr.test.1/user.mlassnig.usr.test.1._dummy1: validated
usr.test.1/user.mlassnig.usr.test.1._dummy2: 3145728/10485760 transferred
usr.test.1/user.mlassnig.usr.test.1._dummy2: 4194304/10485760 transferred
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sr.test.1
e that you were looking for?


sr.test.1
assnig.usr.test.1._dummy2          b6c85475-22db-401b-8a13-bbcded39efcf      ad:1f85c9eb      10485760
assnig.usr.test.1._dummy1          6d86eee3-1411-434d-aadf-ccae2de2dd36      ad:ed6e435f      10485760


71520
4 08:05:43


like to do?
number (1-4)

whole Dataset
art of the Dataset
nother Dataset


u want to download the whole Dataset?

TLAS VOMS proxy. Create one with: "voms-proxy-init -voms atlas"

t has been downloaded to your disk. Thank you.


like to do?
number (1-4)

whole Dataset
art of the Dataset

# Sancho Panza

'check.txt', 'manage.py', 'urls.py', '#downloader.py#', '#__init__.py#', 'DQ2Clients', 'storage', 'manage.pyc', 'pacman-3.26', 'views.pyc', 's
py~', 'check.txt~', 'user.mlassnig.usr.test.1', 'urls.pyc', 'downloader.py', 'urls.py~', 'models.pyc', 'settings.py', '#views.py#', '__init__.pyc',

urrent AFS CERN GRID UI - Enabled Python 2.5 - Configured local site - Enabled DQ2 Clients Ready Querying DQ2 central catalogu
g.usr.test.1 Datasets found: 1 user.mlassnig.usr.test.1: Directory user.mlassnig.usr.test.1 already exists user.mlassnig.usr.test.1: Querying
catalogues for files in dataset... user.mlassnig.usr.test.1: user.mlassnig.usr.test.1._dummy2 already transferred, validating user.mlassnig.u
r.mlassnig.usr.test.1: Using site CERN-PROD_USERTAPE user.mlassnig.usr.test.1: Querying local file catalogue of site CERN-PROD_
g.usr.test.1/user.mlassnig.usr.test.1._dummy1: Getting metadata for srm://srm-atlas.cern.ch:8443/srm/managerv2?SFN=/castor/cern.ch/g
g.usr.test.1/user.mlassnig.usr.test.1._dummy1 user.mlassnig.usr.test.1/user.mlassnig.usr.test.1._dummy1: is cached at source. user.mlassn
fer: lcg-cp -v --vo atlas srm://srm-atlas.cern.ch:8443/srm/managerv2?SFN=/castor/cern.ch/grid/atlas/tzero/atlasusertape//user/mlassnig/
g.usr.test.1._dummy1 file:///usr/local/lib/python2.5/site-packages/dq2/web/get/user.mlassnig.usr.test.1/user.mlassnig.usr.test.1._dummy1
g.usr.test.1/user.mlassnig.usr.test.1._dummy1: 0/10485760 transferred user.mlassnig.usr.test.1/user.mlassnig.usr.test.1._dummy1: 104857
g.usr.test.1/user.mlassnig.usr.test.1._dummy1: validated Finished

# Conclusion

- Produced two functional dataset search and retrieval systems that will serve as prototypes for further testing

- To improve:

  - "Behind the scenes" downloader

  - Create a "waiting room" while datasets are being retrieved

# Cultural Experiences

- Interlaken, Switzerland

# Cultural Experiences

- Interlaken, Switzerland
- Paris, France

# Cultural Experiences

Interlaken, Switzerland

Paris, France

Barcelona, Spain

# Cultural Experiences

- Interlaken, Switzerland
- Paris, France
- Barcelona, Spain
- Jura Mountains

# Cultural Experiences

- Interlaken, Switzerland

- Paris, France

- Barcelona, Spain

- Jura Mountains

- Geneva, Switzerland

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