PyICAT
An ICAT WebService client module

12. March 2013 | Christian Felder
JCNS | Scientific Computing

Part I: Motivation

ICAT web service description language file
- create, createMany
- search, get
- update
- delete, deleteMany
- + types, session management, version info

“To understand exactly how the data manipulation calls work requires an understanding of the schema.” [icatproject.org]
- “rather thin layer on top of a relational DBMS” [icatproject.org]
- generic interface
- knowledge about object relations required
Motivation

Goal

layer on top of ICAT’s WSDL

- data manipulation calls for each type (methods)
- calls should include all relations (arguments)

benefits

- reduces knowledge requirements about the schema.
- higher code density
  - less errors due to wrong/missing attributes and/or relationships

Application Interface

**pyICAT module**

```python
#!/usr/bin/env python
import datetime
import time
from pyICAT import ICatDAQ, ICatClient, ICatType
c = ICatClient("root", "secret", "https://apps.jcns.fz-juelich.de:5443/ICATService/ICAT?wsdl", "db")
daq = ICatDAQ(c)
facility = c.service.search(c.getSessionId(), ICatType.FACILITY + "[name='Jcns']")[0]
instrument = c.service.search(c.getSessionId(), ICatType.INSTRUMENT + "[name='KWS_1']")[0]
```

PyICAT

Part II: Application Interface and programs

12. March 2013 | Christian Felder
JCNS | Scientific Computing
Application Interface
Simple example (II/II)

cycle = daq.facilityCycleForDate(datetime.datetime.today())
inv = daq.addInvestigation(facility, instrument, cycle, "visit0", investigationId)
daq.investigationTypeForName("simulation").investigationId = id
sample = daq.addSample(inv, "EmptyCell")
dataset = daq.addDataset(inv, sample, "Example_Dataset")
daq.datasetTypeForName("raw").datasetId = id
file = daq.addDatafile(dataset, "/tmp/example_dataset/zero.gz",
datetime.datetime.today(),
daq.datafileFormatForName("GZIP")
file)
daq.addDatafileParameter(dataset, file)
daq.updateDatasetStatus(dataset, True)
c.logout()
Application Interface
pyICAT.plugins module

Configuration file
icat.conf

[icatuser]
db/icat42 = secret

[defaults]
remote_base_url = jcnsnfs.jcns.frm2:/Archive/project/instruments/FRM2
port = 5443
hostname = apps.jcns.fz-juelich.de
facility = JCNS
mnemonic = ldap

[plugins]
kws-3 = plugins.pyfrid.KWSDAQ
kws-2 = plugins.kws.KWSDAQ
kws-1 = plugins.kws.KWSDAQ
maria = plugins.pyfrid.MARIADAQ

Configuration program
icatconfig

user@localhost:~ % icatconfig -c
ICAT configuration file [/home/user/.pyICAT/icat.conf]:
default hostname [None]: apps.jcns.fz-juelich.de
default port [None]: 5443
default facility [None]: JCNS
default mnemonic [None]: ldap
remote base url [None]: jcnsnfs.jcns.frm2:/Archive/project/instruments/FRM2
(plugin mnemonic/username password (press ENTER to skip): db/icat42 secret ...
(plugin mnemonic/username password (press ENTER to skip):
instrument plugins.module.class (press ENTER to skip): \n kws-3 plugins.pyfrid.KWSDAQ
... instrument plugins.module.class (press ENTER to skip):
Installation and Summary

current release: v1.6.0

- Prerequisites and third party modules
  - python, version ≥2.6 (version 3.0 not yet tested)
  - SUDS (tested with version 0.4.1)
- Installation
  - python distutils package
    python setup.py install [--prefix=$PREFIX]
- Plugins
  - inherit from pyICAT.plugins.base.DAQMeta
  - store plugin in directory named plugins
  - create plugins/__init__.py
```python
all.. = ['mypluginmodule']
```
  - configure plugin class mapping (instrument → plugin)
    icatconfig

12. March 2013