



Report

SPIRE DP 0.6.3 Acceptance Test Report

Ref: SPIRE-RAL-REP-003124

Issue: 1.0

Date: 1st August 2008

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SPIRE DP 0.6.3 Acceptance Test Report

For the Calibration Scientist and Instrument Engineer

George Bendo
Steve Guest
Ken King
Sarah Leeks
Nanyao Lu
Pasquale Panuzzo
Ed Polehampton
David Shupe

1st August 2008



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1. INTRODUCTION

This acceptance test report is based on the tests carried out by SPIRE at RAL on the Herschel Common Science System (HCSS) version 0.6.3 between 3rd and 11th July 2008, using the new-style SPIRE build #114 containing DP-CORE #216 and HCSS-CORE #192 (corresponding to old-style HCSS build #1634).

The tests were based on the DP test plan at

<http://www.herschel.be/twiki/bin/view/Spire/DPTestPlan>.

1.1 Purpose

The purpose of this test was to validate that data processing functionality is usable for purpose of running SOVT-1. Problems encountered that have a workaround available do not compromise this usability; where no workaround is available the existing 0.6.3 system needs to be patched.

2. TEST SETUP

Client machines were set up with a mixture of:

- SPIRE build #862 (old-style)
- SPIRE build #114 (new-style)
- Installer version of HCSS 0.6.3

The RAL operational machines were set up with:

- SPIRE build #114 (new-style)
- Java 1.5.0_14
- Versant 7.0.1.3.7

Additionally wakefield was configured with a Tomcat web server running on port 80. This was set up with two servlet applications:

- Telemetry server at <http://wakefield.bnsc.rl.ac.uk/hcss/tm>
- PAL (http) server at <http://wakefield.bnsc.rl.ac.uk/hcss/pal>

Note that the `hcss` area of this web site is password protected.

3. TEST EXECUTION

3.1 Test 1: Database Propagation HSC to ICC

It is understood that this test is outside the scope of the data processing system. The test was run in coordination with Pedro Gomez at ESAC. The `pfm4_test` database was to be propagated. The test was run as user `sg55` on `chesterfield`.

The target database (i.e. at RAL) was created and set to send propagation information e-mails:

```
db_admin -i pfm4_prop_test@chesterfield.  
db_admin -prop pfm4_prop_test@chesterfield -n ADD s.guest@rl.ac.uk
```

It was then configured to receive data from the source database at ESAC:

```
db_admin -prop pfm4_prop_test @chesterfield -l START  
herdb01.esac.esa.int spire_ops_pfm4_test 2378
```

On confirmation that the source database at ESAC was ready for propagation, the daemon was started:



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repld pfm4_prop_test@chesterfield

The propagation mechanism then appeared to start. Every five minutes a spurious warning message was generated, such as:

```
03-Jul-08 08:16:33.949 DaemonLogger: [SystemWatchdog(1)]:WARNING: The
node "pfm4_prop_test@chesterfield" has reached a size of 8.1 GB.
Current warning limit is 1.0 GB.: (#2)
```

This was not true – the database was much smaller, while 8GB was its initial maximum size (i.e. the maximum size of the system volume).

The first attempt failed due to the process at ESAC running out of memory. A second attempt was then started. This appeared to run for a few hours, but again failed, this time apparently due to an auto-logout at ESAC. Some data was transferred, but no telemetry packets. There was insufficient data to make any meaningful assessment of the data transfer rate.

Test failed.

This test was successfully rerun on July 24th.

3.2 Test 2: Transfer of files from HSC to ICC

This test was not performed. However, the ftp interface to ESAC via the leased line was successfully exercised during the test period for another reason, so there are no grounds for concern in this. This test is also outside the scope of DP.

3.3 Test 3: Access products from ESAC using HSA browser

This test was attempted by a number of different users.

3.3.1 Report 1

July 10, 10:00. Can log in, but no observations found! On Firefox, Mac OSX 10.4.

10:40. After updating OS and restarting, new Firefox session, cannot get HSA browser to work.

java.io.FileNotFoundException:

<http://satarc.esac.esa.int/herscheldev/hsa/lib/hui-client-0.9b1.jar>

Try Safari (newly updated). The HSA browser starts. This time (blank query), one result is returned. However, the browser claims it does not include any products and has a size of 0 MB. I request it to be downloaded as a tar file anyway. The browser reports that an email will be sent to my registered address when the tar file is ready. No email comes and nothing happens.

Try Firefox again. Reload page. Now the browser window appears. A blank query returns one observation. However, it appears to have no products. On the results screen, selecting “All” brings up a window to save a tar file. But, the next window says “Error Processing the Request: There are no products under this specification”.

Sarah finds out: these problems are due to a new version of HSA being deployed as I was testing. Furthermore, the data has not been repopulated.

Continuing the test using tar file that Kevin and Nanyao obtained from HSA, before the changes had been made. The ingest of the files fails near the end, due to the `PhotPixAngOff` class having been deleted from the library. The data had been written out with an earlier version of the software, than what we are using for the test.



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More disturbingly, reading the FITS files one-by-one using FitsArchive and the default HCSS_READER, fails for every single file!!

The failures accessing the archive were due to changes being made on the server side. A new version was being deployed that morning.

No SPR has been raised on the FITS reading problem. This should be rechecked and an SPR raised if there is still a problem.

3.3.2 Report 2

Part 1: Obtain data of an observation from the I browser

- Open a web browser
- Go to URL <http://hsa.esac.esa.int:8080/herscheldev/hsa/hsa.html>
- Press "Start HSA browser"
- Press "Login/Register"
- fill in User Name and Password and press "Login & proceed"
- Make a query to retrieve some observations [obsid=0x30011628 (805377576)]
- Press "Move Selected to Basket"
- Press "Shopping Basket" to view selected product entries
- Press "Submit Request" to start process to get the observations
- Press "Confirm"
- Press "Dismiss"
- Press "Logout"
- Await email
- Follow instructions in email (open with a browser the link provided in the email and download the tar archive)
- Now put data into local pool by
 - untar the tar file in a directory
 - start HIPE/jide
 - execute the following code:

```
from java.io import *
f=File("name_of_the_directory")
pool=PoolManager.getPool("mypool")
pool.ingest(f, Boolean.FALSE)
```

Results:

The test was performed trying to observation obsid=0x30011628 (805377576).

If only the obsid is provided in the query, the query works; if also the instrument SPIRE is specified, an error is produced saying:

"No Observations matched your query."

At the Request, if you click on "Tar option", a useless page was open.

It seems that is not possible to get a compressed tar.

Side note: having to press "dismiss" to actually proceed is confusing.

The email was received in a very short time. It contains the URL to visit to download the tar file; following the link I got the tar file of 477Mb.

The tar file however contained some invalid fits files whose classes were removed between the E2E test #3.7 and the present test. These files generate an error in the above script, but once removed them and re-executed the script, it worked correctly.

Part 2: Use data products from the generated pool

- Start HIPE
- execute the following script:



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```
from herschel.ia.pal import *
storage=ProductStorage()
pool=PoolManager.getPool("mypool")
storage.register(pool)
res=browseProduct(storage)
```

- choose an ObservationContext, put it in the basket and press OK
- execute the command: obs=res[0].product
- navigate the data inside the observation context obs

Result:

The Product browser threw several exceptions showing that the pool was not reconstructed in the correct way:

```
Jul 7, 2008 2:08:42 PM herschel.ia.pal.browser.table.ProductRefCache$1
uncaughtException
SEVERE: Internal Error: exception in pool-9-thread-5: null
java.lang.NullPointerException
    at
herschel.ia.pal.browser.tree.AbstractTreeModelProvider.exceptionNode(Abstract
TreeModelProvider.java:60)
    at
herschel.ia.pal.browser.tree.ProductRefTreeModelProvider.addChildren(Product
RefTreeModelProvider.java:118)
    at
herschel.ia.pal.browser.tree.MapContextTreeModelProvider$1.run(MapContextTre
eModelProvider.java:65)
    at
java.util.concurrent.ThreadPoolExecutor$Worker.runTask(ThreadPoolExecutor.ja
va:650)
    at
java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:6
75)
    at java.lang.Thread.run(Thread.java:595)
```

Once the obs variable is created, trying to navigate it gave further errors:

```
java.util.NoSuchElementException: No such urn in any pool of storage
[herschel.ia.pal.pool.lstore.FitsProductPool:mypool]:
urn:hsa:herschel.ia.obs.auxiliary.AuxiliaryContext:189
```

Test FAILED

No SPR has been raised on this problem. In attempting to reproduce it, SPR-4651 has been raised, although it is not clear if this represents the same problem. More likely it is due to a knock-on of SPR-0785.

3.3.3 Report 3

* Register for HSA Browser

-- Registered without any problem.

* Product download from the HSA Browser

-- Went to <http://hsa.esac.esa.int:8080/herscheldev/hsa/hsa.html>,
the General User Access to I.

-- It launched archive interface without problems (using either Safari



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- V3.1 or FireFox V2.0.0.15).
- Clicked "Execute Query" and it displayed a list of observations.
 - I logged in and retrieved the first observation listed.
 - Received email notification in about 30 minutes of data available.
 - ftped the data over without any problem.

IV. Ingest the HSA-Downloaded Data into the Local Pool

- Tried to use the following script to ingest the downloaded data into the local storage:

```
from java.io import *
from herschel.spire.ia.dataset import *
from herschel.ia.obs.auxiliary.pointing import *
f=File("/Users/lu/Data/SPIRE/NLU166600")
pool=PoolManager.getPool("nlul66600")
pool.ingest(f, Boolean.FALSE)
```

- It failed at the last sentence because of an unknown class:
`herschel.spire.ia.dataset.PhotPixAngOff`

Conclusion: Data download was successful, but failed to ingest the downloaded data into a local pool.

Issues: (a) I was not able to filter for SPIRE observation only in I when I tried this option on 7/9/2008.

(b) On 7/10/2008, none of the observations are visible any more in HSA.

There are two options for getting the data as instructed in the email sent by HSA: web option and ftp option. The first option was not working (on 7/9/2008).

(d) The call to "pool.ingest" did not work. Need to be fixed.

The ingestion problem is due to the removal of the PixAngOff class, see SPR-0785.

3.3.4 Report 4

Procedure:

- Loaded <http://hsa.esac.esa.int:8080/herscheldev/hsa/hsa.html> .
- Clicked on "Login/Register" and entered User Name/Password.
- In "Query Specifications" pane, clicked on "Execute Query".

Comments:

- The test ultimately failed because the software did not return any products when a query was executed.
- The HSA browser at <http://hsa.esac.esa.int:8080/herscheldev/hsa/hsa.html> failed to work on several occasions. Only a "Java" logo with a load bar was displayed.

3.3.5 Report 5

Actor : Consortium Astronomer not @ RAL (part1), Instrument Engineer and Calibration Scientist not @ RAL (parts 2 and 3)

Starting Conditions:

- A set of pipeline products available in the HSA



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- This is met, there are 53 observations, 23 of them are SPIRE. These are from the E2E test 3.7
- Actor set up as Authorised User of HSA
 - For this you need to be on LDAP (a herschel registered user) if you aren't go to <http://herschel.esac.esa.int/registration.shtml> [but you can do this as part of the test]

I'm already registered (although I haven't updated my email address yet)

Procedure Summary:

- Part1
 - Start HSA via web browser by pointing to <http://hsa.esac.esa.int:8080/herscheldev/hsa/hsa.html>
- On laptop from the visitors network (so that am outside of RAL)
- Using Mozilla firefox v2.0.0.15
- Accepted pop ups from esa.int
- Press Login/Register
 - ok
 - If you are registered already then fill in User Name and Password and press Login & proceed
- Filled in my username and password
- Else press Register As New User follow instructions and then come back and login
- N/A
- Make a query to retrieve some products (can first just press Execute Query to see what products are there so that you can choose a query that will work)
- First executed query without filling in fields – successful.
- Query on instrument gives back message saying no observations matched the query.
- Then queried on 80* to get all SPIRE observations, got 38 results.
- All observations retrieved are public.
- Mark the products to download
- Selected 805377575 and 805377608
- Press Move Selected to Basket
- Done
- Press Shopping Basket to view selected product entries
- Successful



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- Press Submit Request to start process to get the observations

Estimating Product Size takes 20-30 seconds

Selected tar option

- Press Confirm

Done id is SLEEKs165637

- Press Dismiss

Done

- Press Logout

Done

- Await email

Received straight after submission.

- Follow instructions in email

Clicked on web line <ftp://hsa.esac.esa.int/pub/SLEEKs165637> page opens up but is completely blank.

I wonder if the information “You can get more information about the Herschel project by accessing the Herschel web pages from the following URL:

<http://sci.esa.int/science-e/www/area/index.cfm?fareaid=16>”

Should point to the HSC web page.

Also should the email be signed from

The Herschel Science Data Archive team

Or the HSC who interface with the community.

There are a daunting number of files.

Open up a command prompt.

Follow instructions as given in email:

```
ftp hsa.esac.esa.int
```

```
Get an error: ftp: connect :Unknown error number
```

I think this is a Visitor network setup issue (it probably blocks ftp)

Transfer to inside the firewall using PPTP. Now the ftp works.

```
anonymous  
<your email address as password>  
prompt  
cd /pub/SLEEKs165637
```



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```
binary
dir
```

used command `get SLEEKs165637.tar` to retrieve the file.

Connection was closed by remote host before all the data transferred.

Try again, failed to log on to ftp. Stopped and restarted PPTP.

```
anonymous
<your email address as password>
prompt
cd /pub/SLEEKs165637
binary
dir
```

used command `get SLEEKs165637.tar` to retrieve the file.

```
Successfully retrieved file 365598720 bytes in 172.73 s.
```

Disconnect PPTP

Untar file, see that there are 994 files.

Untar to C:\Data\DpTesting

[note during a test run I retrieved a PACS product and 5 times it asked if I wanted to overwrite old file with new file – i.e. that products have same name – but have a factor of 10 difference in file size].

Confirmed that the directory contains 994 files.

Note they are in a flat structure – the products from both observations are in one directory, no sub directories.

Note there isn't an option to retrieve data from straight from HSA to local pool – should there be? (is that what is supposed to be tested?)

Part2

- Start HIPE

Done

- Browse HSA files

I went to search local and remote data to import into session.

Unfortunately only the PAL is implemented, the HAB web interface isn't.

That interface needs to be implemented for this test (and probably to do the previous one in the originally intended way.

- Import Products into local pool

Trying to use PAL, I get the following error:

```
Import "from herschel.ia.obs.calibration.all import *" returns:
      Import Error -> No module named calibration
Import "from herschel.ia.obs.telemetry.all import *" returns:
```



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```
Import Error -> No module named telemetry
Import "from herschel.ia.obs.dataframes.all import *" returns:
Import Error -> No module named dataframes

Import "from herschel.hifi.all import *" returns:
Import Error -> No module named hifi
Import "from herschel.pacs.all import *" returns:
Import Error -> No module named pacs
Import "from herschel.hifi.all import *" returns:
Import Error -> No module named hifi
Import "from herschel.pacs.all import *" returns:
Import Error -> No module named pacs
Exception in thread "AWT-EventQueue-0"
java.lang.NullPointerException
    at
    herschel.ia.pal.browser.views.PalQueryView$LocationRenderer.getListCellRendererComponent(PalQueryView.java:673)
```

This appears to be the same problem as described in Report 2.

3.4 Test 4: Access products from ESAC using HAIO

This test was performed using scripts especially written/modified for the purpose. They are `haioRetrieve.py/sh` in `~sg55/scripts` on `wakefield`. These scripts need to be generalized and made for widely available in the system.

An attempt was first made to run the script without the RAL HTTP proxy. This failed with a "Connection refused" message. RAL Networks were contacted (again) to allow direct HTTP connections to `hsa.esac.esa.int`. As a workaround these lines were set in the user `.props` file:

```
proxySet = true
proxyHost = wwwcache.rl.ac.uk
proxyPort = 8080
```

The first attempt quickly failed with this error:

```
java.io.IOException: Type RCHKT not allowed for version track of
product with type RSCUT
    at
    herschel.ia.pal.StoredVersionHandler.save(StoredVersionHandler.java:118)
    at
    herschel.ia.pal.ProductStorage.commit(ProductStorage.java:632)
    at
    herschel.ia.pal.MapContext.writeDataset(MapContext.java:454)
    at herschel.ia.pal.Context.writeComposite(Context.java:410)
    at herschel.ia.pal.Context.commitRefs(Context.java:315)
    at
    herschel.ia.pal.ProductStorage.commit(ProductStorage.java:631)
    at
    herschel.ia.pal.ListContext.writeDataset(ListContext.java:374)
    at herschel.ia.pal.Context.writeComposite(Context.java:410)
    at herschel.ia.pal.Context.commitRefs(Context.java:315)
    at
    herschel.ia.pal.ProductStorage.commit(ProductStorage.java:631)
    at
    herschel.ia.pal.MapContext.writeDataset(MapContext.java:454)
    at herschel.ia.pal.Context.writeComposite(Context.java:410)
    at herschel.ia.pal.Context.commitRefs(Context.java:315)
    at
    herschel.ia.pal.ProductStorage.commit(ProductStorage.java:631)
```



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at
herschel.ia.pal.ProductStorage.save(ProductStorage.java:558)

The Jython script was modified to catch an exception, print a message and continue. As this error was not seen again, no SPR was raised. The second attempt ran for ~30 minutes, the failed with the error:

```
java.lang.IllegalArgumentException: Improper class in urn
urn:hsa:herschel.spire.ia.dataset.PhotPixAngOff:0:
herschel.spire.ia.dataset.PhotPixAngOff
    at herschel.ia.pal.util.UrnUtils.getClass(UrnUtils.java:50)
    at herschel.ia.pal.ProductRef.<init>(ProductRef.java:107)
    at herschel.ia.pal.MapContext.readTable(MapContext.java:491)
    at
herschel.ia.pal.MapContext.readDataset(MapContext.java:427)
    at herschel.ia.pal.Context.readComposite(Context.java:393)
    at herschel.ia.pal.Context.load(Context.java:291)
    at
herschel.ia.pal.ProductStorage.loadProduct(ProductStorage.java:456)
    at
herschel.ia.pal.ProductRef.loadProduct(ProductRef.java:236)
    at
herschel.ia.pal.ProductRef.getProduct(ProductRef.java:227)
    at
herschel.ia.pal.ProductStorage.commit(ProductStorage.java:611)
    at
herschel.ia.pal.MapContext.writeDataset(MapContext.java:454)
    at herschel.ia.pal.Context.writeComposite(Context.java:410)
    at herschel.ia.pal.Context.commitRefs(Context.java:315)
    at
herschel.ia.pal.ProductStorage.commit(ProductStorage.java:631)
    at
herschel.ia.pal.MapContext.writeDataset(MapContext.java:454)
    at herschel.ia.pal.Context.writeComposite(Context.java:410)
    at herschel.ia.pal.Context.commitRefs(Context.java:315)
    at
herschel.ia.pal.ProductStorage.commit(ProductStorage.java:631)
    at
herschel.ia.pal.ProductStorage.save(ProductStorage.java:558)
    at sun.reflect.NativeMethodAccessorImpl.invoke0(Native
Method)
    at
sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:39
)
    at sun.reflect.DelegatingMethodAccessorImpl.invoke
```

This is due to a known inconsistency between the data set at ESAC and the SPIRE build in use in the tests. This is caused by the PixAngOff classes having been removed from the SPIRE build. *Classes defining products should only be removed with great care and with approval of the appropriate CCB(s) in future, as this causes considerable problems with data already stored in the archive.* The data from this test run was written to a local pool in /misc/winchester1/dptest063/data/products/spg.

The script was modified to catch this exception and restarted, this time writing to a spg2 pool in the same location. This run failed with a slight variant of the same error after nearly 8 hours. The script was modified to catch this exception, but not run again.

On this run, 971MB of data was transferred in 7:51:36, giving a rate of 34.3 Kbyte/sec. Whilst the real rate cannot be reliably ascertained without bypassing the proxy, this is still orders of magnitude slower than the expected rates of ~1MB/s (proxy) or ~4MB/s (no proxy). This test should be rerun when RAL



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Networks allow direct access to the archive without routing through the proxy. Any remaining transfer speed issues may then probably be attributed to the HAIO protocol.

Test partially succeeded. Note that the partial failure of this test had a knock-on effect for a number of other tests, for the reason that the output pool(s) were incomplete. In particular, no `ObservationContext` products were copied.

This test was rerun on July 24th with the routing bypassing the proxy. However, this still failed as the HSA read pool needs access to the VO web site, see SPR-4579.

3.5 Test 5: Interacting with TM on local Versant database

Use `pfm4_test`

start Hipe

```
database set to pfm4_test@chesterfield in user.props:  
hcss.access.database = pfm4_test@chesterfield
```

Register a `DbPool` to read the database:

```
store = herschel.ia.pal.ProductStorage()  
pool = DbPool.getInstance('hcss.access.database')  
store.register(pool)  
refs = herschel.ia.pal.browser.ProductBrowser.browseProduct(store)
```

The `DbPool` command runs and produces this output:

```
ReplStoreFactoryImpl: Creating optimistic no-lock ObjectStore:  
pfm4_test@chesterfield
```

But then when run the `productBrowser` and press submit to search for observations get the following error:

```
java.lang.NullPointerException  
    at herschel.ia.pal.pool.db.DbPool.createUrn(DbPool.java:598)  
    at herschel.ia.pal.pool.db.DbPool.loadRef(DbPool.java:325)  
    at herschel.ia.pal.pool.db.DbPool.visit(DbPool.java:520)  
    at herschel.ia.pal.query.AttribQuery.accept(AttribQuery.java:64)  
    at herschel.ia.pal.pool.db.DbPool.select(DbPool.java:427)  
    at  
herschel.ia.pal.BasicStorageQueryVisitor.handleSelect(BasicStorageQueryVisitor.java:47)  
    at  
herschel.ia.pal.BasicStorageQueryVisitor.visit(BasicStorageQueryVisitor.java:30)  
    at herschel.ia.pal.query.AttribQuery.accept(AttribQuery.java:64)  
    at herschel.ia.pal.ProductStorage.execute(ProductStorage.java:683)  
    at herschel.ia.pal.ProductStorage.select(ProductStorage.java:657)  
    at  
herschel.ia.pal.browser.ProductBrowser.search(ProductBrowser.java:240)  
    at  
herschel.ia.pal.browser.SimpleQueryPanel$6$1SearchWorker.doInBackground(SimpleQueryPanel.java:432)  
    at  
herschel.ia.pal.browser.util.SwingWorker$1.call(SwingWorker.java:286)  
    at java.util.concurrent.FutureTask$Sync.innerRun(FutureTask.java:269)  
    at java.util.concurrent.FutureTask.run(FutureTask.java:123)  
    at herschel.ia.pal.browser.util.SwingWorker.run(SwingWorker.java:325)
```



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```
at
java.util.concurrent.ThreadPoolExecutor$Worker.runTask(ThreadPoolExecutor.java:650)
at
java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:675)
at java.lang.Thread.run(Thread.java:595)
```

No SPR raised. This could be the same issue with the removal of the PixAngOff class, as reported elsewhere, see SPR-0785. Note that the current DbPool is not recommended for operational use.

3.6 Test 6: Interacting with TM on remote Versant database

3.6.1 Report 1

The test was performed following procedure described

<http://www.herschel.be/twiki/bin/view/Spire/DpTestTmFromRemote>, and reported in Appendix 1 below.

Result: The only problem found was when trying to print the plot. No dialog was opened when the “Print...” menu item was selected. However, a PDF file was produced in a directory called “PDF” inside the home directory.

Test PASSED

Some additional tests were performed to check the performacy of the “SPIRE Preprocess Tool” and to check if the web servlet is able to provide big observations.

Test A: Download an 1 hour observation with “SPIRE Preprocess Tool”.

- go in the bin directory and execute the command “./obsExporter”
- enter as “Observation ID” the value 0x30011649 and press “Accept”
- recorder the time needed to extract the data

Result: the tool completed the extraction of the observation. The time needed to complete the extraction of this observation, which consists in 53 minutes of telemetry, was 5 minutes 59 seconds. The time needed to save the products inside the pool was 10 seconds. The size of the pool was 92Mb. **Test PASSED**

Test B: Download a 4 hour observation with “SPIRE Preprocess Tool”.

- go in the bin directory and execute the command “./obsExporter”
- enter as “Observation ID” the value 0x3001164A and press “Accept”
- recorder the time needed to extract the data

Result:

At the first try, the tool did not complete the extraction of the observation because the telemetry web servlet or the database hanged after the completion of the CalibrationPlugin.

In the following temptatives, the tool didn’t get any answer from the servlet.

During these temptatives, the memory allocated for the web servlet was 1Gb.

Trying again during the weekend, after restarting the servlet allocating 4Gb of memory, the tool succeeded to download the observation in 24 minutes and 46. It should be noted that during the execution, the CPU occupancy percentage of the process was always around 100%; this suggest that the performances of the tool are not limited, at the present, by the network connection but by the code itself. The size of the resulting pool was 382Mb.

Test PASSED



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Test C: Download an 11 hour observation with “SPIRE Preprocess Tool”.

- go in the bin directory and execute the command “./obsExporter”
- enter as “Observation ID” the value 0x3001164B and press “Accept”
- record the time needed to extract the data

Result:

The tool did not complete the extraction of the observation, because the telemetry web servlet returned an error:

```
SEVERE: Error accessing Http Server: HTTP/1.1 510 Error querying database:
java.io.IOException: Database: pfm4_test@chesterfield: {
Vexception(5:VSL_SHM_ACCESS: can't access shared memory with OS err #22
(Invalid argument) ("vsl/vslsat.c", line 156) [ shmids=`821461583' ]) }
java.io.IOException: Server returned HTTP response code: 510 for URL:
http://wakefield.bnsc.rl.ac.uk/hcss/tm
Jul 11, 2008 5:09:52 PM
herschel.spire.ia.pipeline.common.rawdata.RawDataExtractionTask extraction
SEVERE: I/O exception in opening the connection with the database: Error
accessing Http Server: HTTP/1.1 510 Error querying database:
java.io.IOException: Database: pfm4_test@chesterfield: {
Vexception(5:VSL_SHM_ACCESS: can't access shared memory with OS err #22
(Invalid argument) ("vsl/vslsat.c", line 156) [ shmids=`821461583' ]) }
java.io.IOException: Server returned HTTP response code: 510 for URL:
http://wakefield.bnsc.rl.ac.uk/hcss/tm
```

Test FAILED

This error is likely to be due to a corruption of the rollback logs for this database, due to two databases erroneously sharing the same log files. No SPR raised.

3.6.1.1 Detailed procedure

- * Start HIPE
- * Select database @RAL
 - o type the lines:

```
from herschel.access import *
Access.database="pfm4_test@chichester"
```

- * Browse on available Observations
 - o type the code:

```
a = TestExecutionAccess ()
table = HcssConnection.getTeTable(a)
```

double-click on the table variable to look at which observations are present in the database

- * Browse on available Observations performed with a specific procedure
 - o type the code:

```
a = TestExecutionAccess (procedure="SpirePhotoLargeMultiScan.tcl")
table = HcssConnection.getTeTable(a)
```

Optional steps – at least one should be executed to extract some data

- * Extract selected HK parameter by time range as raw values and as converted values
 - o e.g. DPU temperature from 2006-12-01T10:00 to 2006-12-01T13:00 UTC, executing the following script:



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```
from herschel.spire.ia.pipeline.common.rawdata import *
from herschel.share.fltdyn.time import *
from herschel.spire.param import *
parName="DPUTEMP"
pd=ParameterDescriptor.getInstance(parName)
format=SimpleTimeFormat(TimeScale.UTC)
startTime=format.parse("2006-12-01T10:00:00.00Z")
endTime =format.parse("2006-12-01T13:00:00.00Z")
dbQueryMaker=DbQueryMakerTask()
connection=dbQueryMaker(startTime=startTime, endTime=endTime, tmPack=True,
packetType="NHK")
stream = connection.openStream()
time=Double1d()
valuesRaw=Long1d()
valuesConv=Double1d()
while stream.hasNext():
    packet=stream.next()
    time.append(PacketUtil.timeToSeconds(packet.time))
    arr=packet.contents
    rawVal=pd.getRaw(arr)[0]
    valuesRaw.append(rawVal)
    valuesConv.append(pd.convertDouble(rawVal))
#
connection.close()
print valuesRaw
print valuesConv
```

* Extract selected HK parameter by OBSID/BBID as raw and converted values
o e.g. SMECMEANSPEED from obsid=0x300117FE, bbid=0xa1060001, executing the
following script:

```
dbQueryMaker=DbQueryMakerTask()
obsid=0x300117FEL
bbid=0xa1060001L
connection=dbQueryMaker(obsid=obsid, bbid=bbid,
tmPack=True,packetType="NHK")
stream = connection.openStream()
time=Double1d()
valuesRaw=Long1d()
valuesConv=Double1d()
parName="SMECMEANSPEED"
pd=ParameterDescriptor.getInstance(parName)
while stream.hasNext():
    packet=stream.next()
    time.append(PacketUtil.timeToSeconds(packet.time))
    arr=packet.contents
    rawVal=pd.getRaw(arr)[0]
    valuesRaw.append(rawVal)
    valuesConv.append(pd.convertDouble(rawVal))
#
connection.close()
print valuesRaw
print valuesConv
```

* Extract selected HK parameter by queries
o extract the value of PSWJFET1V for redundant electronics between 2006-12-01T15:00 and
2006-12-01T17:00 UTC with the following:

```
parName="PSWJFET1V"
PacketType.getInstance(1283, 3, 25, 769)
```




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```
pd=ParameterDescriptor.getInstance(parName)
startTime=format.parse("2006-12-01T15:00:00.00Z")
endTime =format.parse("2006-12-01T17:00:00.00Z")
pa=PacketAccess(startTime, endTime,
apid=pd.apid,type=pd.packetType, ersche=pd.packetSubType,sid=pd.sid)
connection=HcssConnection.getConnection(pa)
stream = connection.openStream()
time=DoubleIld()
valuesRaw=LongIld()
valuesConv=DoubleIld()
while stream.hasNext():
    packet=stream.next()
    time.append(PacketUtil.timeToSeconds(packet.time))
    arr=packet.contents
    rawVal=pd.getRaw(arr)[0]
    valuesRaw.append(rawVal)
    valuesConv.append(pd.convertDouble(rawVal))
#
connection.close()
print valuesRaw
print valuesConv
```

Optional steps – at least one should be executed to plot some data

- Plot HK parameter versus time and save as JPG

```
parName="DPUTEMP"
pd=ParameterDescriptor.getInstance(parName)
format=SimpleTimeFormat(TimeScale.UTC)
startTime=format.parse("2006-12-01T10:00:00.00Z")
endTime =format.parse("2006-12-01T13:00:00.00Z")
dbQueryMaker=DbQueryMakerTask()
connection=dbQueryMaker(startTime=startTime, endTime=endTime, tmPack=True,
packetType="NHK")
stream = connection.openStream()
time=DoubleIld()
valuesRaw=LongIld()
valuesConv=DoubleIld()
while stream.hasNext():
    packet=stream.next()
    time.append(PacketUtil.timeToSeconds(packet.time))
    arr=packet.contents
    rawVal=pd.getRaw(arr)[0]
    valuesRaw.append(rawVal)
    valuesConv.append(pd.convertDouble(rawVal))
#
connection.close()
time=time-(startTime.microsecondsSince1958()*1e-6)

p=PlotXY(time,valuesRaw)
p.xaxis.titleText="Time [seconds]"
p.yaxis.titleText=parName+" [raw ADU]"

p.saveAsJPG(parName+"_raw.jpg")

p2=PlotXY(time,valuesConv)
p2.xaxis.titleText="Time [seconds]"
p2.yaxis.titleText=parName+" [ "+pd.units+" ]"

p2.saveAsJPG(parName+"_conv.jpg")
```

* Print the plot



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o right-click on the plot and select “Print...” from the menu

* Plot HK parameters versus each other

o plot the SMEC motor current versus the motor voltage

```
dbQueryMaker=DbQueryMakerTask()  
obsid=0x300117FEL  
bbid=0xa1060001L  
connection=dbQueryMaker(obsid=obsid, bbid=bbid, tmPack=True, \  
    packetType="NHK")
```

```
stream = connection.openStream()  
time=Double1d()  
values1=Double1d()  
values2=Double1d()  
parName1="SMECMOTORCURR"  
parName2="SMECMOTORVOLT"  
pd1=ParameterDescriptor.getInstance(parName1)  
pd2=ParameterDescriptor.getInstance(parName2)
```

```
while stream.hasNext():  
    packet=stream.next()  
    time.append(PacketUtil.timeToSeconds(packet.time))  
    arr=packet.contents  
    rawVal1=pd1.getRaw(arr)[0]  
    values1.append(pd1.convertDouble(rawVal1))  
    rawVal2=pd2.getRaw(arr)[0]  
    values2.append(pd2.convertDouble(rawVal2))
```

```
connection.close()
```

```
p=PlotXY(values1,values2)  
p.xaxis.titleText=parName1+" ["+pd1.units+"]"  
p.yaxis.titleText=parName2+" ["+pd2.units+"]"
```

- Save extracted HK as a product to a local data pool

```
from herschel.share.unit import *  
from herschel.spire.ia.dataset import *  
from herschel.ia.obs.util import ObsParameter  
from herschel.spire.ia.dataset import SpireProduct  
  
t=TableDataset()  
c1=Column(values1,Unit.parse(pd1.units),pd1.description)  
c2=Column(values2,Unit.parse(pd2.units),pd2.description)  
t[parName1]=c1  
t[parName2]=c2  
prod=SpireProduct("SMEC motor voltage vs motor current")  
prod["table"]=t  
prod.meta["obsid"]=ObsParameter.OBSID.getParameter(Long(obsid))  
prod.meta["bbid"]=LongParameter(bbid,"Building block ID")  
  
pool=PoolManager.getPool("hkPool")  
storage=ProductStorage()  
storage.register(pool)  
storage.save(prod)
```

3.6.2 Report 2

PASS



Report

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PROCEDURE:

Started HIPE.

Executed the following lines to access telemetry data:

```
from herschel.access import *
Access.database="pfm4_test@chichester"
a = TestExecutionAccess ()
table = HcssConnection.getTeTable(a)
a = TestExecutionAccess (procedure="SpirePhotoLargeMultiScan.tcl")
table = HcssConnection.getTeTable(a)
```

Printed table and viewed table in HIPE to ensure that it contained data.

Executed the following lines to extract selected HK parameter by queries:

```
parName="PSWJFET1V"
PacketType.getInstance(1283, 3, 25, 769)
pd=ParameterDescriptor.getInstance(parName)
from herschel.share.fltdyn.time import *
format=SimpleTimeFormat(TimeScale.UTC)
startTime=format.parse("2006-12-01T15:00:00.00Z")
endTime =format.parse("2006-12-01T17:00:00.00Z")
pa=PacketAccess(startTime,
endTime,apid=pd.apid,type=pd.packetType,hersche=pd.packetSubType,sid=pd.sid)
connection=HcssConnection.getConnection(pa)
stream = connection.openStream()
time=DoubleIld()
valuesRaw=LongIld()
valuesConv=DoubleIld()
while stream.hasNext():
    packet=stream.next()
    time.append(PacketUtil.timeToSeconds(packet.time))
    arr=packet.contents
    rawVal=pd.getRaw(arr)[0]
    valuesRaw.append(rawVal)
    valuesConv.append(pd.convertDouble(rawVal))
#
connection.close()
print valuesRaw
print valuesConv
```

Executed the following script to plot data:

```
parName="DPUTEMP"
pd=ParameterDescriptor.getInstance(parName)
format=SimpleTimeFormat(TimeScale.UTC)
startTime=format.parse("2006-12-01T10:00:00.00Z")
endTime =format.parse("2006-12-01T13:00:00.00Z")
from herschel.spire.ia.pipeline.common.rawdata import *
dbQueryMaker=DbQueryMakerTask()
connection=dbQueryMaker(startTime=startTime, endTime=endTime,
tmPack=True, packetType="NHK")
stream = connection.openStream()
time=DoubleIld()
valuesRaw=LongIld()
valuesConv=DoubleIld()
while stream.hasNext():
    packet=stream.next()
    time.append(PacketUtil.timeToSeconds(packet.time))
    arr=packet.contents
    rawVal=pd.getRaw(arr)[0]
    valuesRaw.append(rawVal)
    valuesConv.append(pd.convertDouble(rawVal))
#
connection.close()
time=time-(startTime.microsecondsSince1958()*1e-6)
p=PlotXY(time,valuesRaw)
```



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```
p.xaxis.titleText="Time [seconds]"
p.yaxis.titleText=parName+" [raw ADU]"
p.saveAsJPG(parName+"_raw.jpg")
```

Executed the following script to plot HK parameters versus each other:

```
dbQueryMaker=DbQueryMakerTask()
obsid=0x300117FEL
bbid=0xa1060001L
connection=dbQueryMaker(obsid=obsid, bbid=bbid, tmPack=True, \
    packetType="NHK")
stream = connection.openStream()
time=Double1d()
values1=Double1d()
values2=Double1d()
parName1="SMECMOTORCURR"
parName2="SMECMOTORVOLT"
pd1=ParameterDescriptor.getInstance(parName1)
pd2=ParameterDescriptor.getInstance(parName2)
while stream.hasNext():
    packet=stream.next()
    time.append(PacketUtil.timeToSeconds(packet.time))
    arr=packet.contents
    rawVal1=pd1.getRaw(arr)[0]
    values1.append(pd1.convertDouble(rawVal1))
    rawVal2=pd2.getRaw(arr)[0]
    values2.append(pd2.convertDouble(rawVal2))
connection.close()
p=PlotXY(values1,values2)
p.xaxis.titleText=parName1+" ["+pd1.units+"]"
p.yaxis.titleText=parName2+" ["+pd2.units+"]"
```

Executed the following script to save extracted HK as a Product in a local data pool:

```
from herschel.share.unit import *
from herschel.spire.ia.dataset import *
from herschel.ia.obs.util import ObsParameter
from herschel.spire.ia.dataset import SpireProduct
t=TableDataset()
c1=Column(values1,Unit.parse(pd1.units),pd1.description)
c2=Column(values2,Unit.parse(pd2.units),pd2.description)
t[parName1]=c1
t[parName2]=c2
prod=SpireProduct("SMEC motor voltage vs motor current")
prod["table"]=t
prod.meta["obsid"]=ObsParameter.OBSID.getParameter(Long(obsid))
prod.meta["bbid"]=LongParameter(bbid,"Building block ID")
pool=PoolManager.getPool("test6Pool")
storage=ProductStorage()
storage.register(pool)
storage.save(prod)
```

Checked for pool in .hcss directory to ensure that it was created.

3.7 Test 7: Interaction with Level-0 products in a local pool

3.7.1 Report 1

Actor: Instrument Engineer /Calibration Specialists @ RAL (Ken King)

Starting conditions:

- A local pool



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- At RAL this will be the pool generated following successful completion of test 4
 - At other sites this will be the pool generated by successful completion of test 3
- Pool used was at /misc/winchester1/dptest063/data/products/spg

Scenario(s) tested:

- Scenario 3.2 (Local access part)

Procedure:

- Start HIPE

Logged on to Leicester

Opened Konsole

Typed Hipe – took six minutes to startup!

(This seems to have been due to references to windows file locations in user.props – when these were removed Hipe started in a few seconds)

- Select local pool

*** Tried to look at help (using menu) to find out how to do this – did not work

*** Help documentation is not available from front page

The following messages appeared in the console window:

```
3-Jul-08 11:43:29.479 ViewPartManagerImpl: Extension does not contain a
viewable?
Extension(site.view.login,herschel.ia.gui.apps.views.archive.LoginView,Hersc
hel.LoginView,herschel/ia/gui/kernel/icons/LoginView.gif)
Exception in thread "AWT-EventQueue-0"
herschel.share.util.ConfigurationException: Property not defined:
hcss.api.url
    at
herschel.share.util.Configuration.getProperty(Configuration.java:1034)
    at
herschel.ia.gui.apps.components.help.JavaApiHelp.setHelp(JavaApiHelp.java:48
)
    at herschel.ia.gui.apps.views.help.HelpView.open(HelpView.java:188)
    at
herschel.ia.gui.apps.views.help.HelpView.access$000(HelpView.java:53)
    at
herschel.ia.gui.apps.views.help.HelpView$HelpAction.actionPerformed(HelpView
.java:79)
    at
herschel.ia.gui.kernel.menus.RetargetAction.actionPerformed(RetargetAction.j
ava:38)
    at
javax.swing.AbstractButton.fireActionPerformed(AbstractButton.java:1849)
    at
javax.swing.AbstractButton$Handler.actionPerformed(AbstractButton.java:2169)
    at
javax.swing.DefaultButtonModel.fireActionPerformed(DefaultButtonModel.java:4
20)
    at
javax.swing.DefaultButtonModel.setPressed(DefaultButtonModel.java:258)
    at javax.swing.AbstractButton.doClick(AbstractButton.java:302)
    at
javax.swing.plaf.basic.BasicMenuItemUI.doClick(BasicMenuItemUI.java:1051)
    at
javax.swing.plaf.basic.BasicMenuItemUI$Handler.mouseReleased(BasicMenuItemUI
.java:1092)
    at java.awt.Component.processMouseEvent(Component.java:5517)
    at javax.swing.JComponent.processMouseEvent(JComponent.java:3135)
    at java.awt.Component.dispatchEvent(Component.java:5282)
```



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```
at java.awt.Container.processEvent(Container.java:1966)
at java.awt.Component.dispatchEventImpl(Component.java:3984)
at java.awt.Container.dispatchEventImpl(Container.java:2024)
at java.awt.Component.dispatchEvent(Component.java:3819)
at
java.awt.LightweightDispatcher.retargetMouseEvent(Container.java:4212)
at
java.awt.LightweightDispatcher.processMouseEvent(Container.java:3892)
at java.awt.LightweightDispatcher.dispatchEvent(Container.java:3822)
at java.awt.Container.dispatchEventImpl(Container.java:2010)
at java.awt.Window.dispatchEventImpl(Window.java:1791)
at java.awt.Component.dispatchEvent(Component.java:3819)
at java.awt.EventQueue.dispatchEvent(EventQueue.java:463)
at
java.awt.EventDispatchThread.pumpOneEventForHierarchy(EventDispatchThread.java:242)
at
java.awt.EventDispatchThread.pumpEventsForHierarchy(EventDispatchThread.java:163)
at
java.awt.EventDispatchThread.pumpEvents(EventDispatchThread.java:157)
at
java.awt.EventDispatchThread.pumpEvents(EventDispatchThread.java:149)
at java.awt.EventDispatchThread.run(EventDispatchThread.java:110)
```

Add the following line to 'user.props' and restart Hipe:

```
hcss.ia.pal.pool.lstore.dir = /misc/winchester1/dptest063/data/products
```

Create the local products store:

```
IA>>storage=ProductStorage("spg")
IA>>print storage
[spg]
```

- Browse on available Observations, and by Instrument, Observing modes, Uplink information

```
IA>>result = browseProduct(storage)
```

Press 'submit' button

*** The Query result window shows [Loading...] in every cell

*** The headings for the columns in the Query Result and Download windows are hidden behind the data cells

The following messages appeared in the console window:

```
04-Jul-08 09:50:59.581 ProductBrowser: search query:
herschel.ia.pal.query.AttribQuery(erschel.ia.dataset.Product,"p","1")
```

Select a product from the Query result window

The following messages appeared in the console window:

```
4-Jul-08 09:51:15.416 AttributeTreeModelProvider:
/misc/winchester1/dptest063/data/products/spg/.index/herschel.ia.obs.auxiliary.srem.SremCalProduct/.meta (Permission denied)
04-Jul-08 09:51:15.418 MetadataTreeModelProvider:
/misc/winchester1/dptest063/data/products/spg/.index/herschel.ia.obs.auxiliary.srem.SremCalProduct/.meta (Permission denied)
```

*** This appears to be a problem reading the meta data from the products:

```
IA>>r=storage.select(Query("1"))
IA>>print r
```



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```
[urn:spg:erschel.ia.obs.auxiliary.timecorr.TimeCorrProduct:0,
urn:spg:erschel.spire.ia.dataset.NhkTimeline:7,
urn:spg:herschel.ia.obs.auxiliary.srem.SremCalProduct:0,
urn:spg:herschel.ia.obs.auxiliary.missiontimeline.MissionTimelineProduct:0,
urn:spg:herschel.spire.ia.dataset.BuildingBlockProduct:37,
urn:spg:herschel.spire.ia.dataset.BuildingBlockProduct:28,
urn:spg:herschel.spire.ia.dataset.NhkTimeline:5,
urn:spg:herschel.spire.ia.dataset.BuildingBlockProduct:14,
urn:spg:herschel.ia.obs.auxiliary.uplink.UplinkProduct:0,
.....
IA>>print r[1]
urn:spg:herschel.spire.ia.dataset.NhkTimeline:7
IA>>print r[1].meta
java.io.FileNotFoundException:
/misc/winchester1/dptest063/data/products/spg/.index/herschel.spire.ia.datas
et.NhkTimeline/.meta (Permission denied)
IA>>p=r[1].product
IA>>print p
{description="Nominal House Keeping Timeline", meta=[type, creator,
creationDate, description, instrument, modelName, startDate, endDate,
aorLabel, aot, author, cusMode, dec, decNominal, equinox, instMode,
erschel, missionConfig, naifId, object, observer, obsid, obsMode, odNumber,
pointingMode, posAngle, proposal, ra, raDeSys, raNominal, telescope,
subsystem, bbid, source, bbTypeName], datasets=[signal, mask, time],
history=None}
```

- For an observation
 - Extract selected HK parameter by time range as raw values or converted values

*** 'No tools available for current selection' in the 'Run Tools' window

Changed to 'JIDE' perspective

*** unable to open a script into the editor window

*** unable to run code in the editor window

Switched to use JIDE:

- Extract selected HK parameter by time range as converted values
- Extract selected HK parameter by OBSID/BBID as raw values
- Extract selected HK parameter by OBSID/BBID as converted values
- Compare selected HK parameter timeline to that obtained (and saved) in test 5 or 6



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- Extract selected HK parameters by queries into a product
- Using Table Plotter
 - Plot timeline for a parameter
 - Plot one parameter against another

Tried to print out the plot

*** right click on window only works if right click inside the plot

*** no option to print to operations printer

SPR-4477 raised on the pool access problem.

3.7.2 Report 2

Even if Test 3 failed, the test 7 was performed by executing the POF5 pipeline script loading the observation 0x30011628 from the pool generated in Test 3.

Procedure:

- start HIPE
- open the POF5_pipeline.py script
- execute the script inserting 0x30011628 as obsid

Result:

The processing failed during the Engineering Conversion with the following error:

```
java.util.NoSuchElementException: No such urn in any pool of storage  
[herschel.ia.pal.pool.lstore.FitsProductPool:mypool]:  
urn:hsa:herschel.spire.ia.dataset.context.Level0Context:114
```

Test FAILED

3.8 Test 8: Interaction with Level-0 products in a remote pool

3.8.1 Report 1

Test A: Execute queries on a remote pool

- Start HIPE
- Execute the following script to define the remote pool:

```
from herschel.ia.pal.pool.http import HttpClientPool  
pool = HttpClientPool ("http://wakefield.bnsc.rl.ac.uk/hcss/pal",  
"spg", username, password)  
storage = ProductStorage (pool)
```

- Execute the following query to obtain which observations are available:

```
from herschel.ia.obs import *  
query1=Query(ObservationContext,"1")  
res = storage.select(query1)  
print res
```

Result:

The above query didn't return any result. The propagation of the pool seems not to be completed...



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Executing the following script

```
from erschel.spire.ia.dataset import NhkTimeline
query1=Query(NhkTimeline, "1") # "True" does not work
res = storage.select(query1)
print res
for ref in res:
    print hex(ref.meta['obsid'].value)
#
```

gave the expected results.

Test PARTIALLY PASSED

3.8.2 Report 2

PASS/FAIL

Procedure:

Started HIPE.

Executed the following lines to browse Products in the remote pool:

```
from erschel.ia.pal.pool.http import HttpClientPool
pool = HttpClientPool ("http://wakefield.bnsc.rl.ac.uk/hcss/pal",
"spg2", username, password)
storage = ProductStorage (pool)
res=browseProduct (storage)
```

Used the ProductBrowser to search for all Products with Instrument:SPIRE.

Used the ProductBrowser to search for all Level0Contexts in the pool.

Selected and downloaded all Level0Contexts from the pool using the ProductBrowser.

Validated that the contexts were loaded into HIPE using the following:

```
print res
```

Get the observation IDs of Level0Contexts available in the pool by executing the following lines:

```
obs=res.product
print obs.obsid
```

Used the ProductBrowser to search for all NhkTimelines in the pool.

Selected and downloaded a NhkTimelines from the pool using the ProductBrowser.

Used the following script to extract HK parameters and view them in a plot:

```
time=res[0].product["time"]["sdfTime"].data
smecTemp=res[0].product["signal"]["SMECTEMP"].data
p=PlotXY(time,smecTemp)
```

Used the following lines to display data in TablePlotter:

```
table=res[0].product["signal"]
from herschel.ia.gui.explorer.table import *
from herschel.share.component import *
WindowManager.getDefault().addWindow("test",TablePlotter(table).component,1)
```

Used TablePlotter to show sampleTime versus SUBKTEMP.

Used TablePlotter to show SCAL2TEMP versus SCAL4TEMP.

Comments:

- No ObservationContexts were available from the remote pool, so some tests were performed with Level0Contexts as a substitute.
- Some browsing/searching options (such as browsing for Products by observing mode) are not available in the ProductBrowser.



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- While the extraction of selected HK parameters from NhkTimelines was straightforward, I did not know how to extract HK parameters by time range or OBSID/BBID.

3.9 Test 9: Operational Day Processing

The SPIRE_DIR points to the centrally installed HCSS which is “dp-spire_114”
This contains the observation logging scripts in the directory,

```
/home/spire/hcssbld/spire/lib/ erschel/spire/tools/scripts
```

In my own account, create a directory called `icc_testing/`
Also create a `Scripts/tools` directory

Copy from the `tools/scripts` in the build into my own `Scripts/tools` directory

Set up the properties for logging:

Currently the local store directory is set in the `hcss.ia.pal.pool.lstore.dir` property. I have defined the following new properties which must be set up prior to running the script:

```
hcss.ia.pal.pool.lstore.dir = /misc/winchester1/dptest063/data/products  
loggingDir                 = /misc/winchester1/dptest063/operations/logs  
loggingDatabase            = pfm4_test@chesterfield  
loggingTimesFile          =  
/home/spire/etp87/icc_testing/operational_days.txt
```

Set up the file containing times of observational days. Choose some days with data and some weekends without OBSIDs. Choose days with AOTs observed in.

8-13 December. Assume OD starts and ends at 9am each day (that should include all tests from that day).

```
1, 2006-12-08T09:00:00.000000 TAI (1543647633000000), 2006-12-  
09T09:00:00.000000 TAI (1543658433000000)  
2, 2006-12-09T09:00:00.000000 TAI (1543647633000000), 2006-12-  
10T09:00:00.000000 TAI (1543658433000000)  
3, 2006-12-10T09:00:00.000000 TAI (1543647633000000), 2006-12-  
11T09:00:00.000000 TAI (1543658433000000)  
4, 2006-12-11T09:00:00.000000 TAI (1543647633000000), 2006-12-  
12T09:00:00.000000 TAI (1543658433000000)  
5, 2006-12-12T09:00:00.000000 TAI (1543647633000000), 2006-12-  
13T09:00:00.000000 TAI (1543658433000000)  
6, 2006-12-13T09:00:00.000000 TAI (1543647633000000), 2006-12-  
14T09:00:00.000000 TAI (1543658433000000)
```

(the TAI time is not used so doesn't matter that it is all the same)

Put this file containing times in

```
/home/spire/etp87/icc_testing/operational_days.txt
```

Database access set to Network connection in my `user.props`.

Run in HIPE rather than JIDE

Go to `Scripts/tools` directory and run Hipe



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Window -> Navigator -> open the script observationLogScript.py

- how do I run the script? Only way found was to highlight whole script (with mouse – there is no Select All in the Edit menu) and press play. But then it does not tell me whether it is running or not – ie all buttons still appear to be active. It doesn't appear to be doing anything so I presume the script did not work?

Switch back to JIDE because this is easier to use.
Open the script and press play.

Error:

```
Reading Operational days from
/home/spire/etp87/icc_testing/operational_days.txt...
java.io.IOException: Error accessing Http Server: HTTP/1.1 510 Error
querying database: java.io.IOException: Database: pfm4_test@chesterfield:
herchel.access.LocationException: Failed to get store
herchel.store.api.StoreException: Failed to create store for
pfm4_test@chesterfield: herchel.store.api.StoreException: ERROR while
initializing store: ERROR while accessing database "pfm4_test@chesterfield"
Software schema version is outdated (35). Please a install later release of
the HCSS to access this database: pfm4_test@chesterfield ERROR while
initializing store: ERROR while accessing database "pfm4_test@chesterfield"
Software schema version is outdated (35). Please a install later release of
the HCSS to access this database: pfm4_test@chesterfield, caused by
herchel.store.api.StoreException: Failed to create store for
pfm4_test@chesterfield: herchel.store.api.StoreException: ERROR while
initializing store: ERROR while accessing database "pfm4_test@chesterfield"
Software schema version is outdated (35). Please a install later release of
the HCSS to access this database: pfm4_test@chesterfield ERROR while
initializing store: ERROR while accessing database "pfm4_test@chesterfield"
Software schema version is outdated (35). Please a install later release of
the HCSS to access this database: pfm4_test@chesterfield, caused by
herchel.store.api.StoreException: ERROR while initializing store: ERROR
while accessing database "pfm4_test@chesterfield" Software schema version
is outdated (35). Please a install later release of the HCSS to access this
database: pfm4_test@chesterfield, caused by
herchel.versant.store.jdo.JDOFatalException: Software schema version is
outdated (35). Please a install later release of the HCSS to access this
database: pfm4_test@chesterfield java.io.IOException: Server returned HTTP
response code: 510 for URL:
http://chichester.bnsc.rl.ac.uk:8080/hcss/TmServer
```

Need to set web server to be Wakefield:

```
add
hcss.access.url = http://wakefield.bnsc.rl.ac.uk/hcss/tm
to user.props
```

The script ran and created the following:

in /misc/winchester1/dptest063/operations/logs/

```
combinedLog.csv
observationLog.html
PFM4_TEST_DailyLog_001.csv
PFM4_TEST_DailyLog_004.csv
PFM4_TEST_DailyLog_005.csv
```



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PFM4_TEST_DailyLog_006.csv

pools in /misc/winchester1/dptest063/data/products/

PFM4_TEST_combined_log
PFM4_TEST_daily_log

Check contents of the logs:

Day 001 (8th Dec 2006): the last overnight test was not included (3001181B). This is probably because it was an over weekend scan and the end of the test was after 9am on the morning of 9th Dec. Only tests that start *and* end within the specified log time range are included.

Day 002: no log produced – this was a Saturday

Day 003: no log produced – this was a Sunday

Even if 3001181B was being observed over these two days it is not included in the log because its start and end times were outside of the specified range.

Day 004: Some weird stuff happening with times of tests at the end of the day where some tests were aborted and look like the time ranges overlap. But that could just reflect the fact that they were scripts that didn't work properly.

30011892 was not included – this is an overnight test – did it finish after 9am the next day?

Day 005 seems to be OK:

Note – startTest and EndTest appear individually in the logs – this is because there was some special code used to generate PFM Excel logs to find the name of StartTest observations.

Day 006: seems to be OK – one extra test included which was not included at the end of the Excel log – it was an extra obsid in the overnight test.

Note: observation parameters such as Source name, RA, Dec are not filled yet.

Test Product pool:

```
store = herschel.ia.pal.ProductStorage()  
pool = herschel.ia.pal.PoolManager.getPool("PFM4_TEST_daily_log")  
store.register(pool)  
refs = herschel.ia.pal.browser.ProductBrowser.browseProduct(store)
```

Browse products using ProductBrowser. This works OK – all data seem to be there. I can see the individual logs in DatasetInspector.

Problem: there is one new product every time a new line is added to the log. There are 82 lines in Day 001 – there are 82 products in the pool and each one has one more row in it than the last, up to 82 rows i.e. it looks like the product is being saved every time a new line is added to the log.

Combined Log – the combined log has not been created – the pool is empty.

However, the combined log CSV file has been created successfully.

SPR raised: SPIRE-SPR-0763



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Web page: the web page skeleton is created in the /misc/winchester1/dptest063/operations/logs/ directory OK, but need to make this accessible via Wakefield when the web site is copied over from Chichester.

3.9.1 Health Monitoring

Scripts for Health Monitoring were not included in build 114 (but they are included in later builds)

Copy the getEvents.py script from CVS to my Scripts directory

Keep properties set as for the Observation Logging

Run the script in Jide

It produced the following files in the /misc/winchester1/dptest063/operations/ directory:

```
logs\DRCUEvents_081206_091206.txt
logs\TransparentPackets_081206_091206.txt
logs\DRCUEvents_091206_101206.txt
logs\TransparentPackets_091206_101206.txt
logs\DRCUEvents_101206_111206.txt
logs\TransparentPackets_101206_111206.txt
logs\DRCUEvents_111206_121206.txt
logs\TransparentPackets_111206_121206.txt
logs\DRCUEvents_121206_131206.txt
logs\TransparentPackets_121206_131206.txt
logs\DRCUEvents_131206_141206.txt
logs\TransparentPackets_131206_141206.txt
```

Strange filename because the directory divider was set to the Windows version in the script. This should be changed.

No SPR raised yet as this is only a draft version of the script at the moment and will be modified anyway.

Contents of the files look OK

When no packets found of that type, the file contains (e.g.):

No packets found with SID = [0xCC00, 0xCC01, 0xCC02] in time range

3.10 Test 10: Browse and access products from remote pool

PASS/FAIL

Procedure:

Started HIPE.

Used the following script to browse Products in the remote pool:

```
from herschel.ia.pal import ProductStorage
from herschel.ia.pal.pool.simple import SimplePool
from herschel.ia.pal.browser.ProductBrowser import browseProduct
from herschel.ia.pal.pool.http import HttpClientPool
storage=ProductStorage()
pool = HttpClientPool ("http://wakefield.bnsc.rl.ac.uk/hcss/pal",
"spg2", username, password)
storage.register(pool)
result = browseProduct(storage)
```



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Searched for and selected all JiggPhotProduct in ProductBrowser.
Searched for and selected all SpectrometerDetectorSpectrum in ProductBrowser.
Selected OK in ProductBrowser to load data into HIPE.
Extracted photometer and spectrometer data from the output of ProductBrowser using the following script:

```
sampleP=result[0].product  
herschel=result[2].product
```

Selected sampleP and herschel in the Variables pane. Looked in Run Tools pane for Tasks for these Products.

Started DatasetInspector by executing the following line:

```
DatasetInspector()
```

Comments:

HIPE currently does not appear to support the feature in which Tasks for a selected Product will appear in the Run Tools pane.

It was unclear as to how to inspect the history of a Product.

DatasetInspector did not display any datasets or Products.

3.11 Test 11: Browse and access products from local pool

- Start HIPE. Go to the work bench perspective. (The Product Access Layer perspective is not functional enough to be used at this time.)
- The local pool in this example is a partial copy of the remote pool from Test 10. Run the following script:

```
pool2 = PoolManager.getPool("myspg2")  
storage2 = ProductStorage(pool2)  
refs = browseProduct(storage2)
```
- Search for all JiggPhotProducts in Product Browser. Select all of these for download by checking the boxes next to each result in the search results list. Next, search for all SpectrometerDetectorSpectrum and select these for download as well. Click on the OK button to load these Contexts into the HIPE environment.
- Extract a photometry and a spectroscopy Product using the following: (The numbers may need to be altered so that they correspond to the correct Product in the ArraySet.)

```
sampleP=refs[0].product  
sampleS=refs[1].product
```
- Browse available Tasks for Photometry and Spectroscopy. Not yet implemented. No easy way to find the appropriate Tasks.
- Browse available Tasks for a specific product. Not yet implemented. No easy way to find the appropriate Tasks for these Level 1 products.
- Inspect the history of a product:

```
print sampleP.history  
print sampleS.history
```

(Prints "None" as these products do not have history entries.)
- Browse products in a session using DatasetInspector. DatasetInspector is to be replaced by Outline View in HIPE. Select "sampleP" or "sampleS" in Variables view. The entry should appear in Outline view. Open "Dataset Map" and double-click on the contents. The table is displayed.
- Alternative inspection: Bring up DatasetInspector for the datasets in the spectroscopy product:

```
DatasetInspector(sampleS['0001'], "Spec0001")  
DatasetInspector(sampleS['0002'], "Spec0002")  
DatasetInspector(sampleS['0003'], "Spec0003")  
DatasetInspector(sampleS['0004'], "Spec0004")
```

Then the datasets can be opened to reveal spectra for individual detectors. The spectra may be viewed as tables or with TablePlotter, by right-clicking on the dataset.



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3.12 Test 12: Access documentation

3.12.1 Report 1

Procedure:

- In HIPE, go to top menu Help -> Welcome.
- Place mouse over cursor of the open book. The tool tip is "Read the help documentation."
- Click on the book symbol. The result is "Sorry, did not get that far in implementing this yet..."
- Menu item Help -> Help or pressing F1, does nothing.

At face value, this test may be considered a failure. However, the following works:

- In the HIPE Console window, type
`help()`
- To print a chapter of the User's Manual: It is not possible to print a chapter at once. Only one screenful or section may be printed at a time. If multiple sections are selected in the left-hand pane, and the Print button is clicked upon, the Help window freezes.
- To print a section, select the desired section, then click on the Print button.
- To access a product and bring up information about it: get a product from the local pool (defined elsewhere)

```
from herschel.spire.ia.dataset import *
query1 = Query(DetectorTimeline, "1")
res1 = storage.select(query1)
myprod = res1[10].product
```
- Go to the Variables window and select "myprod". It will appear in the Outline view with the name, class, package, and dataset map. Right-clicking "myprod" in the Variables view is supposed to allow help to be selected, but this does nothing. To bring up a help window with the User's Reference Manual information on the DetectorTimeline task, type in the Console:
`help(myprod)`
- Get pipeline scripts related to a Product: Not yet available for this product (DetectorTimeline). It seems that no pipeline scripts have been made into Tasks that are registered within HIPE.
- Get synopsis of a certain Task: This may be done for the Display task in

```
herchel.spire.ia.gui.image:
from herschel.spire.ia.gui.image import Display
display = Display() # Brings up image display window
help(display) # Brings up help browser on Chapter 7 of User's
Manual, on Display
```

3.12.2 Report 2

FAIL

Procedure:

Started HIPE.

Used the following script to load a Product into HIPE:

```
from herschel.ia.pal.pool.http import HttpClientPool
pool = HttpClientPool ("http://wakefield.bnsc.rl.ac.uk/hcss/pal",
"spg2", username, password)
storage = ProductStorage (pool)
from herschel.ia.obs import *
from herschel.spire.ia.dataset import NhkTimeline
query1=Query(NhkTimeline,"1")
res = storage.select(query1)
sample=res[0].product
```

Accessed user manual by looking within doc\hcss\um of HCSS directory.



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Right-clicked on the loaded product in the Variables or Outline panes of HIPE, then selected help from the right click menu, and then looked in the Topic Help pane for information.

Left-clicked on the product in the Variables pane of HIPE, then looked in the Run Tools pane for possible applications/product descriptions.

Right-clicked on a Task in the Classes pane of HIPE, and then looked in the Topic Help pane for information.

Comments:

Virtually all help and documentation features within HIPE are not available at this time. However, documentation is still accessible directly from the hcscs directory.

3.13 Test 13: Browse and access calibration products

1. get overview of Spire calibration data.

start HIPE

- first need to import the cal files and make a calibration pool.

Run cal import

It used to work from the command line like this:

```
CalImport.read()
```

However, this produces the following error:

```
java.io.FileNotFoundException: Can't find spire jar  
/home/spire/hcssbld/hcssdp-spire.jar
```

SPR raised: SPIRE-SPR-0761

Instead of this, run the cal_import script to create the calibration pool before starting HIPE

This doesn't work:

```
SPIRE_DIR is already set to /home/spire/hcssbld/spire  
HCSS build type is new  
HCSS_DIR is already set to /home/spire/hcssbld/hcss  
/home/spire/hcssbld/spire/bin/cal_import: line 5:  
/home/spire/hcssbld/spire/bin/./lib/hcss/config/setHcssExtLibs_bsh: No such  
file or directory
```

Is the build on Leicester older than the solution to SPR-0732 which fixes this problem? Yes.

Workaround – copy the calibration product pool created on my Windows machine to Leicester. Change the lstore directory in user.props to point to the .hcss directory (was pointing towards Winchester for the logging tests).

examine calibration set using product browser:

```
store = herschel.ia.pal.ProductStorage()  
pool =  
herschel.ia.pal.PoolManager.getPool("calibrationSet_20080707_140532")  
store.register(pool)  
refs = herschel.ia.pal.browser.ProductBrowser.browseProduct(store)
```




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problem: this pool was created before PixAngOff file removed -> it crashes because there is no class for this file and it doesn't know how to read it. Delete this product from within the pool. Doesn't work: need to recreate pool without PixAngOff in.

Go back to my windows machine. Load dp-spire_119 – this should have the fix for cal_import

```
start JIDE
type CallImport.read()
failed with error:
```

```
java.io.FileNotFoundException: Can't find spire jar D:\soft\spiredp-
spire.jar
```

SPR raised: SPIRE-SPR-0761

try just running cal_import.bat

This worked.

Copy the pool
calibrationSet_20080708_113412
from my machine to my home directory on Leicester in /home/spire/etp87/.hcss/lstore/

update the urn in my user.props to point to this pool.

run Hipe

```
store = herschel.ia.pal.ProductStorage()
pool =
herchel.ia.pal.PoolManager.getPool("calibrationSet_20080708_113412")
store.register(pool)
refs = herschel.ia.pal.browser.ProductBrowser.browseProduct(store)
```

press submit with no query – this works – I can see all of the calibration products

Problem: the column labels in the Query result window are squashed up vertically and not possible to read. It is only just possible to click on the title to re-order the column.

Can see all products and click on them to display in dataset inspector

Get the calibration set at the command line:

```
df = java.text.SimpleDateFormat("yyyy-MM-dd HH:mm:ss z")
start = df.parse("2008-07-07 12:00:00 GMT")
cal = SpireCal.getInstance(start)
```

can now see "cal" in the Variables window and click through the tree of products for phot and spec.

Can see these and the description of the products in the Editor window, but cannot click on them to view them in the dataset inspector.

It is not clear whether Hipe is working or whether it has finished and the command doesn't work – when double click on the products in the Editor window, nothing happens, but sometimes I got the impression that it is actually thinking about it.



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OK, modify a calibration product and save back into the system:

```
chanMask = cal.spec.chanMask
# change pixel SSWD4 to be dead
print chanMask.isDead('SSWD4')
# get the channel names
names=chanMask.getNames('SSW')
isDead = chanMask.getIsDead('SSW')
element=0
name=names[element]
while name != "SSWD4":
    print name
    element+=1
    name = names[element]
isDead[element]=1
chanMask.setIsDead('SSW',isDead)
```

now save this calibration product into a private pool
Steve told me 2 methods:

1. put modified product back into cal context and save in pool. This requires a reference so that the modified product can be set inside the list context

```
newRef = ProductRef(chanMask)
```

problem is that this returns the following:

```
IA>>print newRef
[no urn]
```

so when I carry on, nothing happens:

```
index=0
refList = cal.spec.refs
for prodName in refList.keySet():
    if prodName == "ChanMaskList":
        refList.set(index, newRef)
        print "Done"
    index+=1
```

2. put a modified FITS file in the directory structure. Turn this into a .jar file using:

```
jar cf newcal.jar *
```

Read this in as a new calibration set using:

```
CalImport.read('newcal.jar')
```

Tried

```
CalImport.read('/home/spire/hcssbld/spire/lib/dp-spire.jar')
```

to read in the original default calibration set, and this worked, so it is only when no file is specified that CalImport.read() doesn't work.

Cannot test delivering Cal product yet as procedure not defined for this.

3.14 Test 14: Process products on RAL computer

Procedure:

- Stepwise execution of the pipeline standard processing steps
- Visualization of temporary results



Report

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- Modify input parameter for a pipeline step
- Get GUI command into command line history if GUI is used
- Command line support by command completion mechanism
- Compare results
- Load private calibration Product
- Use private calibration Product for a pipeline step
- Compare results (Display and Plot)
- Plug in of private Jython and Java Tasks without restarting HIPE
- Reloading of Jython and Java Tasks without restarting HIPE
- Execute private or modified Jython/Java Task
- Browse History of Products

Check the store of data products created with the SPG at

```
/misc/winchester1/dptest063/data/products/spg2
```

```
store = herschel.ia.pal.ProductStorage()  
pool = herschel.ia.pal.PoolManager.getPool("spg2")  
store.register(pool)  
refs = herschel.ia.pal.browser.ProductBrowser.browseProduct(store)
```

This works and I can see all of the products in the browser. However, it didn't work the first time – it seems because I went too quickly through the commands and when I started the browser it was not ready yet and gave an error when I pressed submit. Is this because there is no mechanism to prevent me sending more commands before previous ones are finished in Hipe?

Choose spectrometer observation for 0x30011804

run stepwise through SOF1 pipeline script from within the build.

get to the stage of entering the pool name and obsid.
It says that it cannot find an observation with that OBSID..

OK, reason was that the copy from I in Test 4 was not complete. Therefore need to choose an OBSID which was actually completed: look for an observation context in that pool.

Cannot find any observation contexts for any of the observations I tried. Therefore create my own local pool for the observation 0x300117fe

```
- obsExporter
```

This gives error:

```
SPIRE_DIR is already set to /home/spire/hcssbld/spire  
HCSS build type is new  
HCSS_DIR is already set to /home/spire/hcssbld/hcss  
/home/spire/hcssbld/spire/bin/obsExporter: line 5:  
/home/spire/hcssbld/spire/bin/../../lib/hcss/config/setHcssExtLibs_bsh: No such  
file or directory
```

This appears to be due to a bug with the old-style build on Windows. Spire SPR-0787 raised.

However, try this on build 119 on my Windows machine. It works.



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Therefore create the pool there and copy it to Leicester.

Run pipeline SOF1

Out of memory error: require to start Hipe with more memory

Starting Hipe using:

```
- hipe -Xmx1024m
```

does not work, so I copied the bin file called hipe to my home directory and changed to Xmx1024m inside it.

run pipeline reading the level0 observation context from my local store.

set to plot the results.

Loop over BB's:

```
0xa801 PCAL flash
0xa0b2 SOF1 end
0xa801 PCAL flash
0xa0b1 SOF1 init
0xaf01 Obs config
0xa0b0 SOF1 config
0xa107 BSM move
0xa106 FTS scan
```

But why are the Bbtypes beginning with "A" whereas in the AOT description document they begin with "2"? eg. 0x2106 = FTS scan

So only interested in the last building block.

Run through each step for this BB and plot the results.

1. plot the level 0.5 SDT:

The plot brings up a window which cannot be moved around the screen – no top bar. It is separate to the Hipe main window.

I can save it by right clicking the mouse and pressing properties. There is also no way to close the plot window, except p.close() on the command line.

2 apply time domain phase correction

3. deglitch

I get the following error:

```
java.lang.NullPointerException: Dataset[signal] does not exist
```

Check the output of the previous step:

```
IA>>print sdt
{description="Spectrometer Detector Timeline", meta=[type, creator,
creationDate, description, instrument, modelName, startDate, endDate,
aorLabel, aot, author, cusMode, dec, decNominal, equinox, instMode,
herschel, missionConfig, naifId, object, observer, obsid, obsMode, odNumber,
pointingMode, posAngle, proposal, ra, raDeSys, raNominal, telescope,
```



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```
subsystem, bbid, source, bbTypeName, commandedResolution, offsetApp,
biasFreq, rcRollApp], datasets=[voltage, resistance, mask, time, quality],
history=None}
```

Ignore the deglitching step and go straight to:

4. create Interferogram

It works on the SDT from step 2 (ie miss out deglitch task).

plot the result

5. baseline correction

6. apodisation

7. fourier transform

now the script goes back and applies phase correction to the interferogram before fourier transform:

8. phase correction

9. apodise

10. fourier transform

plot this spectrum and see that the imaginary part is now zero.

11. average spectra

gives this error:

```
java.lang.IllegalArgumentException: Pixel SLWA1 is not contained in this
product
```

Modify Input parameter for one step.

- re run the steps but with a different apodisation

standard apodisation was NB_15

Change this to NB_11 in the post phase correction apodisation step:

```
sdi_apod = apodizeIfgms(sdi=sdi, apodType="post", apodFunctionName="aNb_11")
sdi_apod = apodizeIfgms(sdi=sdi, apodType="post", apodFunctionName="aNb_20")
```

compare the result of fourier transforming both – can see the difference in the laser line – save plots of both.

Command line support by command completion mechanism

I'm not entirely sure what this means. Tried to complete task names on the command line using Tab key. This just inserts a tab. Steve says nothing like this is implemented, and anyway Tab should be reserved for switching between GUI components.

Compare results

Compared plots with different apodisation functions

Load private calibration Product

In current implementation, masked pixels that are dead are removed from the final product.



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Therefore it will be obvious if I modify the dead pixel mask to contain pixel SSWD4 because it won't exist any more in the final product.

Modify the ChanMask cal product and save to a pool in my home directory.

run the createIfgm task using this calibration product instead of the standard one:

```
sdi=createIfgm(sdt=sdt, smect=smect, hkt=nhkt,
calSmecZpd=obs.calibration.spec.smecZpd, calSpecChanMask=chanMask,
calSpecChanTimeOff = obs.calibration.spec.chanTimeOff, interpolType=
"spline")
```

try to plot the result for SSWD5:

```
java.lang.IllegalArgumentException: Pixel SSWD5 is not contained in this
product
```

ie. the new mask has been applied

Plug in of private Jython and Java Tasks without restarting HIPE

For this step need to write a task

```
import herschel
import java
class edTask(herschel.ia.task.Task):
    def __init__(self):
        print "initialising"
        q=herschel.ia.task.TaskParameter('ed', java.lang.Double)
        self.addTaskParameter(q)

q=herschel.ia.task.TaskParameter('sdi', herschel.spire.ia.dataset.Spectromete
rDetectorInterferogram)
    self.addTaskParameter(q)

q=herschel.ia.task.TaskParameter('outsdi', herschel.spire.ia.dataset.Spectrom
eterDetectorInterferogram)
    q.setType(herschel.ia.task.TaskParameter.OUT)
    self.addTaskParameter(q)
    def execute(self):
        print "hahaaaa"
        print "ed = ",self.getValue("ed")
        outputSdi = self.getValue("sdi")
        self.setValue("outsdi", outputSdi);
```

save this to a file called edTask.py and then import edTask

This doesn't work, even when I put it in the same directory as I started Hipe from.

restart Hipe and then it works.

Note: when I highlight several lines in hipe to run them, I cannot use the "run" arrow button again to run a single line until I have unhighlighted the previous lines.

Then I got an error in the task – I modified it and wanted to reload:

This does not work:



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```
reload(edTask)
```

Reloading edTask
KeyError: edTask

Restart Hipe.

Run SOF1 pipeline up to create interferogram
- create interferogram to give SDI

```
import edTask
edTask=edTask.edTask()
edsdi=edTask(sdi=sdi,ed=1.0)
```

now run the baseline correction on the result of my task:

plot the baseline corrected interferogram: it looks OK.

ie. plug in of my private task worked OK.

Reloading of Jython and Java Tasks without restarting HIPE

Now change my task to print something different and try to reload.

```
- reload(edTask)
AttributeError: __getitem__
```

just typing import edTask again does not work

Try going to Classes Tab in Hipe. Click on edTask but there is no option to reload.

So this step did not work.

Execute private or modified Jython/Java Task

This has already been done in the previous step and was successful.

Browse History of Products

Cannot find any way to browse the history other than the following:

```
print sdi.history
```

This lists the tasks and parameters that have been applied to that product.

3.15 Test 15: Process products outside RAL

- Input Data Product
- Since the data ingest in (III) failed. We downloaded a PFM4 test observation from RAL using “obsExporter”

Observation ID: 0x300118E6
Database: pfm4_test@chichester
Pool ID: 300118E6
Level 0.5 process: yes



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This is a POF2 observation. The data was successfully downloaded and stored to a local storage pool.

* Install SPIRE calibration products:

- Went to the directory `bin/cal_import.app/Contents/MacOS`, and executed `cal_import` command.
- checked that the script runs correctly and completes with the message:
"Saving 1 properties to `/home/panuzzo/.hcss/user.props`"
- checked that the new pool was created and populated.
- In `user.props` file, the calibration entry was also updated:
`spire.cal.urn= urn:calibrationSet_20080711_161913: erschel.spire.ia.cal.SpireCal:0`

* Running the Pipeline Script on the Sample Data:

- loaded the correct pipeline script into HCSS/JIDE. In this case, it is `hcss/lib/herschel/spire/ia/pipeline/scripts/POF2/POF2_pipeline.py`
- Ran it line by line in an interactive fashion. The deglitching line
 - o `pdt = deglitch(input=pdt)`
apparently caused an error. But when this deglitching line was commented out, the script ran to the end successfully.
- Saved the processed results into a new storage pool.
- Inspected the results using the Dataset Inspector and TablePlotter. All seems to be okay although the fluxes are still Nan's as the nonlinearity correction and flux conversion calibration table has not been populated.

Conclusion: The POF2 pipeline was run successfully (when the deglitching was turned off).

Issues: (a) Had to turn off the deglitching; otherwise, it caused an error:

Error in the "for bbid in b bids" block:

```
Command: p3 = PlotXY(yang, ang, xtitle = "Chopper angle (arcsec)",  
                    ytitle = "Jiggle angle (arcsec)", \
```

```
Error: java.lang.NullPointerException: Dataset[signal] does not exist
```

3.16 Test 16: Run pipeline at RAL

This is the same as test 14 except that it is running the pipeline without stopping at individual steps.

Run the SOF1 script with OBSID 0x300117fe

Error at deglitching task. Therefore comment this out.

Completed OK and saved final products to pool

Check pool with PAL browser and Level 1 context with SDS is present.

3.17 Test 17: Trend analysis using local pool

This test was not performed. The trend analysis framework is not yet implemented. However, the test as written could mostly be carried out using the PAL alone.



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3.18 Test 18: Trend analysis using remote pool

This test was not performed. The trend analysis framework is not yet implemented. However, the test as written could mostly be carried out using the PAL alone.

3.19 Test 19: Workspace handling

In Hipe there does not seem to be a way to save the session. The save button only seems to work for individual scripts. Ie. this does not seem to be implemented yet in Hipe.

4. SUMMARY AND CONCLUSIONS

- The running of this acceptance test, while costly in terms of manpower, has been a valuable experience which will be of benefit during tests such as SOVT-1.
- It is not currently possible to exercise the test plan exactly as it is written. Additionally, with hindsight, some procedures could be performed more optimally in a different way. The test plan should be updated to reflect these points.
- Many of the problems encountered were related to the previous point, or were a knock-on effect from the HAIO product transfer test not completing fully successfully.
- The database propagation test (Test 1) should be rerun and the data transfer speed noted.
- The HAIO data product transfer test (Test 4) should be rerun when RAL Networks allow direct access to the archive without routing through the proxy. Any remaining transfer speed issues may then probably be attributed to the HAIO protocol.
- Classes defining products should only be removed with great care and with approval of the appropriate CCB(s) in future, as this can cause considerable problems with data already stored in the archive.
- The Windows version of the HCSS installer has a major problem in that in cases of error, the window disappears with no opportunity to see the error message. This makes debugging of problems next to impossible. This needs to be fixed before the installer can be widely promoted for use on Windows.
- The new-style build is missing a number of applications, including telemetry ingestion. These applications are only used on the EGSE within the ICC, and therefore this is not a factor in accepting the build for DP purposes.
- While HIPE has proved to be usable at this point in its development, it is clear that significant further work is still required in terms of functionality, user-friendliness and integration with the rest of the system. It may be the case that this integration exercise will solve many of the other issues.
- No SPR has been raised on the PAL ingestion problem of files retrieved from the HSA, or the failure to read the FITS files with FitsArchive, as described in Test 3. These should be rechecked and SPRs raised if there is still a problem.

4.1 SxRs raised as a result of the Acceptance Test

Number	Area	Module	Priority	Title
SPR-4477	HCSS	IA_Pal_Pool_Lstore	Normal	Local store needs write access to access metadata
SPR-4607	HCSS	Infrastructure	Normal	Installer version on Windows loses message screen
SPR-4651	HCSS	IA_Pal_Pool_Lstore	Normal	Ingestion failure + unhelpful message
SPR-0761	SPIRE	Calibration	Normal	CallImport.read() does not work
SPR-0763	SPIRE	Tools	Normal	Problems with Operational Day logging output in pool



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SPR-0787	SPIRE	Infrastructure	Normal	Problem with old-style build on Windows
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Workarounds exist for all of the SxRs in this list. It is not required to patch fixes into the system.

4.2 Additional SxRs required for SOVT1

These SxRs need to be patched into the system.

Number	Area	Module	Priority	Title
SPR-4541	HCSS	IA_Dataset	Normal	MetaData memory leak and event listeners
SPR-0777	SPIRE	IA	High	SpirePreprocessTool fails to save Level 0 data

4.3 Additional SxRs relevant to this test

The following existing SxRs have been identified as problems during this acceptance test, but it is possible to work around them for SOVT-1.

Number	Area	Module	Priority	Title
SPR-4579	HCSS	HSCOps_HSA	Normal	HsaPool requires access to http://usvo.org/xml/VOTable.dtd
SPR-0785	SPIRE	IA	High	Removal of SPIRE calibration classes

4.4 Overall conclusion

The new-style SPIRE build containing HCSS 0.6.3, patched for the SxRs in section 4.2, and utilising certain workarounds, is suitable for use in SOVT-1.