



# SPIRE Photometer Interactive Analysis (SPIA)

Bernhard Schulz

NHSC, SPIRE-ICC



# The three data analysis choices

- Pipeline processing
  - Easy and straight forward
  - No flexibility
- Editing and running a script
  - Sophisticated and long learning curve
  - Full flexibility
- Interactive analysis with GUIs
  - Relatively easy to learn
  - Limited flexibility
- Straight pipeline results may be good enough for science analysis at a future date, **but not yet.**
- For astronomers with limited resources to learn the system, the GUI IA seems to be the optimal choice



# Interactive Analysis Steps

- Load data
- Inspect data
- Reprocess data
- Inspect results
- Change processing parameters
- Reprocess again and inspect again etc...
- Go to next major step of reduction
- Select results to keep
- Save results for later
- Save results to continue processing with something else



# Requirements for a GUI IA

- Simple data retrieval from HSA
- Data inspection tools at all levels
- A split of the general workflow into smaller pipelines (modules)
- Interactive access to parameters
- Management of observations and results
  - Simple saving of observations into PAL pools
  - Simple retrieval of observations from PAL pool
  - Output of results formatted for other applications

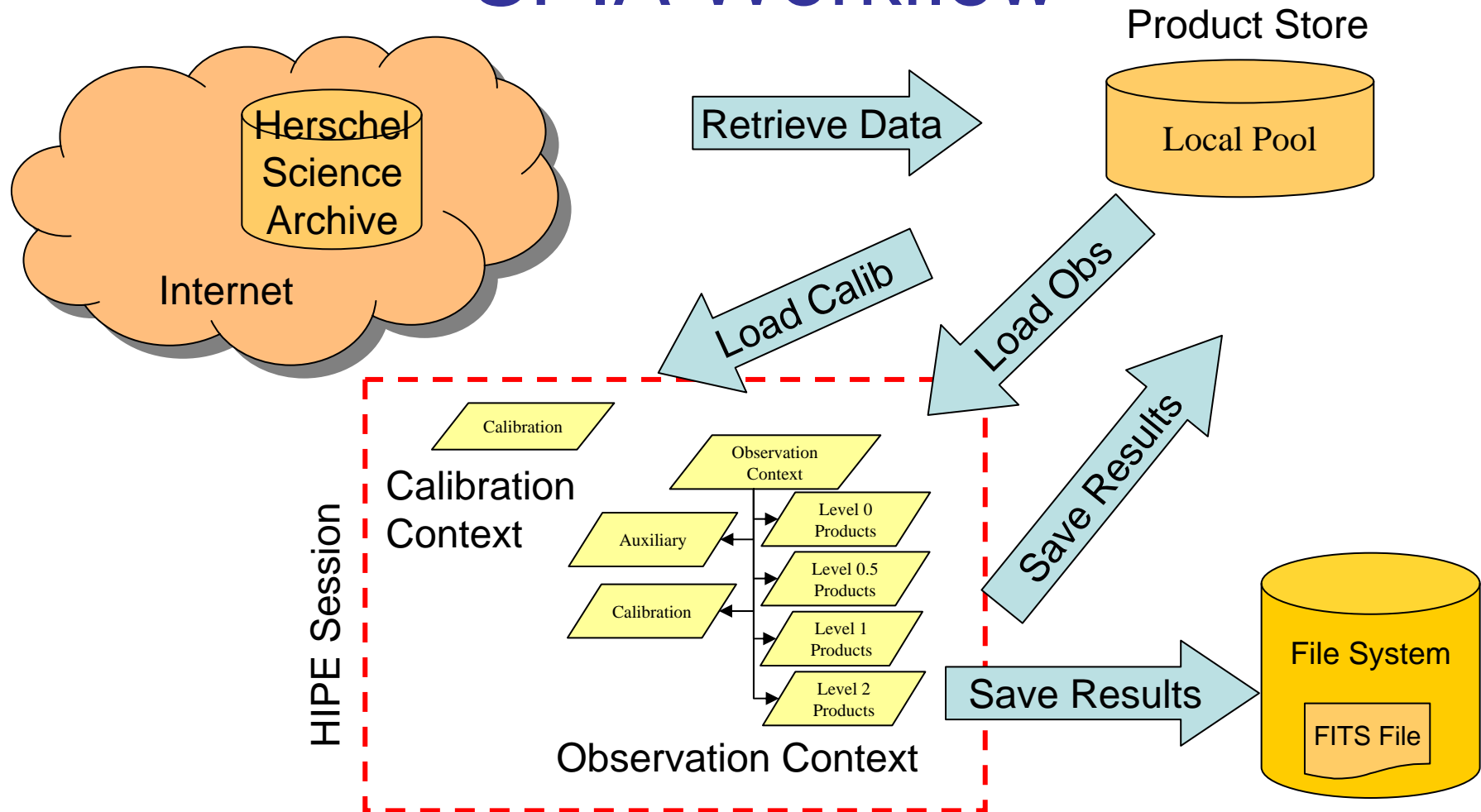


# SPIRE Photometer Interactive Analysis SPIA

- Attempt to integrate available HIPE “plumbing”
- No need for sophisticated SWING programming
- Built around the observation context
- Makes full use of HIPE features
  - Task GUIs, Views, Perspectives, Context Viewer, TablePlotter, Map Display, etc...
- Processing modules are tasks that work on the observation context
- Session oriented

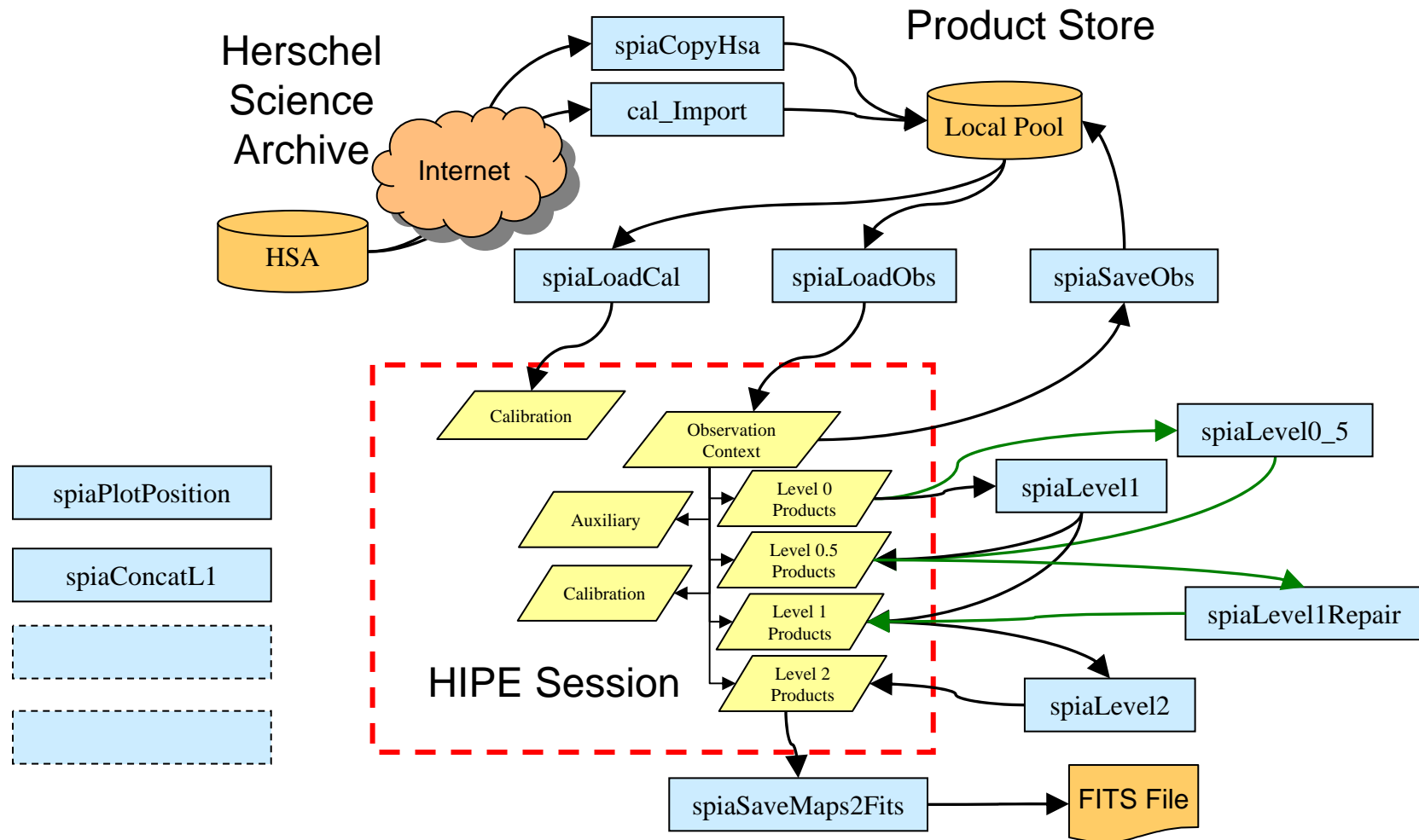


# SPIA Workflow





# SPIA Modules





# Screenshot of SPIA Session

**Task GUI**

**Variables**

**Task List**

**Outline**

**Command Line**

```
herschel.ia.dataset.image.wcs.WcsException
HIPE> obsOut_1 =
spiaLevel2(obs=obsOut,cal=cal,CopyObs="No",excludeRadius=60.0,pixelSizePsw=6.0,p
16 scans from first observation included.
Running naive map maker.
Processed 16 scans to Level2 maps.
Starting with browse product image.
Browse product image done
done Level2 OBSID=0x50004660L
HIPE>
```





# Another Screenshot

The screenshot displays the HIPE software interface. On the left, a 'Context Viewer' window shows the 'Photometer Scan Product' metadata and a list of data files. The main window, 'Scan Overplot', shows a 2D plot of pixel numbers (0 to 220) with a central bright spot and green crosshairs. A 'spiaPlotPosition Output' box points to the plot. Below the plot, a 'Detector Timeline Explorer' window shows a signal plot for PLWCS, with a 'Detector Timeline Explorer' box pointing to it. The interface includes a menu bar, toolbar, and various control panels.

| name         | value                   |
|--------------|-------------------------|
| Operator     | PSP                     |
| Operator     | Bernhard Schulz         |
| CreationDate | 2010-08-29T22:53:33Z    |
| Description  | Photometer Scan Product |
| Instrument   | SPIRE                   |
| ModelName    | FLIGHT                  |
| Start Date   | 2010-04-20T22:38:19Z    |
| End Date     | 2010-04-20T22:38:58Z    |



# Availability

- Distribution from NHSC Wiki
  - Python script
    - Simple
    - Easy inspection of the code
    - Must be run at begin of each session
  - HIPE Plugin
    - More convenient
    - Persistent after installation
  - User's Manual
  - Publication ADASS 2010 proceedings
    - <http://arxiv.org/abs/1101.1284>
- <https://nhscsci.ipac.caltech.edu/sc/index.php/Spire/SPIA>