

Science User Interface and Tools

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Overall Philosophy

- The SUI/T is the entry point of the community to the LSST data – for expert and novice users
- The SUI/T needs to be simple enough to engage the novice and flexible enough to meet the needs of the power-users
- The SUI/T is more than just the list of requirements – it is a toolkit to mate the data with the user
- Enable creativity and flexibility

Overall Philosophy

- No way we can anticipate all the needs/wants of the community
- DM will build a portal that fulfills the needs of the general user (e.g., searching, image visualization, table manipulation, plotting, workspace etc.)
- Components will be usable by others to use and to build tools that meet their own special needs

SUI/T: Entry Point for LSST Data

- Provide users easy access to LSST data
- Enable users to do as much data discovery as possible
 - Searches
- Facilitate data analysis by providing tools needed
 - Visualizations
- Manage work flow and data collections for users
 - Workspace
- Supply software building blocks so others can build their own UI

But there is so much more ...

- An SUI/T toolkit to mate tools and workspace
- Data access API with Python wrappers
- User workspace environment
- Visualization from workspace to remote client(s)
 - Web browser
 - iPython notebook
- Interactive visualization controllable by JavaScript and Python API
- Customizable visualization functions through call-backs provided by users

Web-based Portal



Firefly Pixel Size: 1.375" Value: 4.641138 DN Eq-12000: 0h03m46.10s, +1d04m18.2s Wise: Atlas, B1 Lock By Click

Data Sets: Catalogs & Images Single Image: Add/Modify... Help Background Monitor

Coverage FITS data Science_Cod_ExposureCone, -1 DeepSourceCone, X

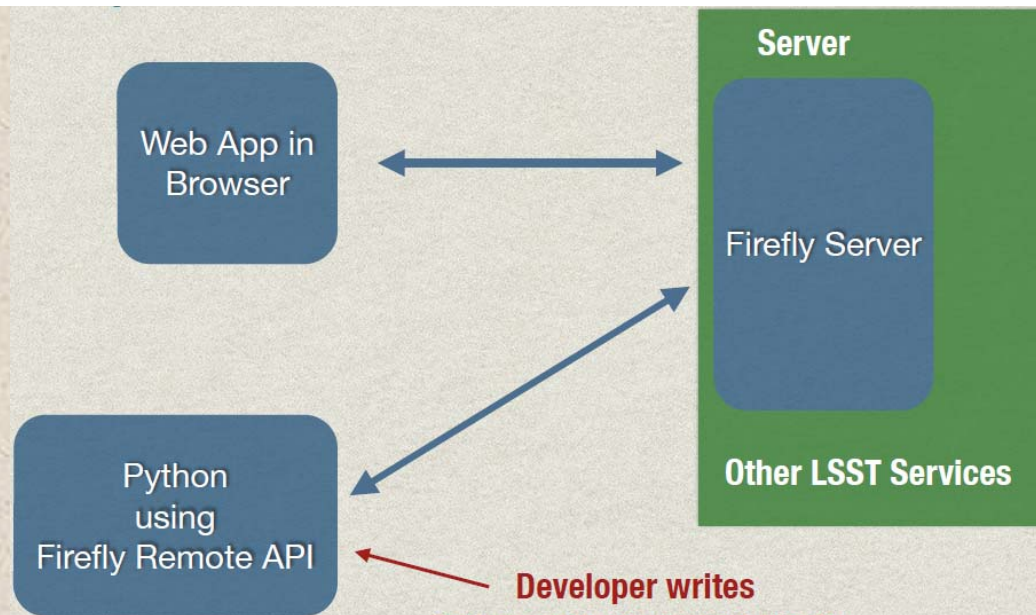
11 of 13 (501 - 550 of 613)

<input type="checkbox"/>	deepSourceId	parentDeepSourceId	deepCoaddId	filterId	
<input checked="" type="checkbox"/>	3562429753590795		26542170	2	0.
<input checked="" type="checkbox"/>	3562429753590579		26542170	2	0.
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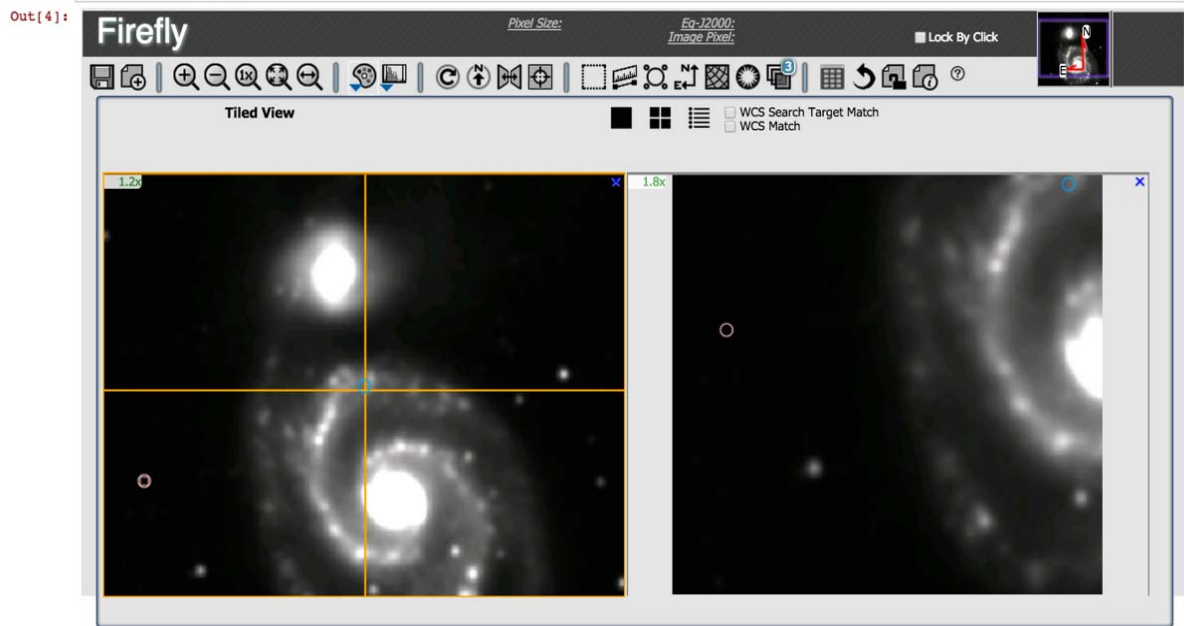
LSST DeepSource

8/19/2015
Please see buttons at the top right for available actions.

Visualization Tools With Python



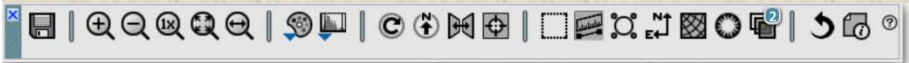
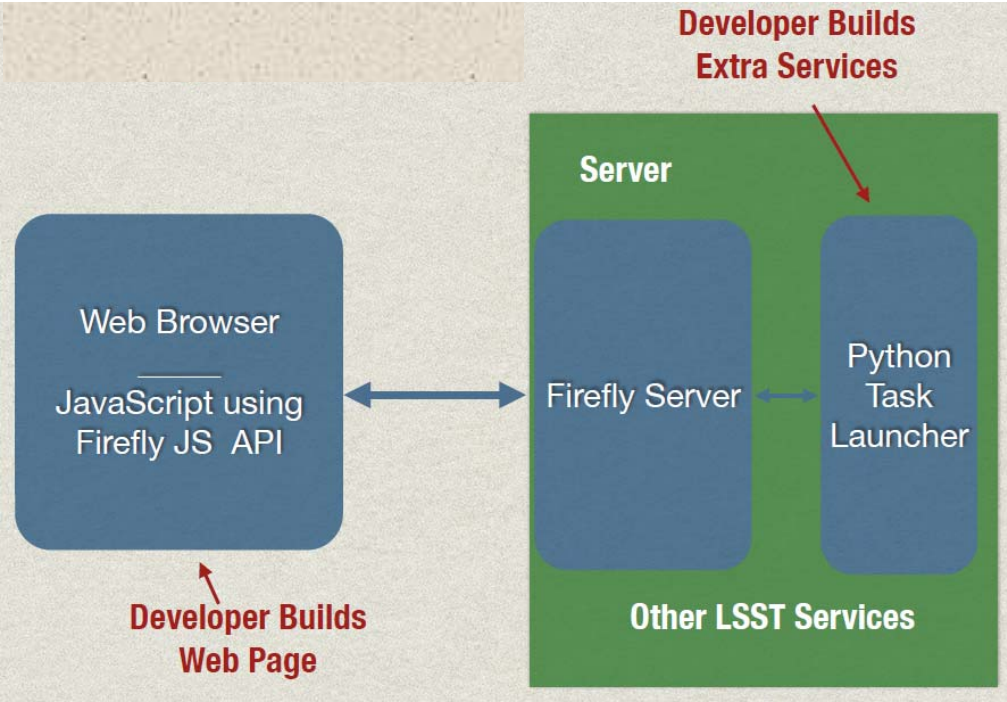
```
In [4]: IFrame(fc.getFireflyUrl(), 1100, 600)
#fc.launchBrowser()
```



```
In [5]: mainFile = fc.uploadFile('data/wise-m51-band2.fits')
fc.showFits(mainFile, 'main')
```

DM Update - SUI

Visualization and Interactivity



Some WISE image .799x

Options: Do Graph

0.038°

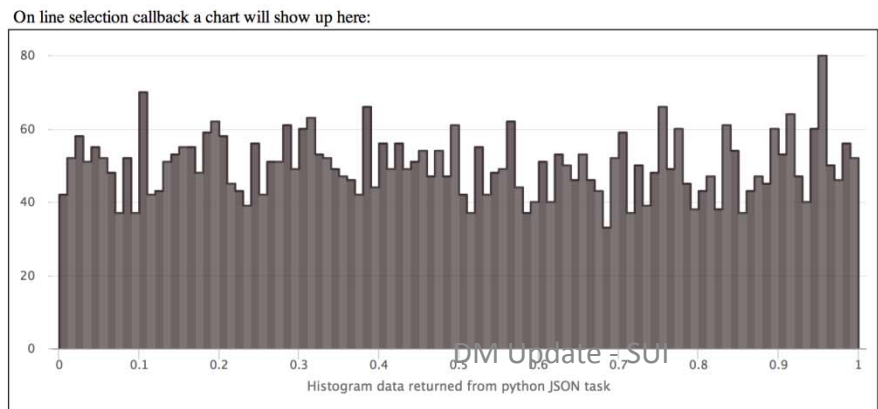
corresponding quadrant will be here:

Quadrant- 0,0 1.3x

On area selecti

```

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"cSys": {}
},
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```



DM Update - SUI

Engaging the Science Collaborations

- Over the next 12 – 24 months
 - Understand specific scientific needs and assess the completeness of the pre-construction requirements
 - Workshops to begin teaching the collaborations how to use the tools
- Some specific Science Views can help drive real development
 - Simple Entry View
 - overview of survey progress, single object lookup ...
 - DE/Extragalactic
 - 3-d visualization of redshift (x,y,z), color-color, color-magnitude, view into alerts ...
 - Galactic Structure
 - Color-color, color-magnitude, multi-color images, ...
 - Solar System
 - Moving objects: Trail of images, Tracklets, Light Curves, View into alerts, ...
 - Transients/Variables
 - Stack of Images, Views into alerts, light curves ...