

A simple SAMP Applet

“the SAMPplet”

Renaud Savalle <renaud.savalle@obspm.fr>

Jérôme Berthier

Pierre Le Sidaner

VO-Paris Data Centre
Observatoire de Paris-Meudon



IVOA Interop Garching 2009-11-09



A simple SAMP Applet

- Goals
- SAMP and JSAMP
- Development
- Architecture
- Demo

Applet Goals

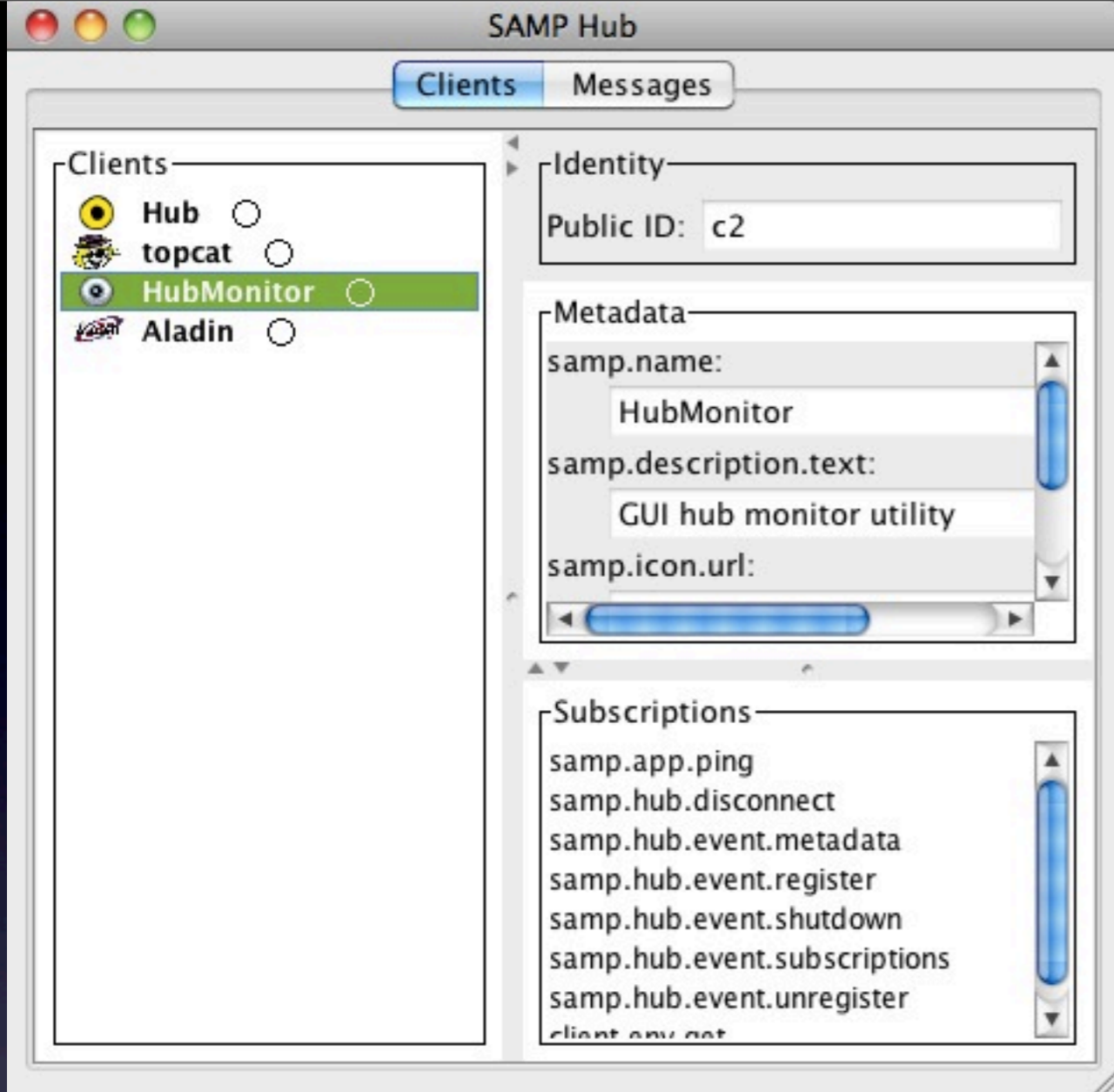
- **Idea:** Build a quick-look feature for web portals...
- ... by dispatching data to SAMP applications from a web page
- ...to target applications that run locally
- Tested with Aladin, Splat, TOPCAT, DS9, VoSpec
- **Trick:** since all SAMP clients need to access `$HOME/.samp`, the applet must be signed by the developer then trusted by the user
- Written in Java => use library JSAMP by Mark Taylor

SAMP

- Simple Application Messaging Protocol
- IVOA Recommendation since 21 April 2009 (v1.11)
- Already widely used => success for the IVOA
- Application interoperability using XML/RPC messages and subscriptions
- Communication happens through a **hub**
- Support for **Java**, Perl, Python, C?

JSAMP

- API = a set of Java classes implementing SAMP
- Written by Mark Taylor
- <http://software.astrogrid.org/doc/p/samp/1.0/>
- No need to understand the underlying XML/RPC mechanism (except for debugging)
- Includes a standalone SAMP hub and monitor with very useful GUIs



SAMP

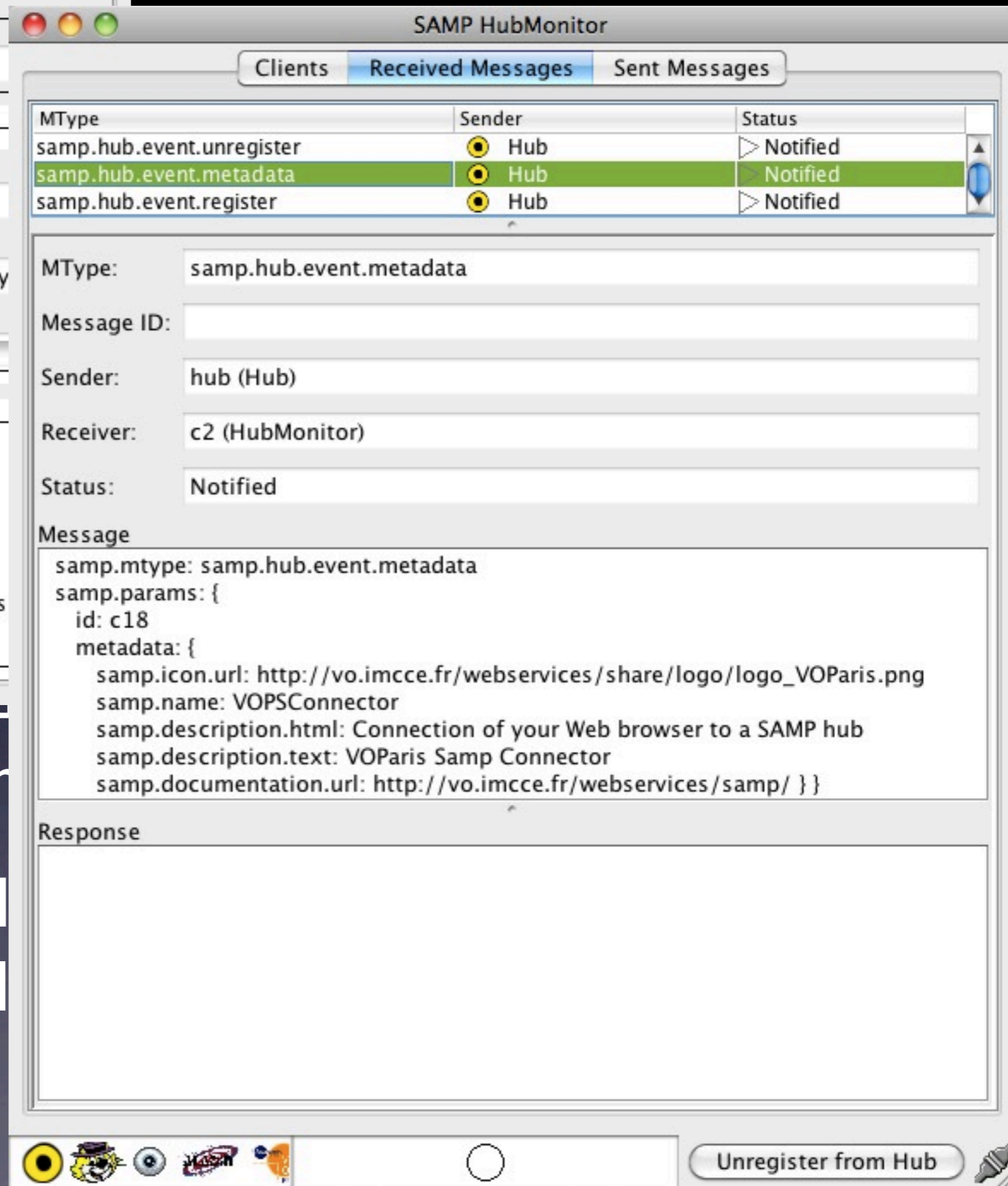
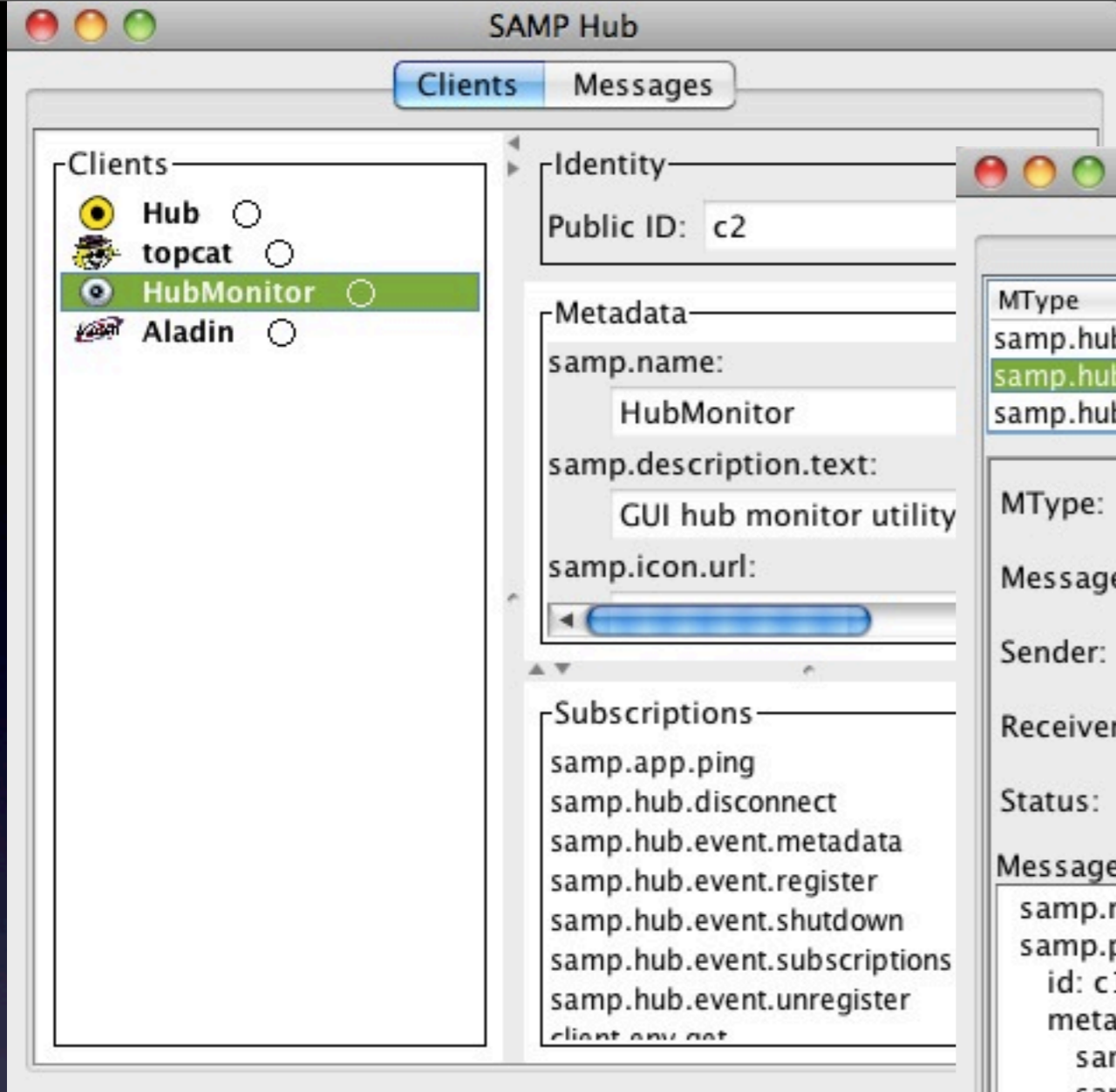
Classes implementing SAMP

aylor

loggrid.org/doc/p/samp/1.0/

• No need to understand the underlying XML/RPC mechanism (except for debugging)

- Includes a standalone SAMP hub and monitor with very useful GUIs

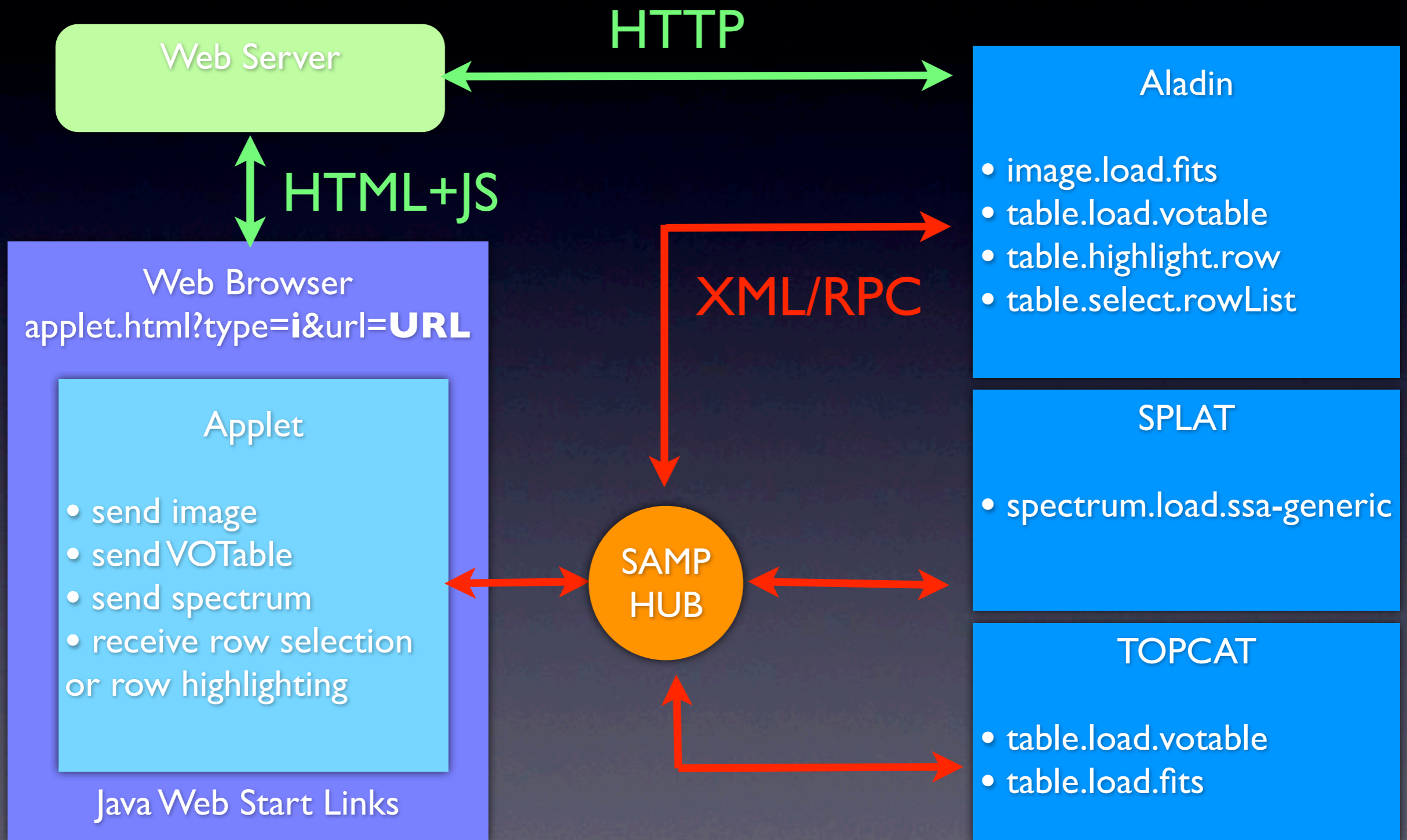


- Includes a standard RPC mechanism with very useful

Applet Development

- Almost like making a standalone Java program...
- Except... all libraries (JSAMP, FITS,...) are embedded in ONE jar file
- ... and the jar file must be signed (cf HOWTO)
- The browser needs to be Java-compatible:
Firefox, Safari, IE, Opera
- The web page embeds the applet: nothing to launch by the user. Pop-up window for trusting

Architecture



Demo

- **WebSAMPConnector**
- Available from VO-PDC
- Download it from <http://vo.obspm.fr/tool.php>
- Two ways to use the applet: visible (testing/interactive) or invisible (transparent)



VOPSampConnector Demonstrator

... *through a Java applet:*

<< Console >>

```
>> Testing output: ok  
Pinging SAMP hub...  
Connecting to the hub...
```

<< Actions >>

Send a VOTable Send an image Send a spectrum 

... *through a hidden Java applet and Javascript onclick event*



WebSampConnector Demonstrator

... through a hidden Java applet and Javascript onclick event



Broadcast a [VOTable](#)

Broadcast a [FITS image](#)

Broadcast a [Spectrum](#)

Tips:

- click on the radar icon to start/stop to check if your SAMP hub is running or not.
- click on a link to broadcast a dataset

or

- click on the hyperlink hereafter to check if a SAMP hub is running before trying to broadcast the dataset

Broadcast a [VOTable](#) (before that, check if a SAMP hub is running or not)

WebSampConnector Demonstrator

... through a hidden Java applet and Javascript onclick event

Broadcast a [V](#)

Broadcast a [F](#)

Broadcast a [S](#)



http://vo.imcce.fr

No SAMP hub is running!

Start one if you want to broadcast the dataset.

OK

Tips:

- click on the radar icon to start/stop to check if your SAMP hub is running or not.
- click on a link to broadcast a dataset

or

- click on the hyperlink hereafter to check if a SAMP hub is running before trying to broadcast the dataset

Broadcast a [VOTable](#) (before that, check if a SAMP hub is running or not)



THE IMCCE VIRTUAL OBSERVATORY SOLAR SYSTEM PORTAL

Observatoire de Paris / CNRS



[Portal Home Page](#) | [Contact us](#)

- SSODNet
- Miriade
- SkyBoT**
- Skybot 3D
- AstroId
- SsoTEP

The Virtual Observatory Sky Body Tracker

Query forms

Fill in the form of your choice and submit the query. Read the [documentation](#) if you mind how to do, or just put your mouse above the labels of the input fields for a quick help.

[More info...](#)

Cone Search Resolver getAsterClass Status

:: Cone Search Query Form ::

Epoch (UTC):

Target:

Objects: Asteroids Planets Comets

Radius (arcsec):

Observer: [\(IAU code list\)](#)

Filter:

Output: Object Basic Obs All

Last update: 2009-11-01

Example 2: PDS

- VIRTIS=Visible and Infrared Thermal Imaging Spectrometer aboard Venus-Express, produces data **cube** (λ, x, y)
- Storage format: PDS=Planetary Data System
- Use of PDS library **lecturePDS** by S. Erard, written for IDL (porting to GDL in progress)
- Note: for planetary images used here, the WCS is arbitrary, the aim is only to superimpose a catalog

http://mac-rs.obspm.fr/samp/samp_applet.html?type=i&url=http://mac-rs.

SAMP Applet

Console

```

Creating catalog in /tmp/tmp_radec.xml
Calling JSAMP
Creating message
Sending message
Done.

```

Controls

Click to

Click to create+send VOT via SAMP

Click to r

Web Start:(java installer)

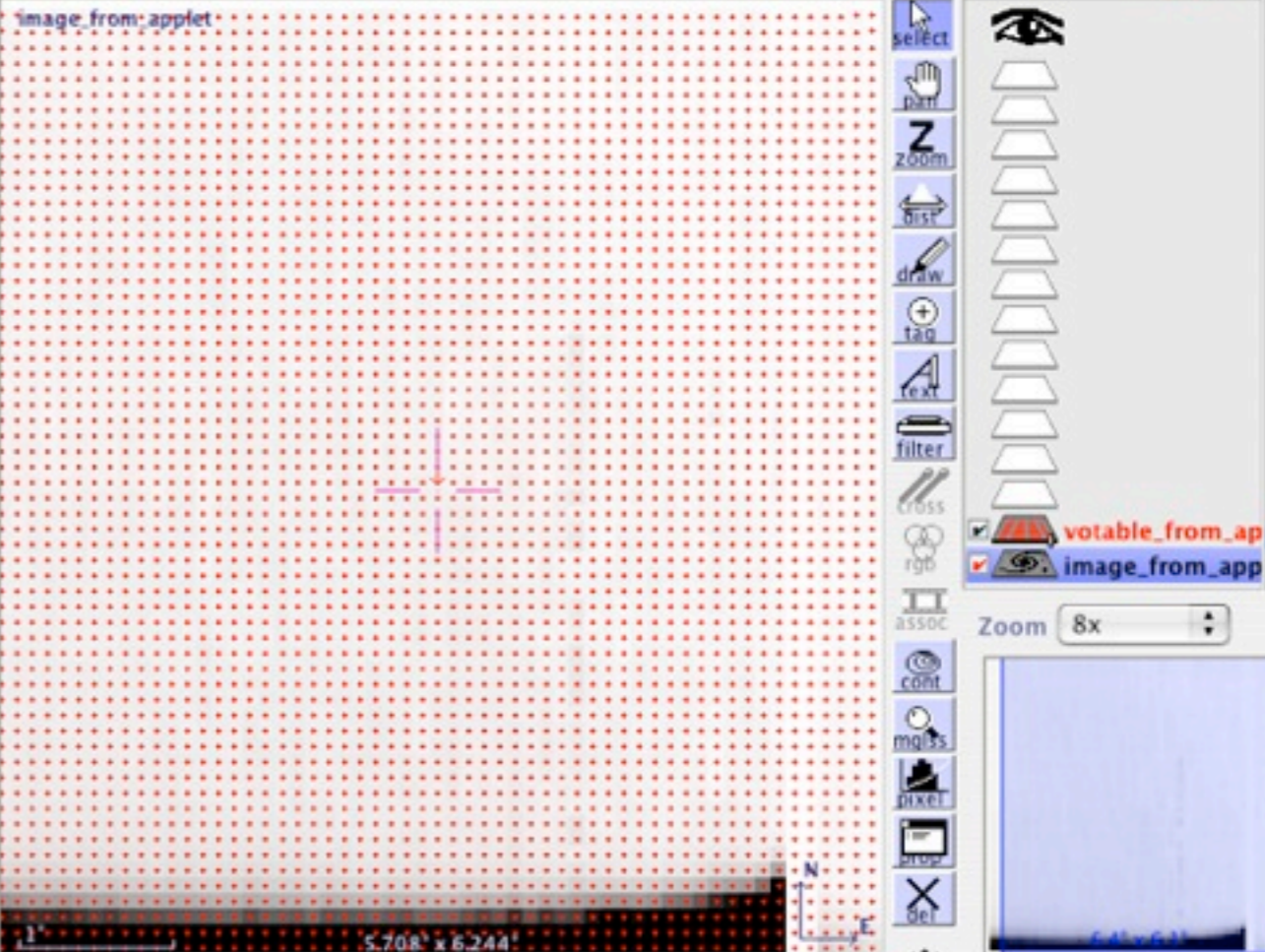
Aladin Java:  Aladin.jar

SPLAT: 

Aladin v6.0

Location ICRS Pixel 0.0166 full

image_from:applet



select
pan
Zoom
first
draw
tag
text
filter
cross
rgb
ASSOC
cont
mq33
PIXEL
stop
del

Zoom 8x

Source #1025 - Click on it to get details

grid multiview match

TIP: Create your own catalog. The simplest syntax is: Ra Dec Val1 Val2...

0 sel / 3904 src 4Mb

Applet obspm.SAMPDemo started

http://localhost/samp/samp_applet.html

SAMP Applet

Console

```
sendSAMPFITSfileFromURL calling sendSAMPFITSfile  
Calling JSAMP  
Creating message  
Sending message  
Done.
```

Controls

Click to create+send VOT via SAMP

Web Start:(java installer)

Aladin Java:  Aladin.jar

SPLAT: 

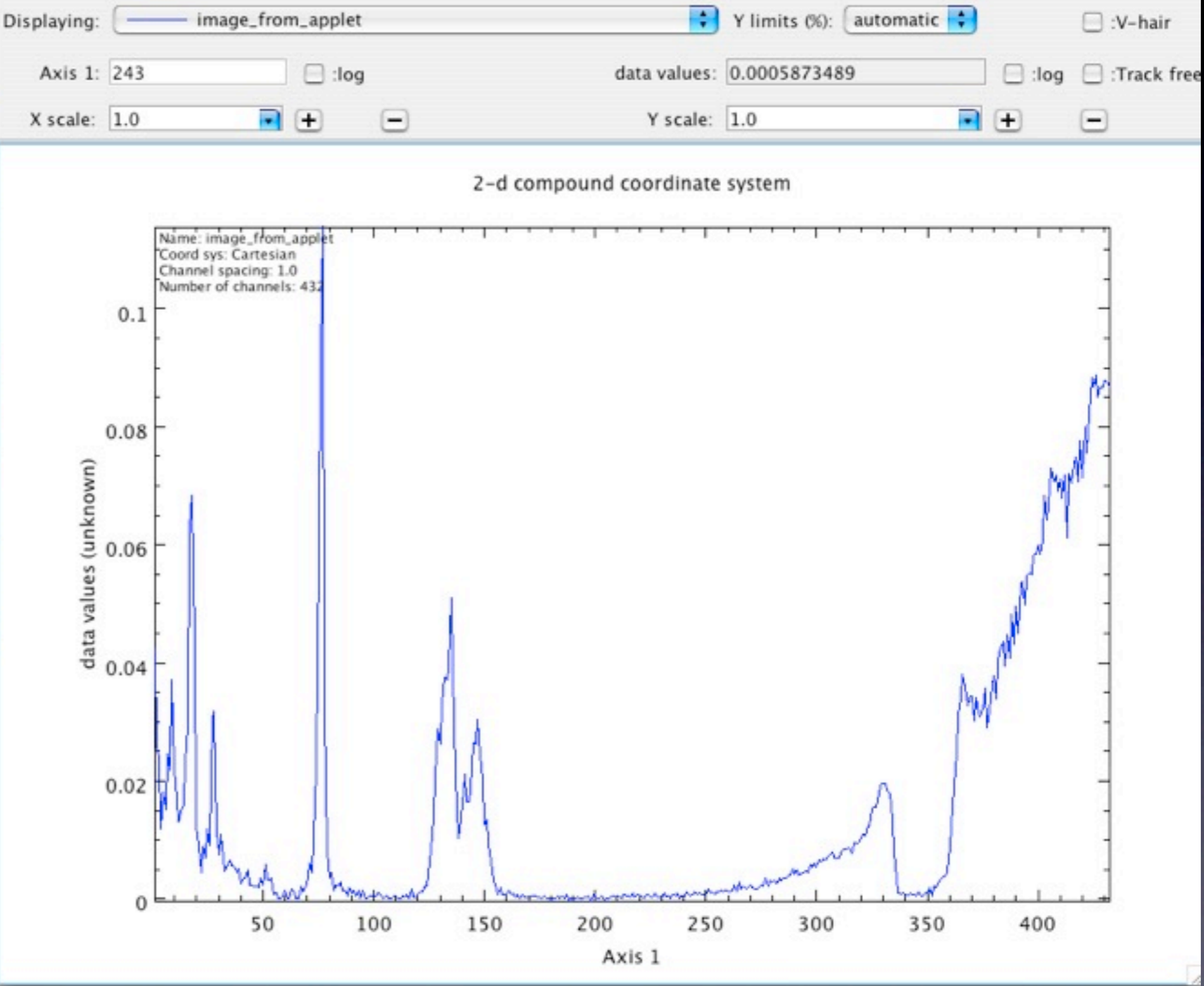
Applet obspm.SAMPdemo started

Starlink SPLAT-VO: <plot0>

Displaying: image_from_applet Y limits (%): automatic

Axis 1: 243 :log data values: 0.0005873489 :log :Track free

X scale: 1.0 Y scale: 1.0



Perspectives

- The applet can be embedded with HTML/JS in any portal, e.g. VizieR
- Think of direct data transfer in SAMP to avoid tmp files (~image.load.data) ?
- Ability for SPLAT to load a spectrum in place of existing one (“overwrite”)
- Unrelated: A WCS for planetary usage? (Aladin has a solar referential that we have tried, does not work for tables/catalogs)

Acknowledgements

Mark Taylor, Astrogrid, Univ Bristol

Thomas Boch, CDS, Strasbourg

Jonathan Normand, VOP-DC, Obs. Paris

Stéphane Erard, LESIA, Obs-Paris

and in advance for all the new testers...

PDS Up

http://localhost/samp/pds_upload.html

SAMP Applet PDS Upload

PDS Upload test form

Extract: image or spectrum

Slice: i= j= k=

Choose a file to upload (max size 1GB): no file selected

NB: If no file is selected, the next page will use a default one.

PDS Processor

http://localhost/samp/pds_processor.php

SAMP Applet PDS Processor

```

IDL Version 7.0, Mac OS X (darwin i386 m32). (c) 2007, ITT Visual Information Solutions
Unable to create directory: /Library/WebServer/.idl
Permission denied
Installation number: 501613.
Licensed for use by: Observatoire de Meudon

% Compiled module: PDSTOFITS.
This is pdstofits
called with
arg_pds=/tmp/upload/VI0072_05.CAL
arg_type=i
arg_i=      10
arg_j=      20
arg_k=      30
arg_fits=/Library/WebServer/Documents/tmp/test_www.fits
Reading PDS file /tmp/upload/VI0072_05.CAL
% Compiled module: VIRTISPDS.
% Compiled module: STR_SEP.
% Compiled module: V_HEADPDS.
Reading label /tmp/upload/VI0072_05.CAL
% Compiled module: V_PDSPAR.
% Compiled module: STRSPLIT.
% Compiled module: V_STR2NUM.
% Compiled module: V_READPDS.
% Compiled module: V_GETPATH.
% Compiled module: V_OBJPDS.
% Compiled module: V_POINTPDS.
% Compiled module: V_QUEPDS.
% Compiled module: V_LISTPDS.
% Compiled module: V_TYPEPDS.
% Compiled module: V_SWAPDATA.
% Compiled module: SWAP_ENDIAN_INPLACE.
Number of objects found:      3

% VIRTISPDS: File in use: /tmp/upload/VI0072_05.CAL
** Structure <2870604>, 8 tags, length=7080328, data length=7080326, refs=1:
  LABEL      STRING      Array[166]
  TABLE     FLOAT       Array[432, 64, 3]
  QUBE_NAME   STRING      Array[2]
  QUBE_DIM    LONG        Array[3]
  QUBE        FLOAT       Array[432, 64, 61]
  SUP_NAME    STRING      Array[3]
  SUP_DIM     LONG        Array[2]
  SUFFIX      UINT        Array[3, 61]
Creating new FITS header for image of size 64x61
Writing FITS image (with WCS) into FITS file
/Library/WebServer/Documents/tmp/test_www.fits
% Compiled module: WRITEFITS.
% Compiled module: CHECK_FITS.
% Compiled module: FXPAR.
% Compiled module: GETTOK.
% Compiled module: VALID_NUM.
% Compiled module: SXDELPAR.
% WRITEFITS: WARNING - An END statement has been appended to the FITS header
% Compiled module: SXPAN.

You can now visualize the file here

```

http://mac-rs.obspm.fr/samp/samp_applet.html?type=i&url=http://mac-rs...

SAMP Applet

Console

```
sendSAMPFITSFileFromURL calling sendSAMPFITSFile
Calling JSAMP
Creating message
Sending message
Done.
```

Controls

Click to

Click to create+send VOT via SAMP

Click to r

Web Start:(java installer)

Aladin Java:  Aladin.jnlp

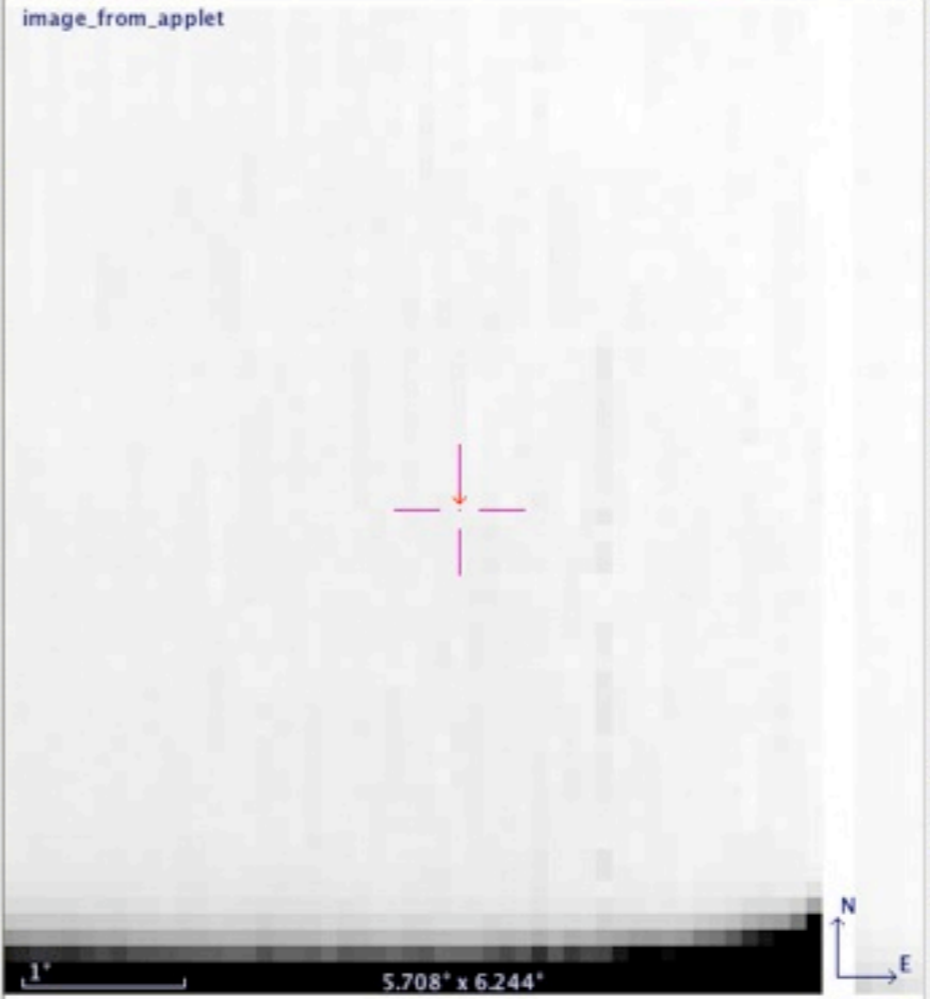
SPLAT: 

Applet obspm.SAMPDemo started

Aladin v6.0

Location ICRS Pixel 0.02767 full

image_from_applet



1" 5.708° x 6.244°

grid multiview match

Search

(c)1999-2009 Uds/CNRS - Centre de Donnees astronomiques de Strasbourg

0 sel / 0 src 1Mb

SAMP Applet

Console

```
SAMPSelectRowsHandler.processCall called
-table-id: grid0
-url: null
-rows selected:
1846, SAMPSelectRowsHandler.processCall called
```

Controls

Click to

Click to create+send VOT via SAMP


Click to r

Web Start:(java installer)

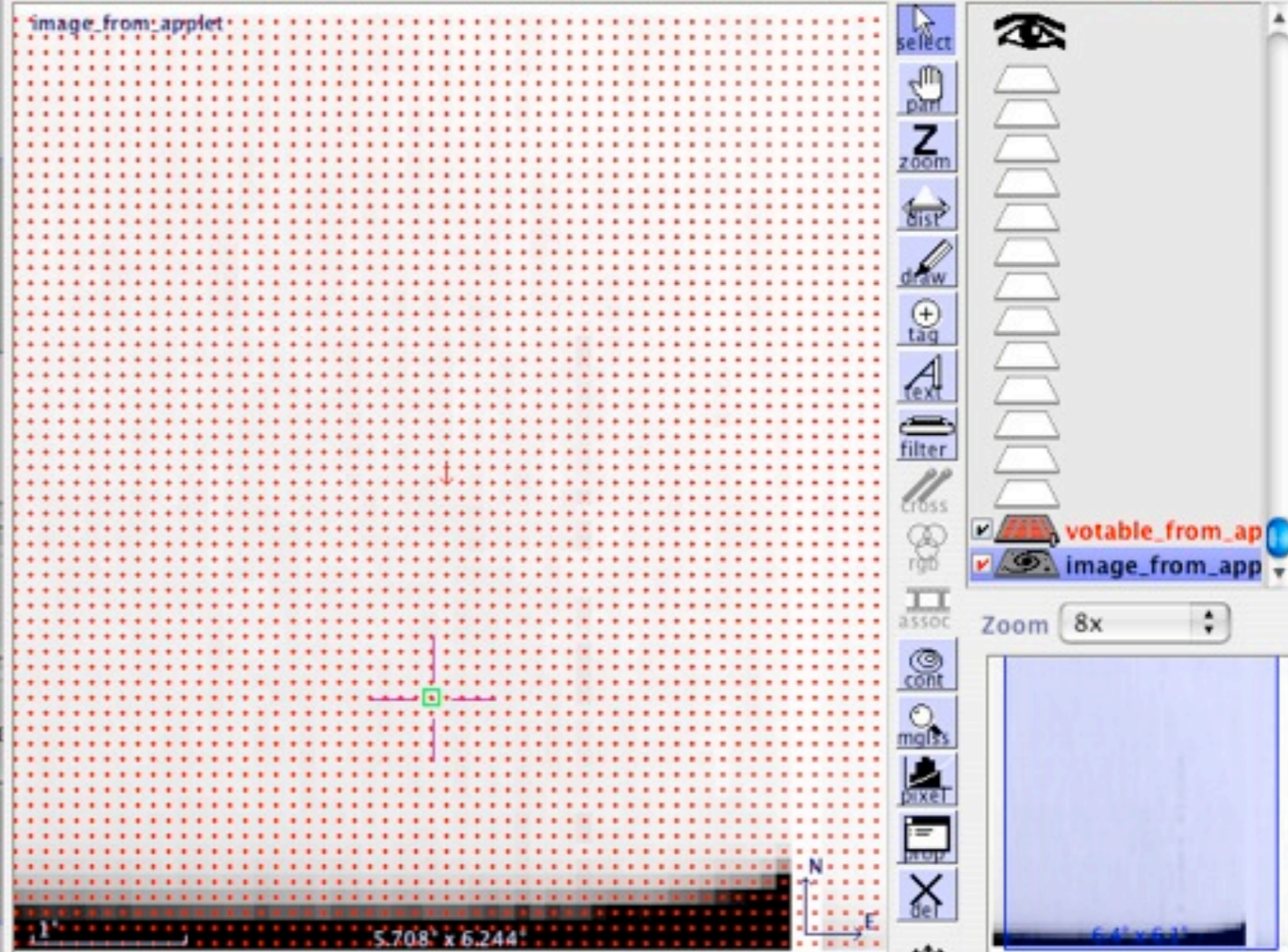
Aladin Java:  Aladin.jnlp

SPLAT: 

Aladin v6.0

Location ICRS Pixel 0.01866 full 

image_from_applet



select
pan
zoom
dist
draw
tag
text
filter
cross
rgb
assoc
cont
magn
pixel
help
del

Zoom 8x

Search

RA	DEC
179.90018	-1.3000008

1 sel / 3904 src 6Mb

Applet obspm.SAMPDemo started