

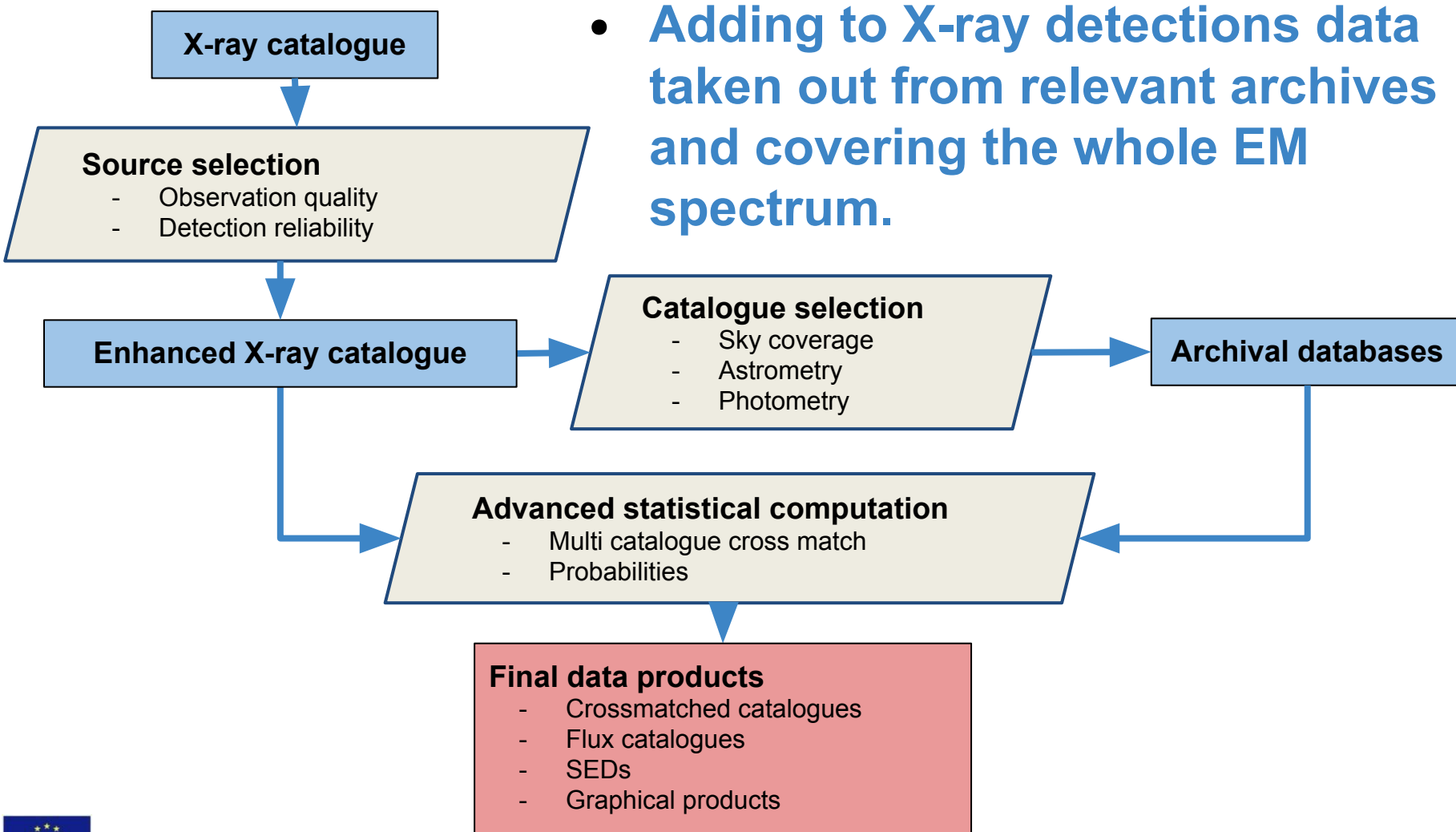
Arches Outreach

Laurent Michel - André Schaaff

SSC XMM-Newton / CDS

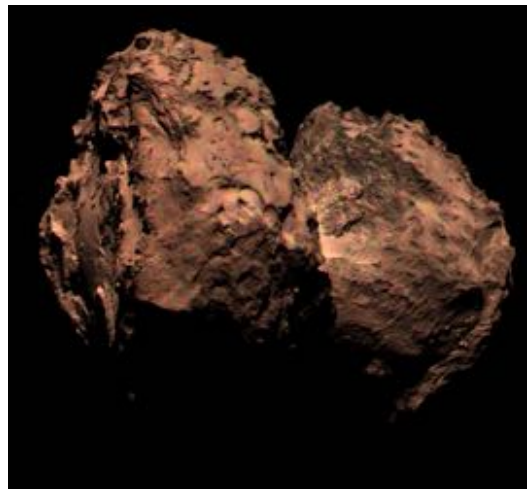
Observatoire de Strasbourg

Arches at a Glance



Talking about Astronomy: a pleasant job

- Just show nice pictures





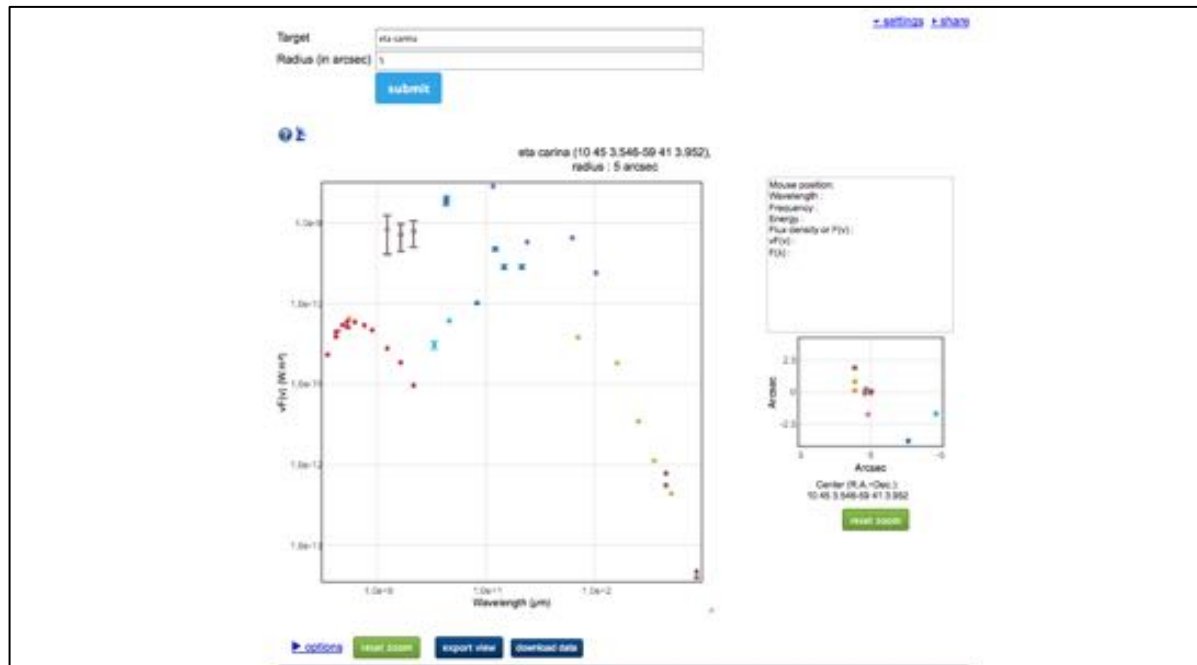
Talking about Astronomy: a pleasant job

- **And let people dream**



Talking about Arches: a ~ pleasant job

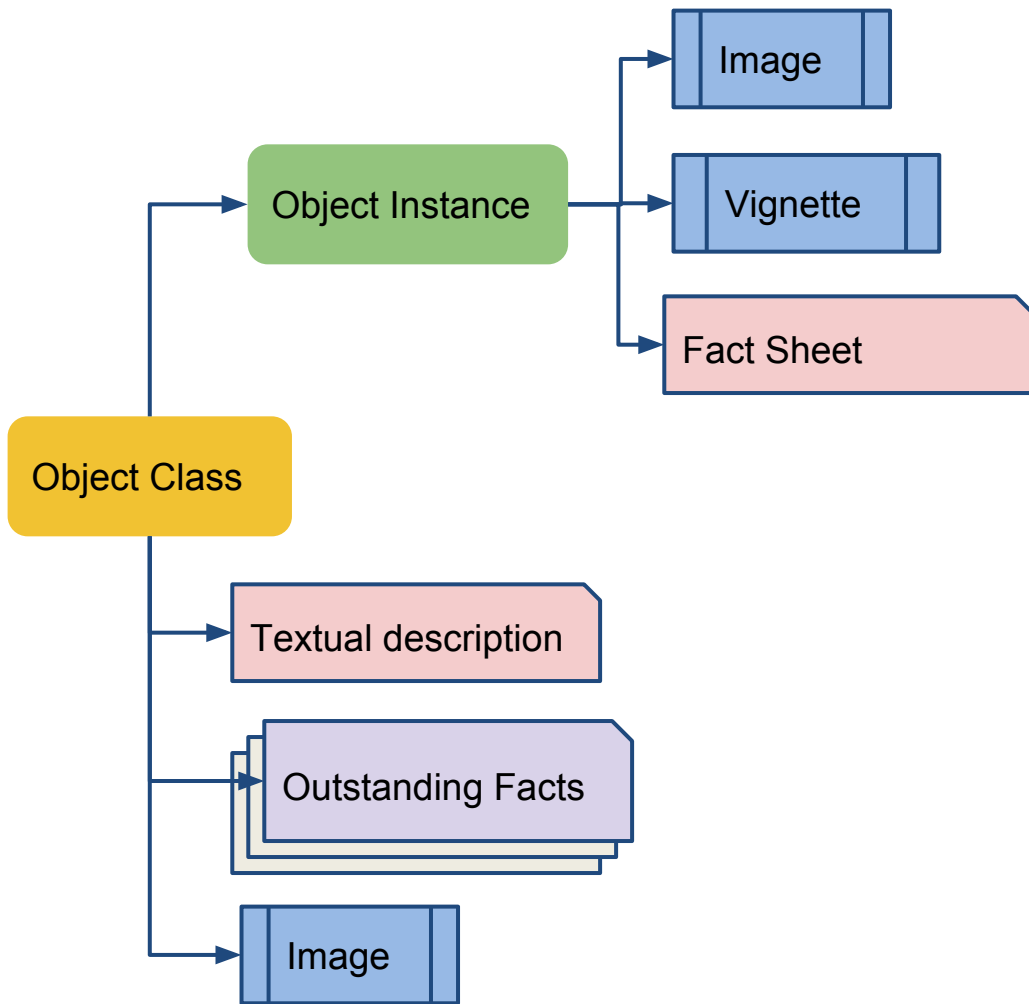
- **Goal & target**
 - Making SEDs attractive for a wide audience
 - Kids, general audience, students
- **Just show *nice* pictures**



Arches Walker at a Glance

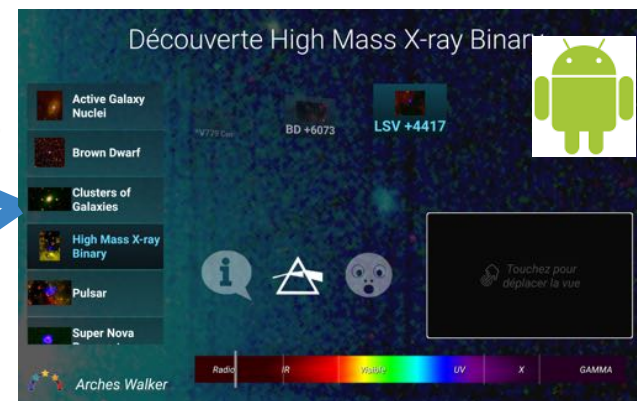
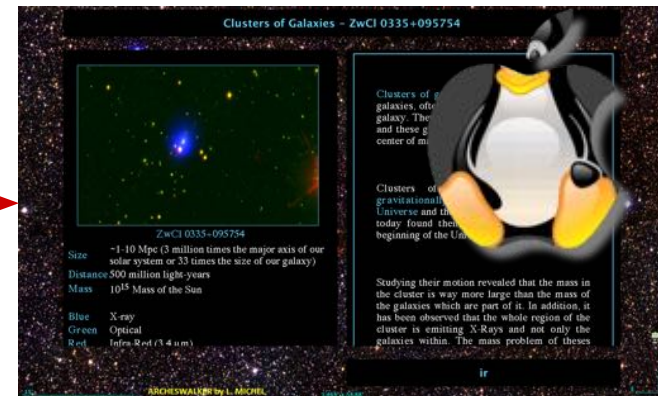
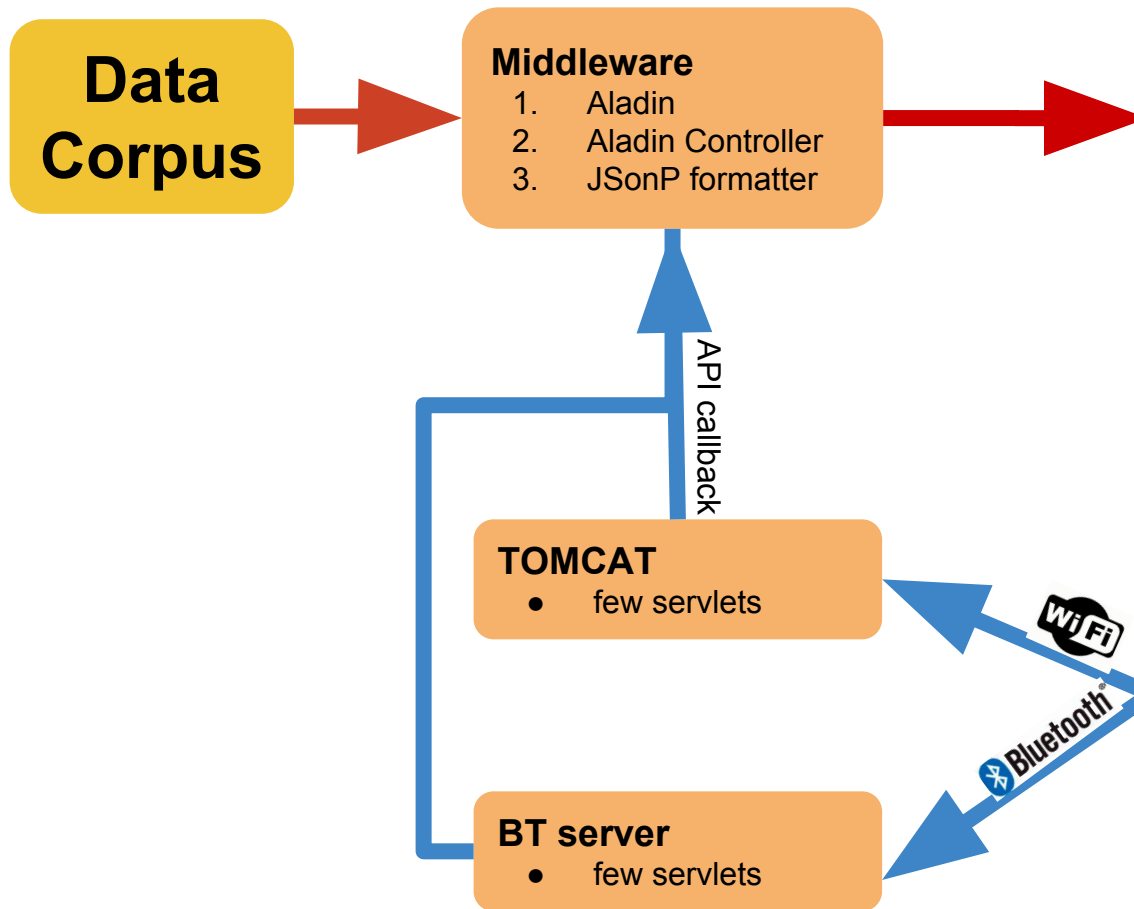
- **Building a data corpus**
 - A set of object relevant for the Arches sciences
 - Data sheets accessible to a large audience
- **Browsing the EM spectrum**
 - Using HIPs
- **Making it available through different media**
 - Post cards
 - ArchesWalker

Arches Walker, Data Corpus

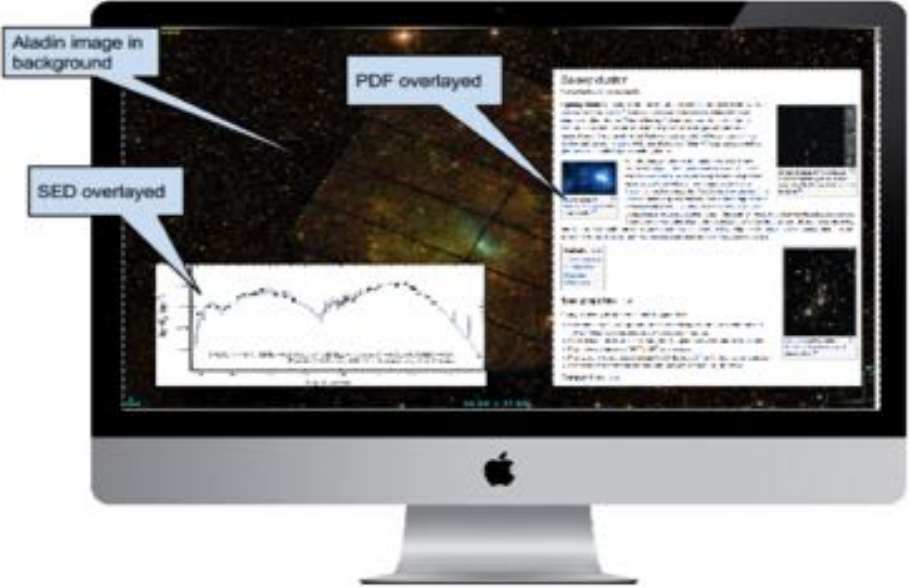


Arches Walker, Remote Control

Role reversal in a Web application
 Display controlled by Tomcat



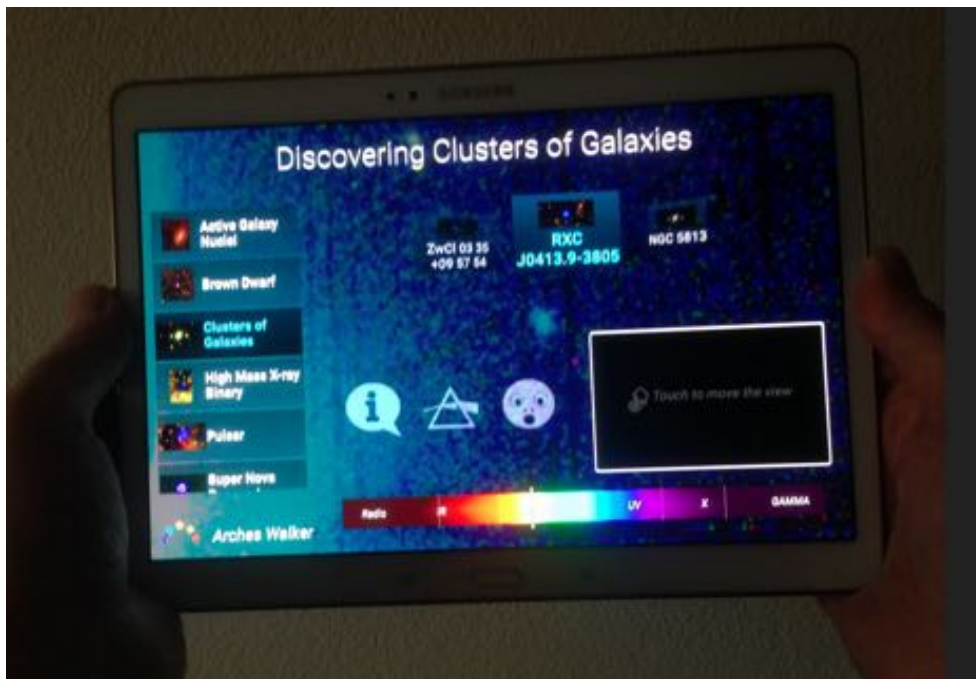
Demo



Demo: Get the table screenshot

Apps III- Wednesday 14:50– 15:30 - Großer Saal

Speaker	Title	Duration	Materials
Ivan Zolotukhin	VO-powered publication in Science magazine: discovery of the runaway mini-galaxies	12' + 3'	
Omar Laurino	The new Iris release	12' + 3'	
Laurent Michel	ArchesWalker	12' + 3'	Screenshot for the demo



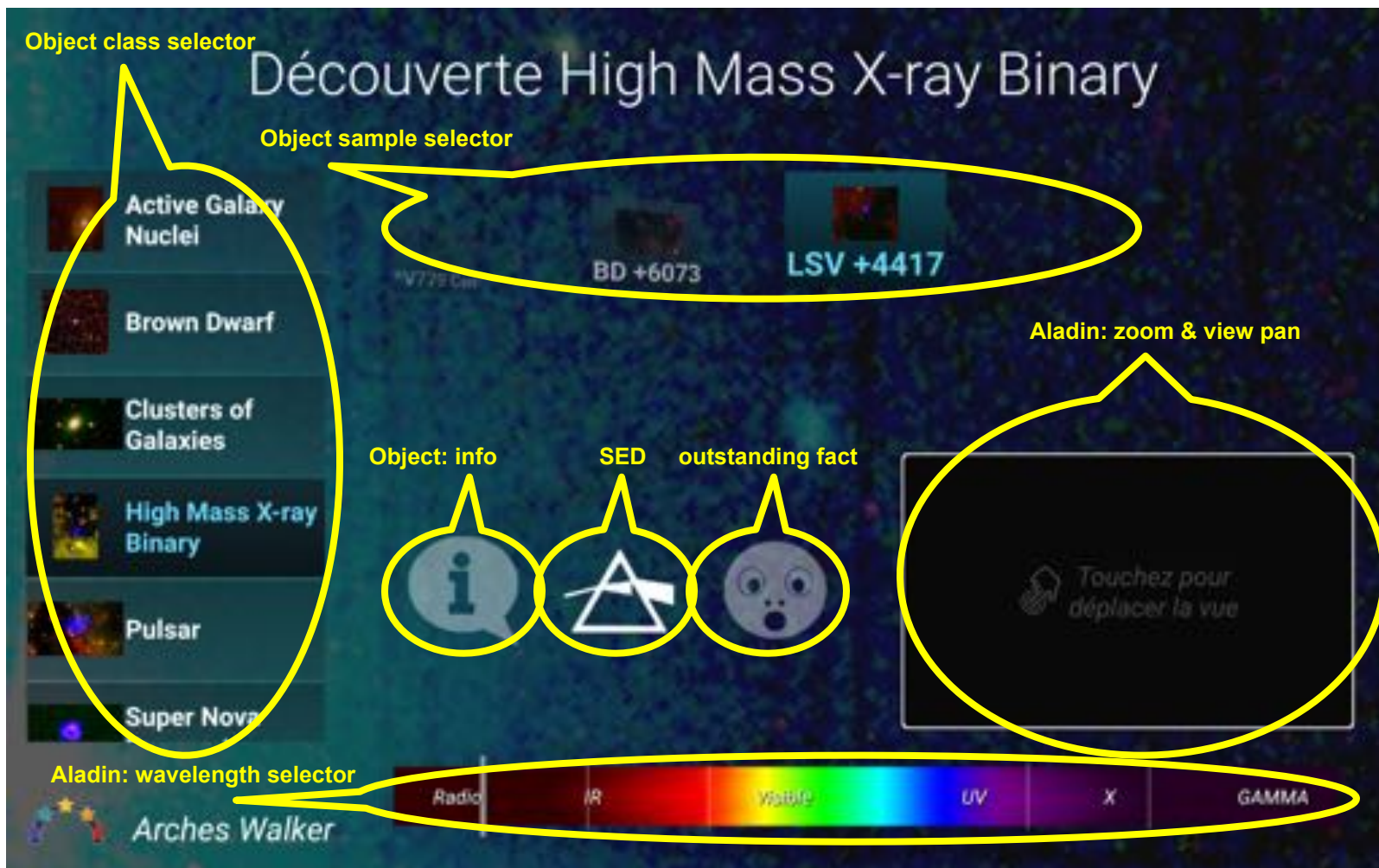
1. Selection of an object class (AGN, HMXB...)

- a. Getting a class description on demand
- b. Getting some outstanding fact about this class

2. Selection of some specific objects in the current class

- a. Getting a description of this object with a coloured composite image
- b. Getting a SED
- c. Browsing the neighbourhood of the object in various wavelengths.

Tablet panel



Object class selector

Découverte High Mass X-ray Binary

Object sample selector

Active Galaxy Nuclei

Brown Dwarf

Clusters of Galaxies

High Mass X-ray Binary

Pulsar

Super Nova

*V773 Ori

BD +6073

LSV +4417

Object: info

SED

outstanding fact

Aladin: zoom & view pan

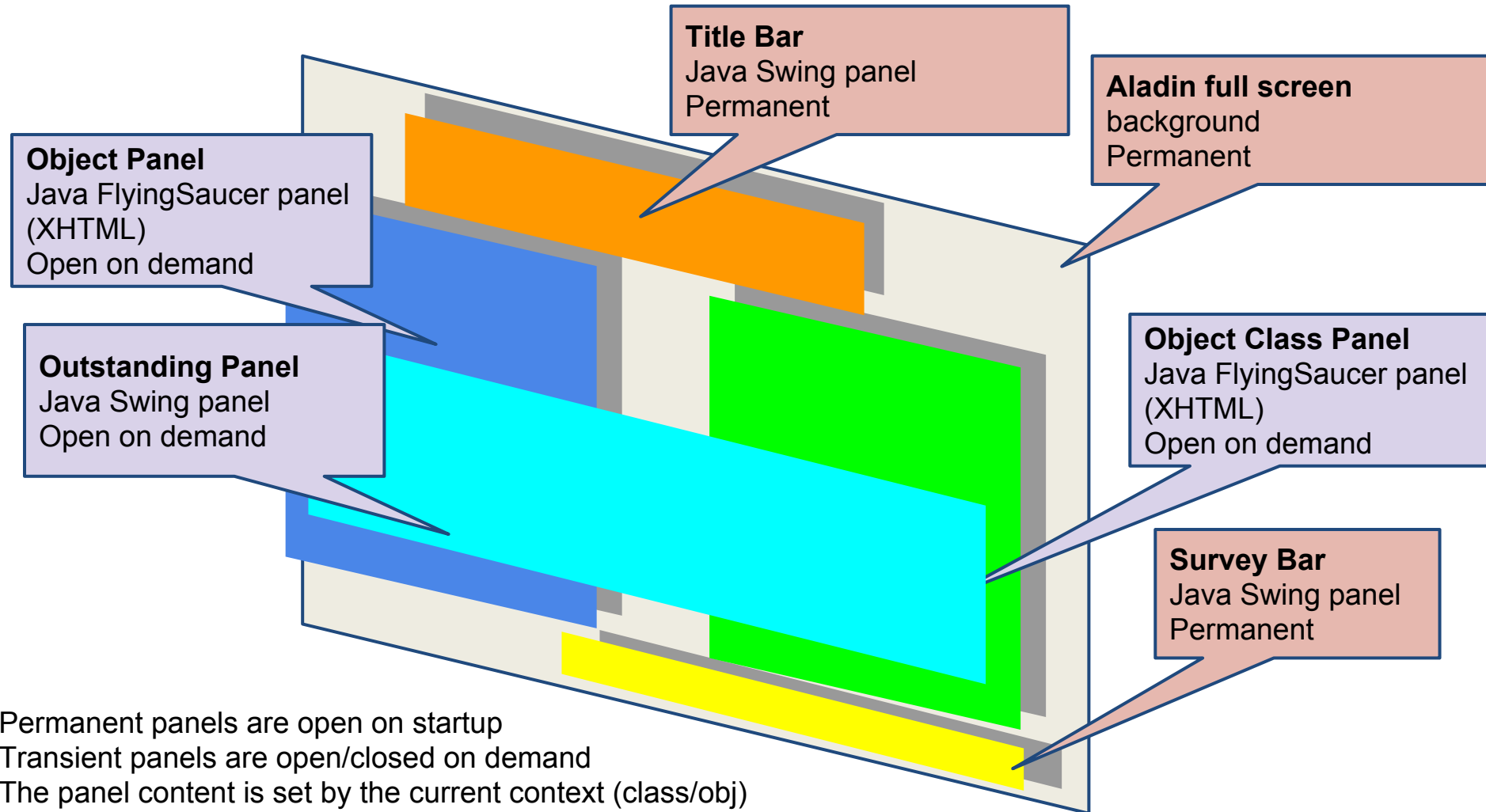
Touchez pour déplacer la vue

Aladin: wavelength selector

Radio IR Visible UV X GAMMA

Arches Walker

Arches Walker, Display Layout



Arches Walker, Implemented Commands

- Only 2 servlets
- Parameters are given by a basic parameter query language
 - `servlet?action=..&value=..&class=..&object=..`
- The low number of implemented commands denotes the simplicity of the tablet interface

Target	Action	Parameter(s)	Servlet
Aladin	move	increment	<code>./aladincontrol?action=move&...</code>
Aladin	zoom	increment	<code>./aladincontrol?action=zoom&...</code>
Aladin	band	value on an arbitrary range	<code>./aladincontrol?action=band&...</code>
Panel	show/hideDescription	class name (show)	<code>./panelcontrol?action=description&...</code>
Panel	show/hideObject	class + object name (show)	<code>/panelcontrol?action=object&...</code>
Panel	show/hideHugeness	class name (show)	<code>/panelcontrol?action=hugeness&...</code>
Panel	show/hideSed	class name (show)	<code>/panelcontrol?action=sed&...</code>

- **An issue almost as old as the printing business**
 - **Separating content from layout**
 - Applying the same layout to various content
 - Applying different layout the same content
 - **The content must remain easy to update**
 - **The layout must remain easy to edit**
- **Some standard solutions (non exhaustive)**
 - XSLT: need to go through XML documents
 - JSP: need to keep within the JEE framework
 - CMS: Need to keep within the CMS framework
- **JSON5: A format for the content**
 - Structured enough
 - Easy to edit by hand
- **XHTML A layout format**
 - Easy to display on either browser or on a Java panel (FlyingSaucer: <https://xhtmlrenderer.java.net/>)
 - Easy to parse (javax.xml. ...)

Arches Walker, JSONP mechanism

```

<body>
<div style="height: 300px; overflow: hidden">
</img>
</div>
<br/>
<table align="center">
<tr>
<td rowspan="3" class="firstcolumn">Quantities</td>

<td class="label"><json field="characteristics[0].label"/>
<td class="value"><json field="characteristics[0].value"/></td>
</tr>
<tr>
<td class="label"><json field="characteristics[1].label"/>
<td class="value"><json field="characteristics[1].value"/></td>
</tr>

```

Environment variable

New HTML tag

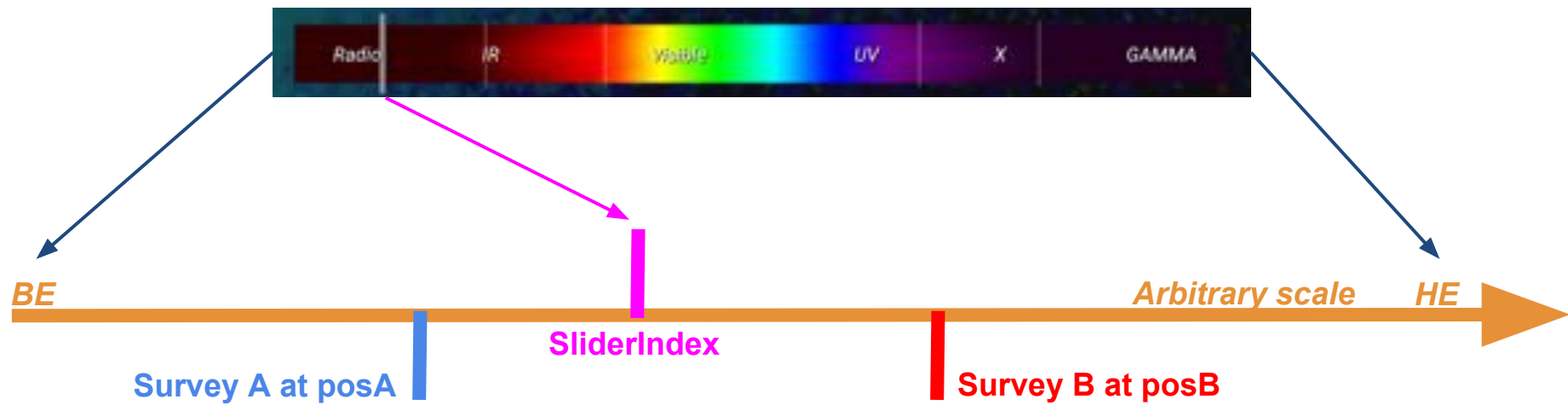
```

{
  title: "LP 944-20",
  caption: "LP 944-20",
  characteristics: [
    {label: "Mass", value: "Inferior to 0.8 Mass of the Sun"},
    {label: "radius", value: "~ 0.1 Radius of the Sun"},
    {label: "Density", value: "800 Density of the Sun"},
  ],
  surveys: [
    {label: "Red", value: "Infra-Red (4.6 &#181;m)"},
    {label: "Green", value: "Infra-Red (3.4 &#181;m)"},
    {label: "Blue", value: "X-ray"},
  ],
}

```

JSON5 data file

Arches Walker, Managing the transparency



Toward HE

SurveyA as background
 SurveyB in foreground
 with Transparency = $(\text{posB} - \text{SliderIndex}) / (\text{posB} - \text{posA})$

SurveyB as background
 SurveyA in foreground
 with Transparency = $(\text{posA} - \text{SliderIndex}) / (\text{posB} - \text{posA})$

Toward BE

Arches Walker, Survey List

```
"hips": [  
  {  
    "rank": 8,  
    "name": "Haslam",  
    "label": "Haslam 488Mhz_reprocessed",  
    "url": "http://alasky.u-strasbg.fr/Haslam408_2014",  
    "dirname": "Haslam"  
  },  
  {  
    "rank": 16,  
    "name": "NVSS",  
    "label": "NVSS intensity maps (1.4GHz)",  
    "url": "http://alasky.u-strasbg.fr/NVSS/intensity/",  
    "dirname": "NVSS"  
  },  
  {  
    "rank": 32,  
    "name": "PLANCKLFI",  
    "label": "PLANCK LFI color composition 30-44-70 GHz",  
    "url": "http://alasky.u-strasbg.fr/PLANCK/LFIcolor30-44-70",  
    "dirname": "PLANCKLFI"  
  },  
  {  
    "name": "GALEX",  
    "label": "GALEX Allsky Imaging Survey (AIS) colored 0.14-0.27 um",  
    "url": "http://alasky.u-strasbg.fr/GALEX/GR6-03-2014/AIS-Color",  
    "dirname": "Galex"  
  },  
  {  
    "rank": 230,  
    "name": "XMM",  
    "label": "XMM PN colored",  
    "url": "http://saada.unistra.fr/xmmpnsky",  
    "dirname": "XMM"  
  },  
  {  
    "rank": 277,  
    "name": "Fermi",  
    "label": "Fermi color",  
    "url": "http://alasky.u-strasbg.fr/Fermi/Color",  
    "dirname": "Fermi"  
  }  
]
```

Minimum Scale

Survey position on the scale

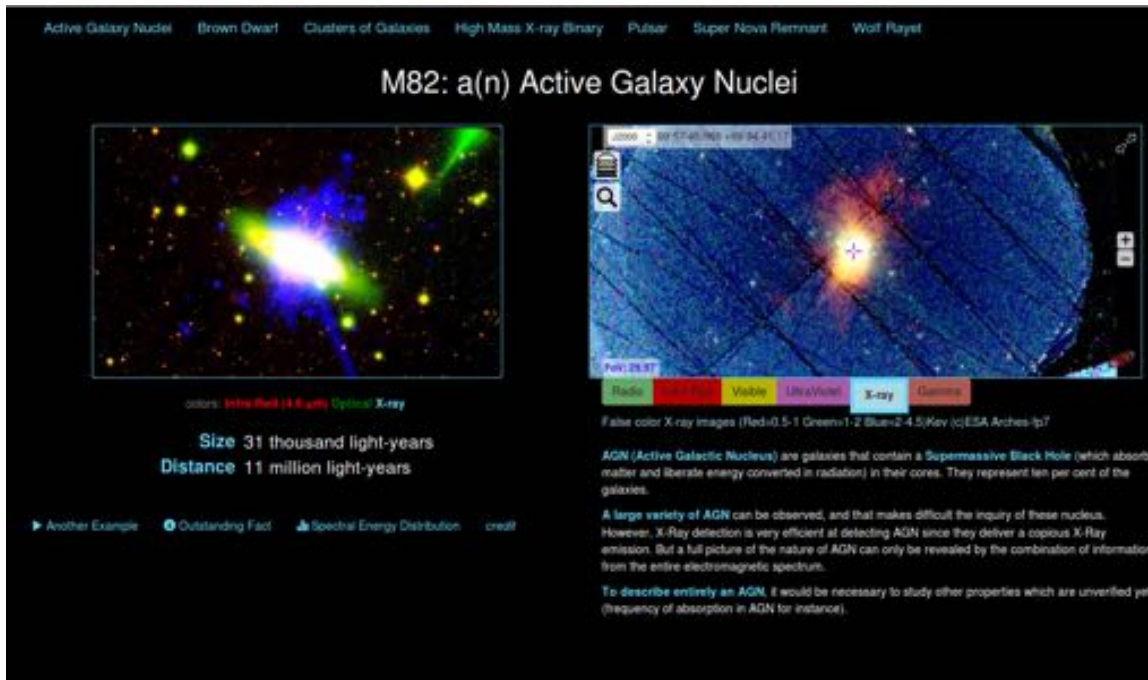
Survey description for Aladin

Directory of the local survey

Maximum Scale


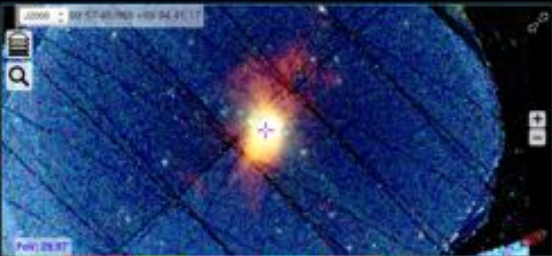
Arches Walker on the Web

- Making the data corpus available through a web application
 - Browsing a sample of objects
 - Explore different wavelength bands



Active Galaxy Nuclei | Brown Dwarf | Clusters of Galaxies | High Mass X-ray Binary | Pulsar | Super Nova Remnant | Wolf Rayet

M82: a(n) Active Galaxy Nuclei

Colors: Infra-Red (4.6 μm), Optical, X-ray

Size: 31 thousand light-years
Distance: 11 million light-years

▶ Another Example | 📌 Outstanding Fact | 📈 Spectral Energy Distribution | 🗨️ create

False color X-ray images (Red=0.5-1 Green=1-2 Blue=2-4.5)Key (c)ESA Arches-tp7

AGN (Active Galactic Nucleus) are galaxies that contain a Supermassive Black Hole (which absorbs matter and liberate energy converted in radiation) in their cores. They represent ten per cent of the galaxies.

A large variety of AGN can be observed, and that makes difficult the inquiry of these nucleus. However, X-Ray detection is very efficient at detecting AGN since they deliver a copious X-Ray emission. But a full picture of the nature of AGN can only be revealed by the combination of information from the entire electromagnetic spectrum.

To describe entirely an AGN, it would be necessary to study other properties which are unverified yet (frequency of absorption in AGN for instance).

[Prototype online](#)