

The background of the slide is a visualization of a dataset. It features a dark field with numerous small, semi-transparent squares in green, purple, and pink. A blue line forms a large triangle that encloses a significant portion of the data points. In the center of this triangle, there is a dense cluster of pink squares. On the right side of the image, there are three small, light-colored rectangular buttons stacked vertically, which appear to be part of a software interface.

**ALiX**

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# Use Cases and Features

- **A Tool Using Aladin Lite as Catalogue Portal**
  - Using a sky view as primary selection tool
  - What You Get Is What You See
- **Expected Features**
  - Automatic display of the catalogue sources covering the current view
  - Easiness to mix VO resources with local data
  - View annotation

# Challenges

- **No Dependency to a Particular Data Source**
  - Flexible connection interface
  - Aladin Lite view automatically supplied with catalogue sources
- **Easiness of the VO Resources Selection**
  - More intuitive than HTML forms
- **Preventing to Overload Aladin Lite**
  - Must support access to very high density resources
    - Dense catalogue
    - Crowded area

# Data Workflow

CDS MOC server

Text query

HiPS Image Server(s)

List of resources covering the current field of view

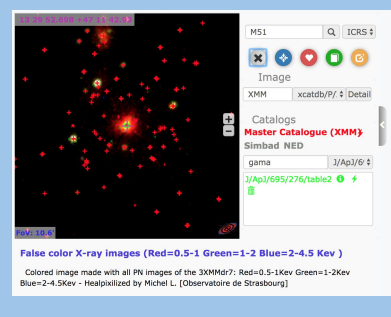
VizieR

Field of View

## ALiX

Data

Javascript widget based on Aladin Lite



Simbad

NED

User control (JS API)

Sources in the current field of view

Field of View

JS Code

Database

Backend: the database interface hosting ALiX

# Snapshot

13 29 52.698 +47 11 42.93

M51

ICRS

Image

XMM xcatdb/P/. Detail

Catalogs

**Master Catalogue (XMM)**

Simbad NED

gama J/ApJ/6

J/ApJ/695/276/table2

FoV: 10.6'

## False color X-ray images (Red=0.5-1 Green=1-2 Blue=2-4.5 Kev )

Colored image made with all PN images of the 3XMMdr7: Red=0.5-1Kev Green=1-2Kev Blue=2-4.5Kev - Healpixilized by Michel L. [Observatoire de Strasbourg]

# Backend Control

The interface displays a heatmap of a celestial region with a central bright yellow/orange area and surrounding red and green pixels. Several green and red crosses mark specific points. At the top left, coordinates '12 24 54.323 +12 51 23.63' are shown. At the top right, a search bar contains '186.2415,12.881', a search icon, and a dropdown menu set to 'ICRS'. Below the search bar are five circular icons: a grey 'X', a blue compass, a red heart, a green document, and an orange edit icon.

```
location :{
  url : 'http://saada:8080/ThreeXMMdr5/getqueryreport?query=Select%20ENTRY%20From%20...',
},
radiusUnit : 'arcmin',
format : 'votable',
label : "Master Catalogue (XMM)",
description: "Beautiful catalogue",
associe_data : {name:'',
  url : 'http://xcatdb.unistra.fr/3xmmdr5//getarchesdetail/acdslinks?oid={$oidsaada}',
  id : '',
  format : {},
  label:"ACDS Sources",
  description: "Texte plus complet qui donne plus d'informations"
},
},
```

*Backend conn. setup*

FoV: 3.14'

oidsaada	namesaada	pos_ra_csa	pos_dec_csa	healpix_csa	error_maj
581249378845717589		186.24076913694	12.884805038233	7280562368	2.14866944 4

Resource Show Detail

- fade +

# Backend Control

- **Update each time the Aladin Lite field of view is changed**
  - Query template update
  - Run and display (VOTable or JSON)
  - The volume of the data to be displayed is limited by the size of the view (1deg max)
- **Control on the Catalogue Source Display**
  - Source parameters returned by the server can be displayed
  - Automatic refresh can be suspended
  - Flashing mode allowing to retrieve sources in a crowded view

# Connection with the Backend

- **Connection**

- Open at starting time
- Data source must be enclosed in a GET requests
- Data sources are described with an URL template

```
SELECT * FROM my.local.catalogue
WHERE CONTAINS(POINT('ICRS', ${RA}, ${DEC}),
              CIRCLE('ICRS', ${FOV}, ${RA}, ${DEC})) = 1
```

- **Possibility of fetching additional data**

- Multiple detections or any sort of associated sources
- Textual data
- Declared with a URL template referring a particular source parameter

```
http://xcatdb.unistra.fr/...../acdslinks?oid=${oidsaada}&mode=aladinlite
```



# Accessing VO Resources

- **List of available resources supplied by the MOC server**

- Search engine like
  - The list of matching resources is updated while keywords are typed in the search bar.

```
http://alaska.unistra.fr/MocServer/query?  
RA=23.4621&DEC=30.6599417&SR=2.8927120236021113  
&fmt=json&get=record&casesensitive=false  
&publisher_id,creator_did,publisher_did,obs_id,obs_title,obs_regime=*UV*
```

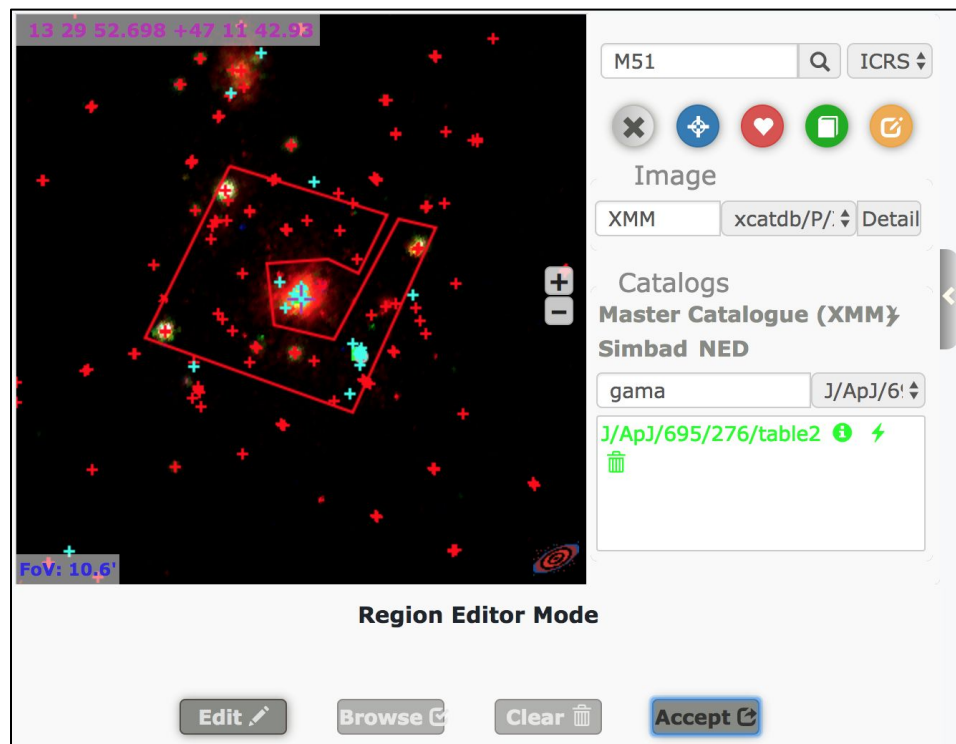
- Only resources covering the current field of view are listed.
- Keyword typed by the user are applied (OR) to a fixed fields selection
  - No selection by field

- **Available Datasets**

- Any catalogues and images declared in the HiPS network
- Simbad
- NED

# Region Editor

- **Handler is called when the polygon is closed**
  - Given at init time
  - Can be used to set up a query by REGION
  - Can be used to download data enclosed in the polygon



# Footprint Display

- **Footprint Display**

- Drawn from the API
- Not editable
- Mark for the edges of a cutout

13 30 26.504 +47 11 12.77

M51   ICRS

Image

XMM

Catalogs

Master Catalogue (XMM)

Simbad NED

gama

J/ApJ/695/276/table2

FoV: 51.37'

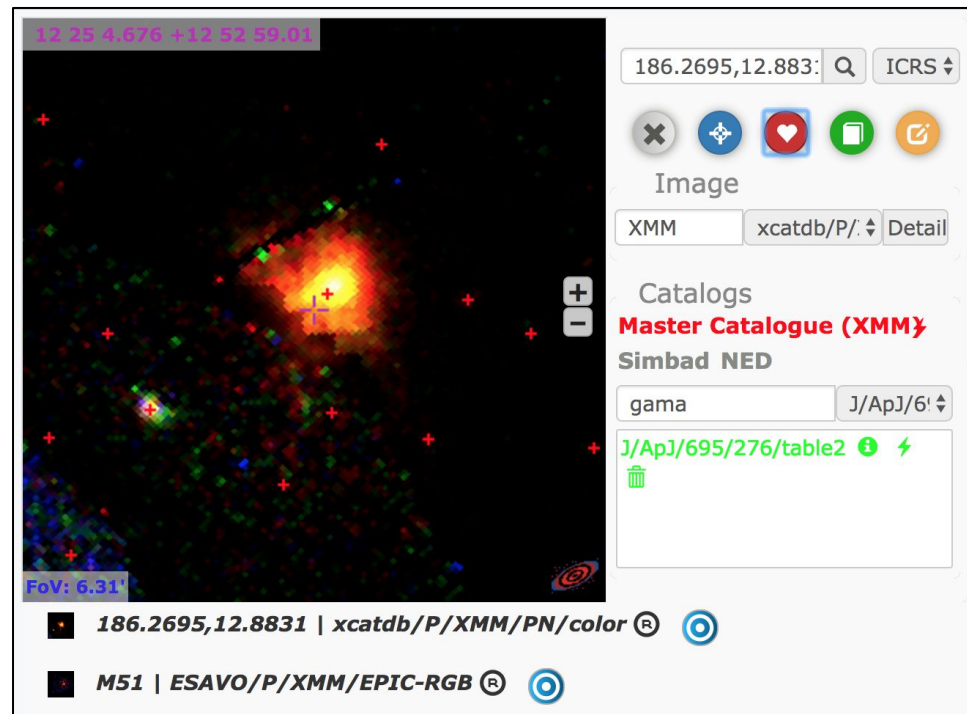
# Bookmark Management

- **Views can be bookmarked**

- Persistent over the current session
- Can be restored in Aladin Lite
- Can be exported as a snapshot

- **Bookmark content**

- Current field of view
- Background image
- Backend sources
- Footprint
- All catalogues
- Polygonal region
- Annotation
- PNG screenshot



# API

- **The Regular Aladin Lite API is Wrapped in the ALiX API**
  - Remains available
  - Warning: some Aladin Lite functions are overloaded
- **Documented Controls**
  - Reference position: where you go back when you click on “Center”
  - Current view: center and size
  - Footprint marker: Polygon as a string
  - Popup state: open/close while keeping the session

# TAP Connection (not implemented yet)

- **Resource selection**

- Done outside of ALiX (TapHandle)
- Connection controlled by the API
  - TAP service endpoint
  - TAP\_SCHEMA record + filtering parameter

- **Query management**

- Similar to the link with the backend
- URL patterns (pos, filtering parameter)
- Emulation of progressive catalogues

```
SELECT TOP 1000 t.*  
FROM table t  
WHERE CONTAINS(POINT('ICRS', t.ra, t.dec),  
                CIRCLE('ICRS', 23.462083, +30.659917, 0.0166)) = 1  
ORDER BY mag desc
```

# Next Steps

- **4XMM SSC database implementation**
  - Making AliX the main search tool for the database
- **Connection with TAP resources**
  - Using URL templating to make TAP resources progressive
  - Integration to TapHandle
- **Packaging and publication on GitHub**
- **5 months internship starting in Sept 2018**

**FINI**