

Aladin planetarium control experience, lessons learnt

François Bonnarel, Sébastien Derriere, Pierre Fernique, André Schaaff
Centre de Données astronomiques de Strasbourg

Arnaud Steinmetz
E.N.S.I.I.E. Strasbourg

Milène Wendling, Benjamin Rota
Jardin des Sciences, Université de Strasbourg

Application Session 1
IVOA, Trieste, 2016





□ Outline

Context: Aladin & Planetarium

From the screen to the dome

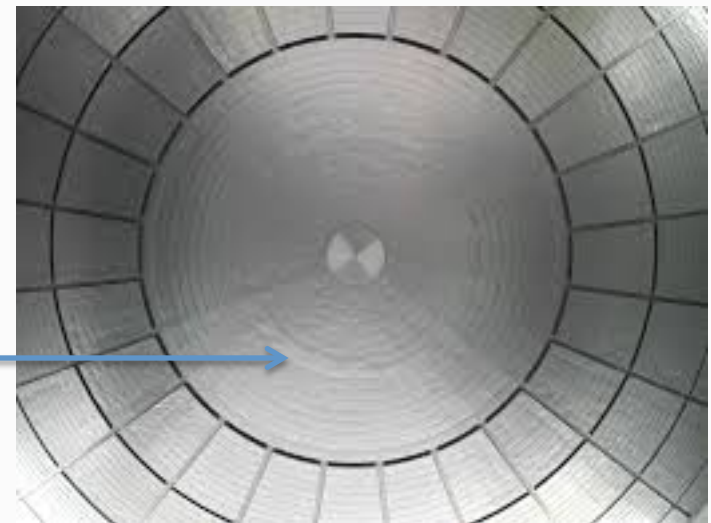
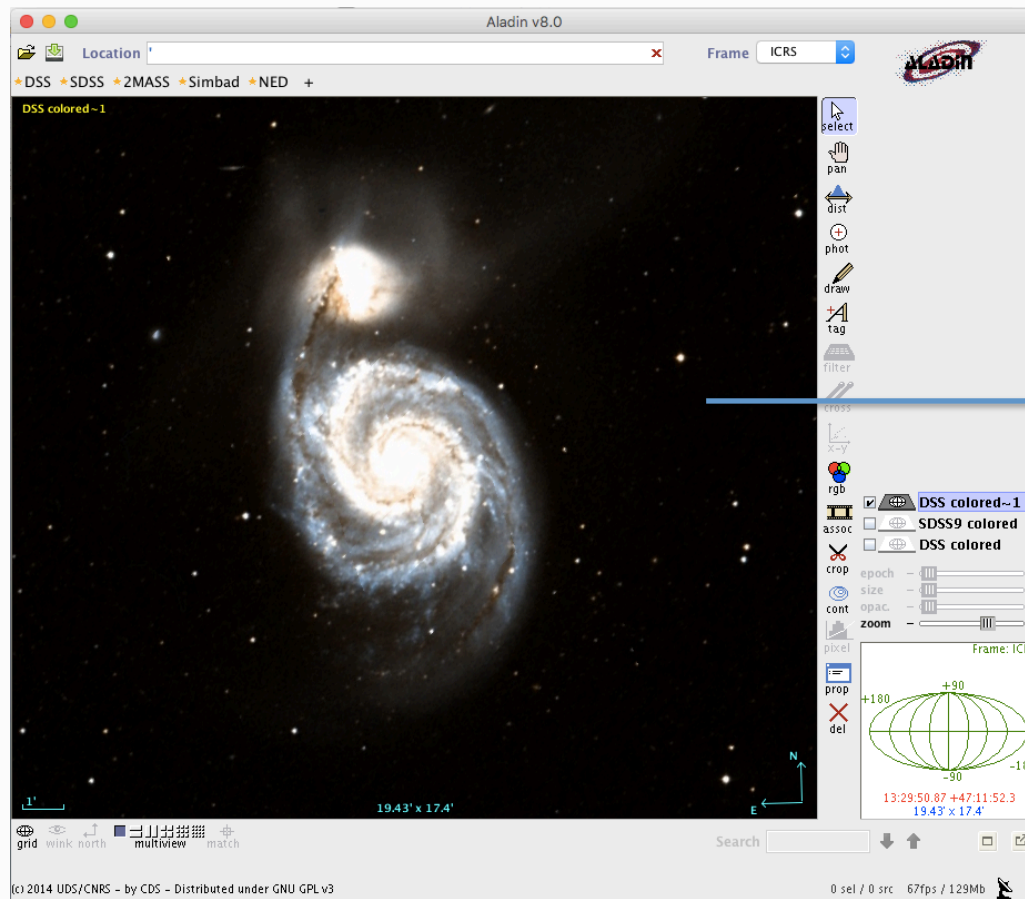
Experiments / lessons learnt

Planetarium plugin

Melting-pot of illustrations

Perspectives

□ Aladin



Experiments processed with
a standard laptop

□ Planetarium

- Diameter of the dome (half sphere): 8.20m
- Barco F50 2560*1600 pixels
- Immersive adventure fisheye



□ From the screen to the dome

- How to display Aladin HiPS surveys on the dome ?
 - The “fisheye” projection we use is actually the ARC (zenithal equidistant) projection.
 - In this projection angular distances to the zenith are conserved.
 - Well adapted to projection on the sphere for this.

□ Experiments

- Not easy to manipulate in the dark...
- Aladin was displayed on the dome, we encountered problems to manipulate it easily (no display and control capability on the laptop side).
- The result was not too bad but the projection was not perfect.
- Motion was not smooth.

□ Lessons learnt

- Control
 - Remote device (tablet, smartphone, ...) ?
 - **Through a Plugin displayed on the laptop ?**
- Improvement of the projection
- Zoom in
 - The projection is working for the half sphere visualization but a “zoom in” provides a distortion of the display which involves to change the projection on the fly.
 - An appropriate scale (=zoom) factor has to be applied to the angular distance instead of rectangular zoom.

□ Lessons learnt (2)

- Aladin side
 - Script command “goto <target>” (e.g. goto M31)
 - Zoom out, smooth motion to the target, zoom in to focus on the target
 - Decreasing, during the motion, of the time between 2 views (average of 40ms, better with 20ms but the size of the projection implies a jerky motion)
 - “cinema” mode to switch to the fisheye view (without menus and widgets)
 - “function” script to create and save scenarios

☐ Planetarium plugin

The screenshot shows the Aladin Controller interface. At the top, there is a menu bar with "Scenario", "Display", "Settings", and "Help". Below the menu bar, there are two tabs: "Console" and "Editor". The "Console" tab is active and contains the following commands:

```
P/DSS2/color=get hips(P/DSS2/color);  
cview P/DSS2/color  
P/allWISE/color=get hips(P/allWISE/color);  
cview P/allWISE/color  
P/IRIS/color=get hips(P/IRIS/color);  
cview P/IRIS/color  
P/GALEXGR6/AIS/color=get hips(P/GALEXGR6/AIS/color);  
cview P/GALEXGR6/AIS/color
```

To the right of the console, there is a text area containing the following text:

DSS2 optical HEALPix survey, c
AllWISE color (Red=W4, Green:
IRAS-IRIS HEALPix survey, col
GALEX GR6 AIS (until March 20

Below the console, there is a "Send" button. Below the "Send" button, there is a "Main Survey" section. This section contains a row of buttons: "DSS2", "Mellinger", "allwise", "Iris", "Glimpse", and "GaleX". Below these buttons, there is a "Radio" dropdown menu and a "Scenario :" label. The "Radio" dropdown menu is currently set to "Radio" and contains the following options:

- PLANCK HFI color composition 353-545-857 GHz
- PLANCK LFI color composition 30-44-70 GHz
- PLANCK R2 HFI color composition 353-545-857 GHz
- PLANCK R2 LFI color composition 30-44-70 GHz

□ Planetarium plugin (2)

The screenshot displays the Aladin Controller interface. At the top, the title bar reads "Aladin Controller". Below it, a menu bar includes "Scenario", "Display", "Settings", and "Help". The main window is divided into several sections:

- Console/Editor:** A tabbed interface with "Main Info" and "Code" tabs. The "Main Info" tab contains fields for "Name:", "Param:", "Type:" (set to "Scenario"), and "Description:". A "Create Function" button is located below these fields.
- Core:** A list of functions including addcol, backup, bitpix, blink, call (highlighted), cm, cmoc, collapse, conv, contour, coord, copy, ccat, cview, and call.
- Code:** A text editor showing the definition of the "call" function:

```
#NAME#
_call_ - script function call

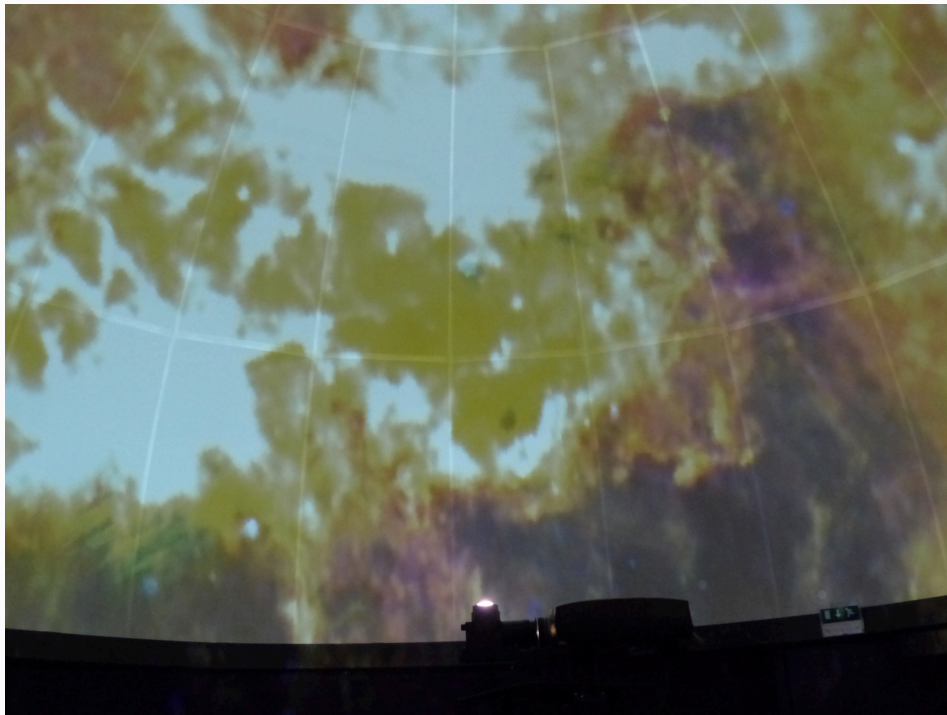
#SYNOPSIS#
call fonctionName[(param,...)]

#DESCRIPTION#
For calling a script function previously defined via the
@function command

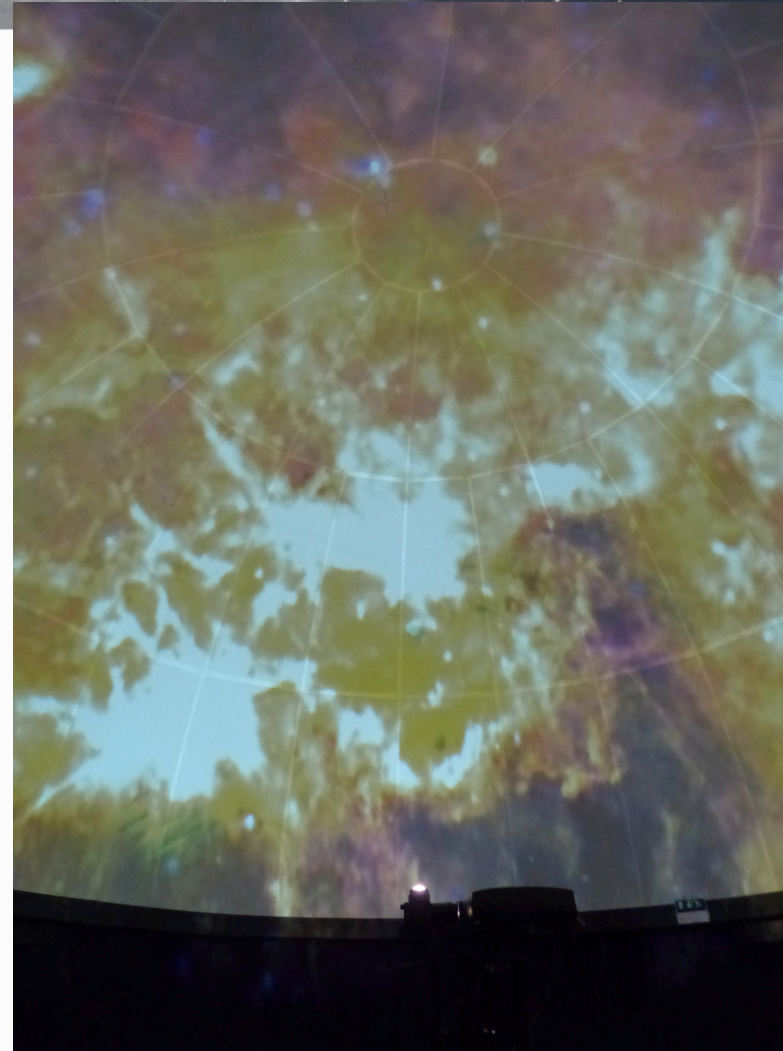
#EXAMPLE#
call data(m1)

#SEE# #ALSO#
@function, @list, @setconf
```
- Right Panel:** A list of scenarios including "AllWISE color (Red=W4, Green=W2, Blue=W1)", "GLIMPSE360: Spitzer's Infrared Milky Way", and "GALEX GR6 AIS (until March 2014)- Color composition".
- Main Survey:** A section with buttons for "DSS2", "Mellinger", "allwise", "Iris", "Glimpse", and "Galex".
- Radio:** A dropdown menu with a list of scenarios: "PLANCK HF1 color composition 353-545-857 GHz", "PLANCK LF1 color composition 30-44-70 GHz", "PLANCK R2 HF1 color composition 353-545-857 GHz", and "PLANCK R2 LF1 color composition 30-44-70 GHz".
- Scenario:** A large text area for defining the selected scenario.

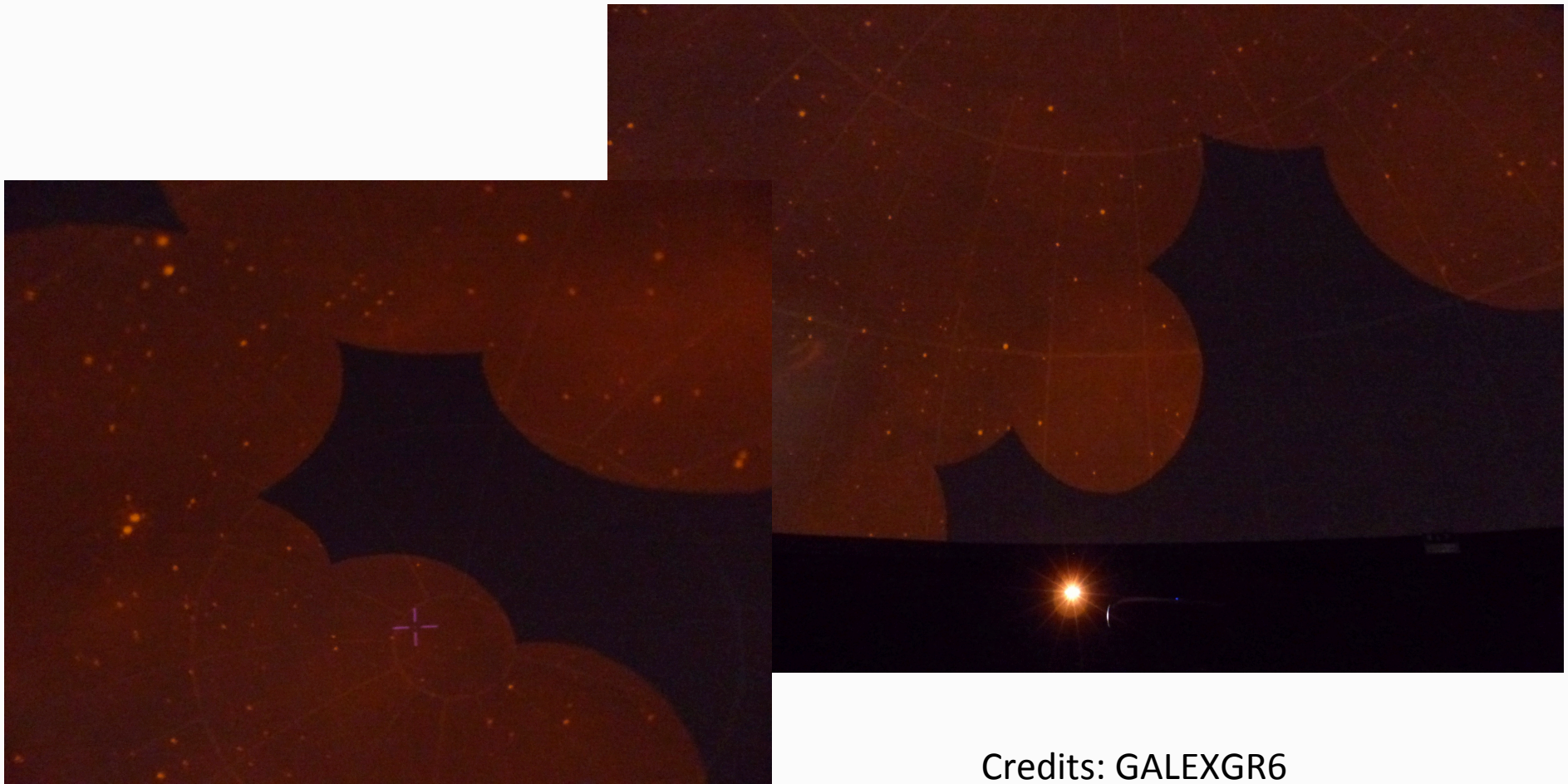
□ Melting-pot of illustrations



Credits: IRIS

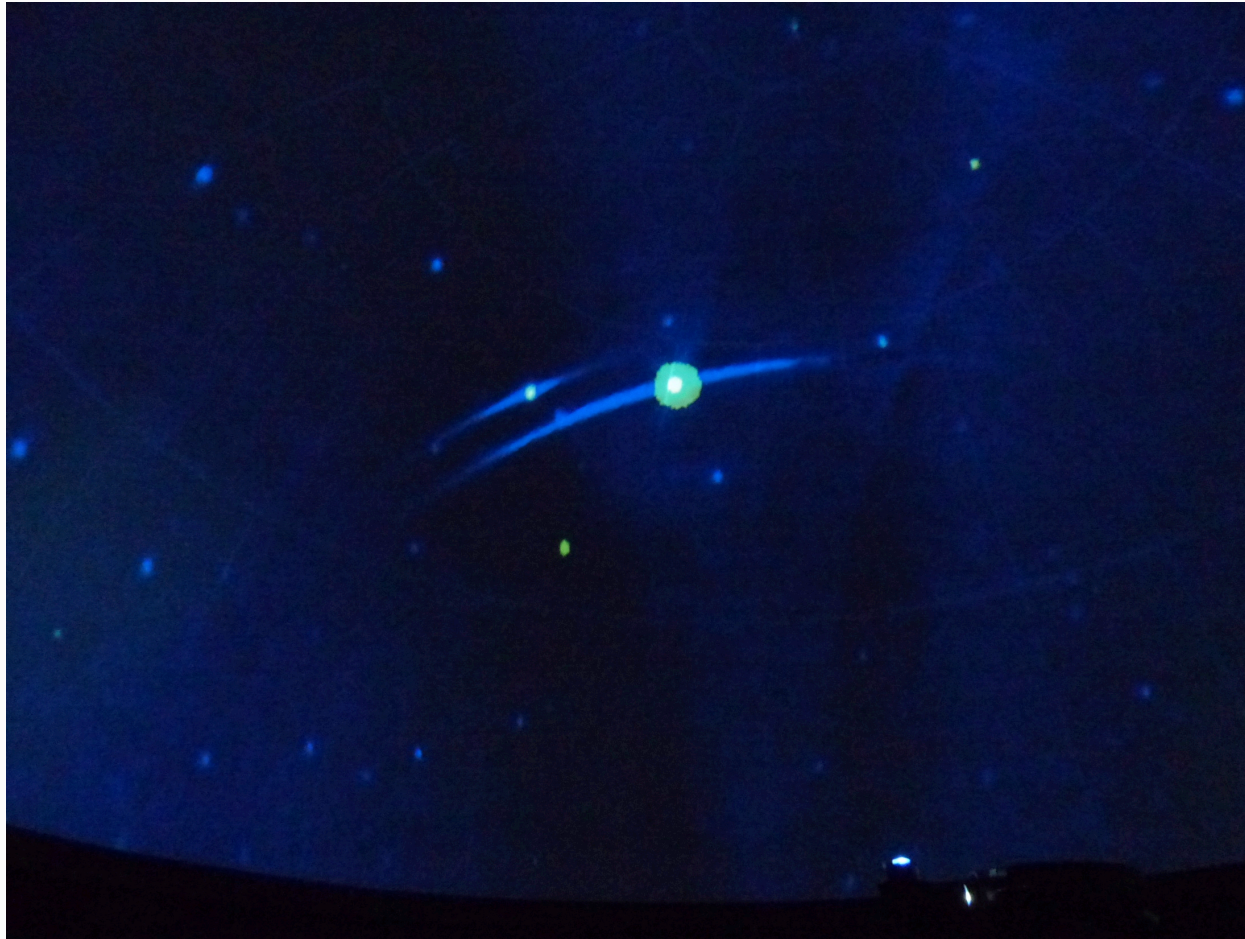


□ Melting-pot of illustrations (2)



Credits: GALEXGR6

□ Melting-pot of illustrations (3)



□ Melting-pot of illustrations (4)



Credits: allWISE



□ Perspectives

- Smoother motion.
- Adaptive projection when zooming in (and out).
- Set of scenarios.
- Remark: Strasbourg Planetarium will move to a new building in around 2 years.