

Experiments (iOS, android, HTML5 / WebGL) for future mobile and online services

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CDS

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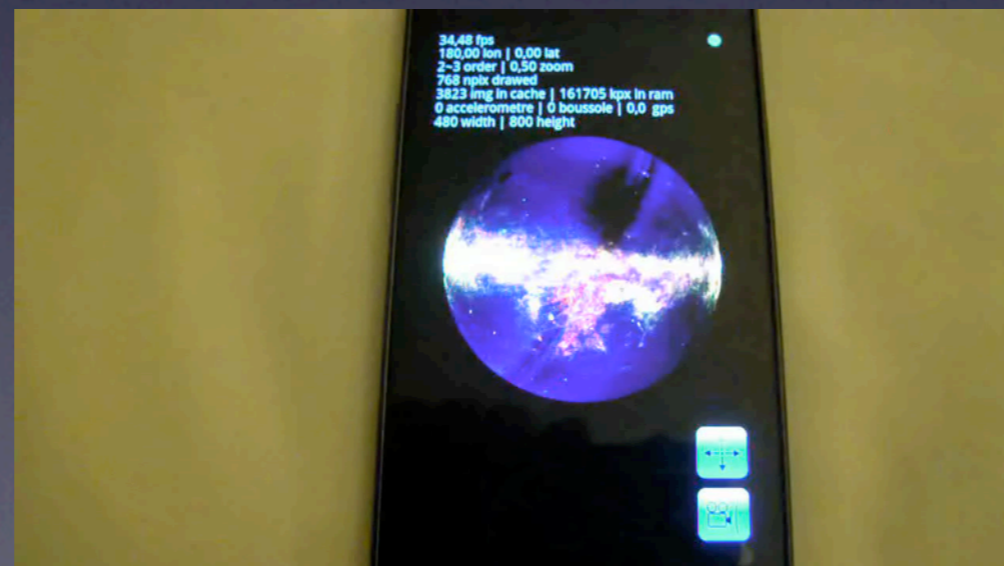


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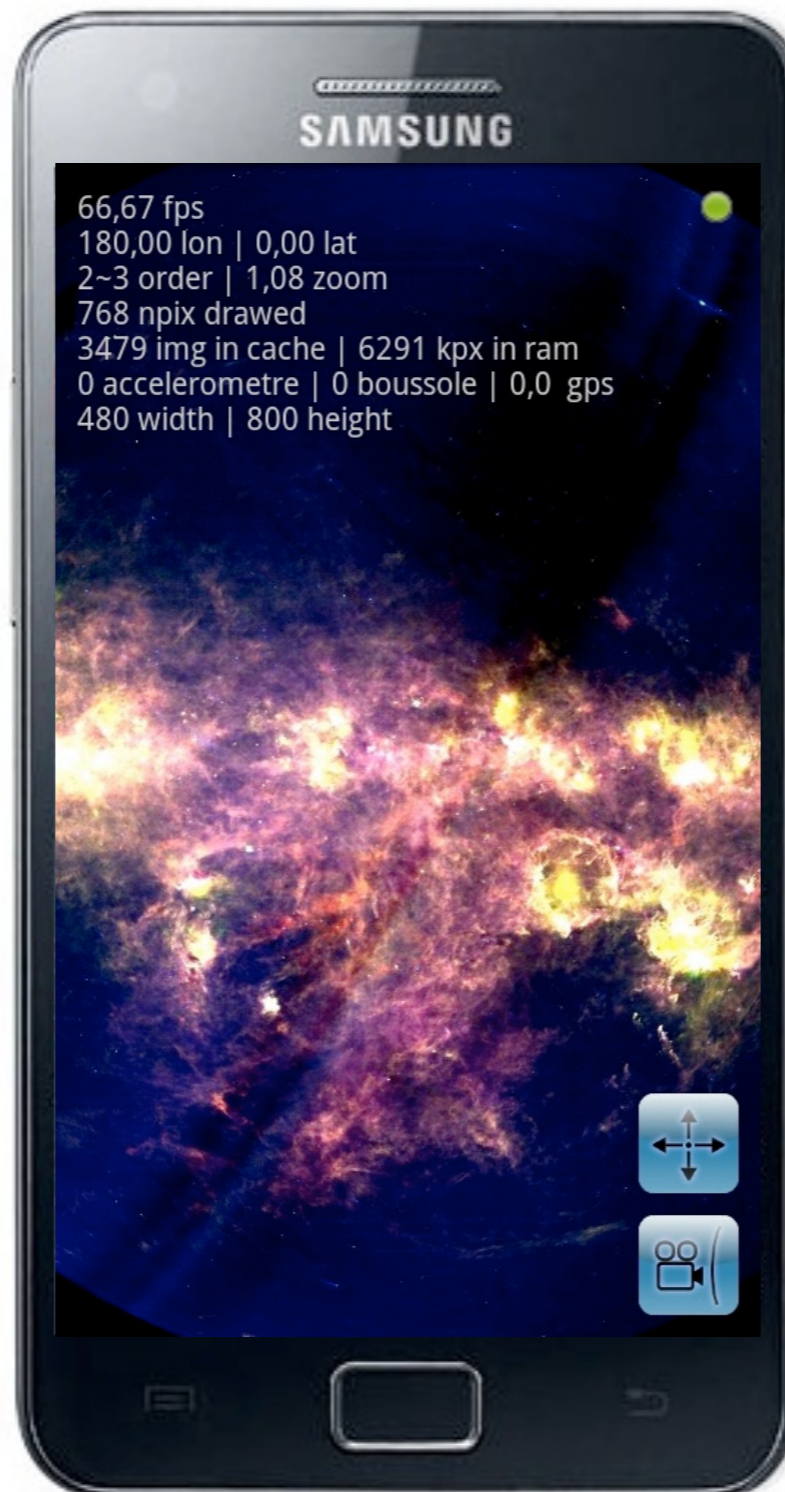
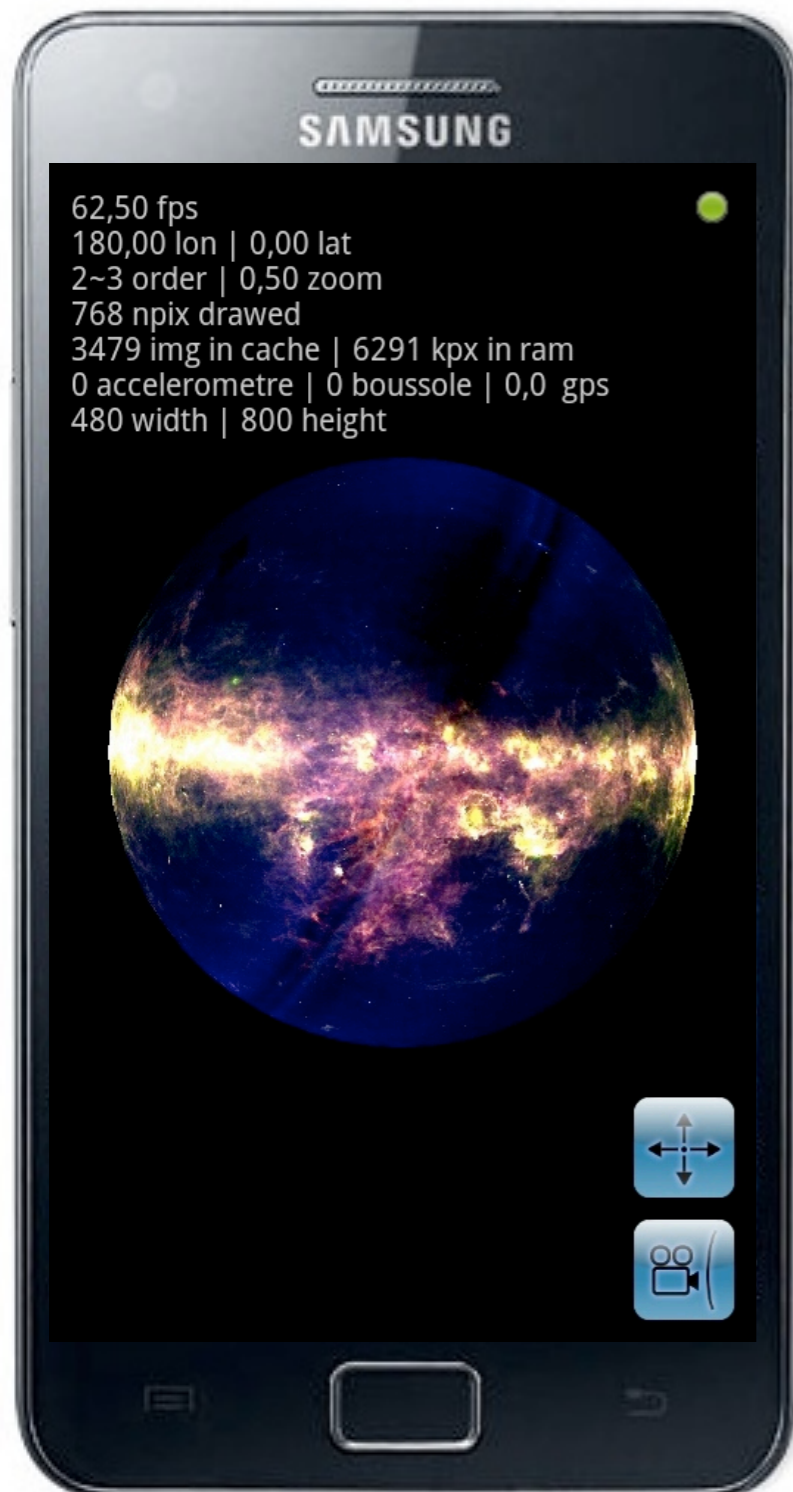
- *Naples presentation* : Aladin at the finger tips and first tests on Internet tablets (iOS and android)



- *Pune presentation* : SkySurveys, surveys in your pocket (android)



Status of SkySurveys



Status of SkySurveys (2)

- Tested on android 2.2 to 4.0 and on several devices
- Correction of bugs
- Ongoing work concerning the link with Simbad objects
- If you have a (HEALPix) survey it is possible to make a test with your own images (send me a mail)

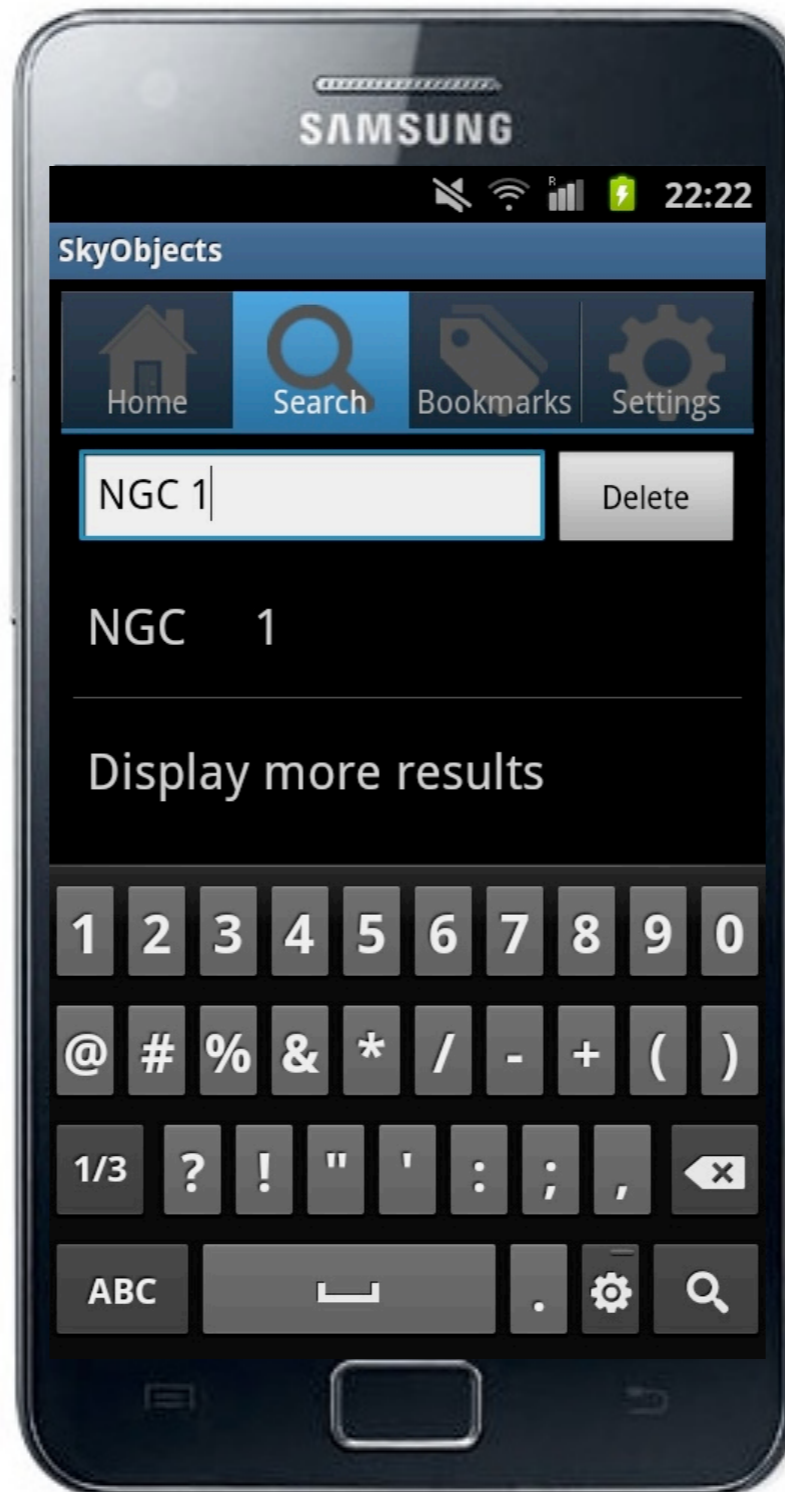
New experiments

- Development of SkyObjects, an app for both iOS and android
- Prototyping an Aladin Allsky in HTML5 / Javascript / WebGL (like SkySurveys on android with OpenGL)

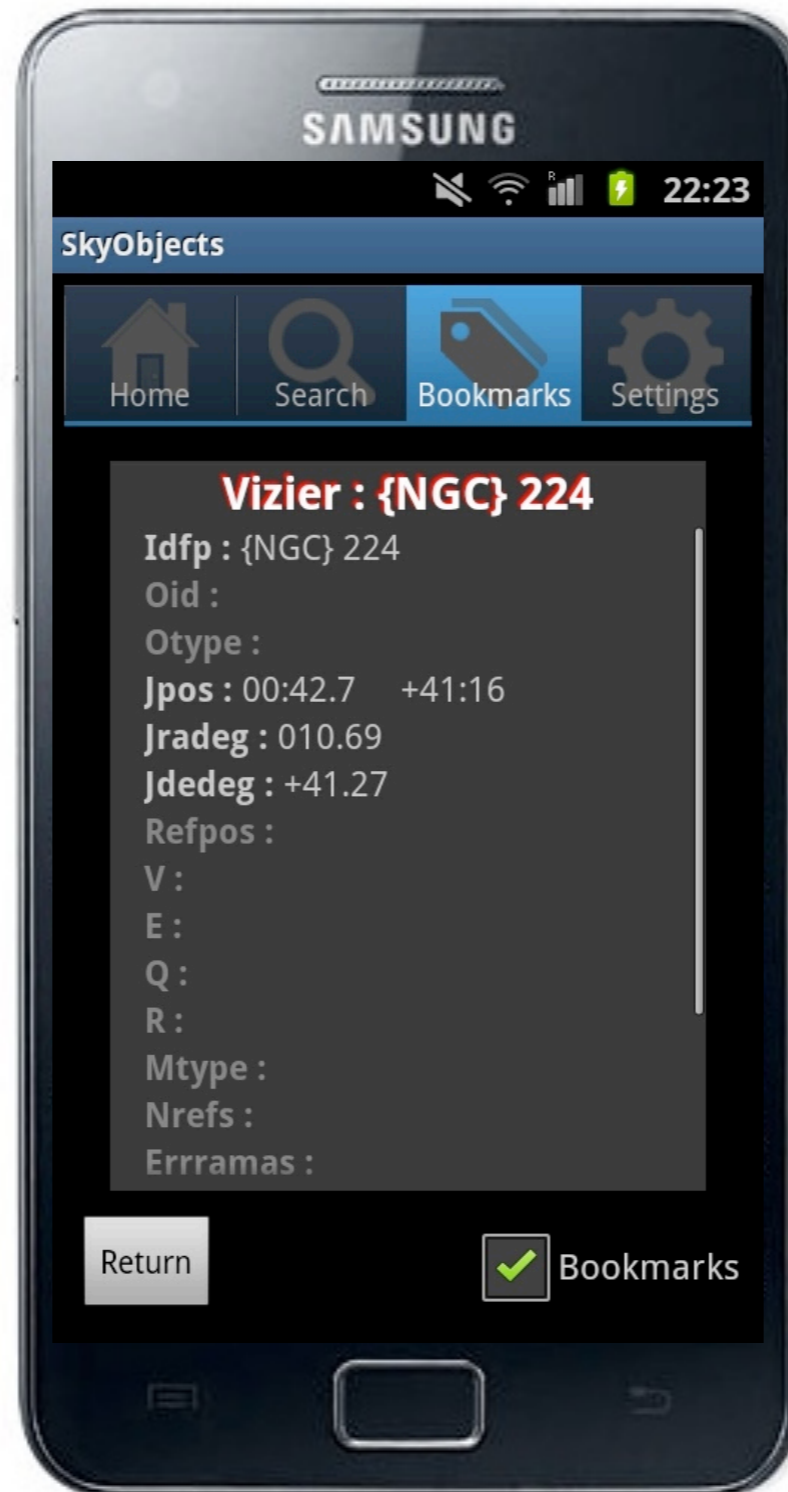
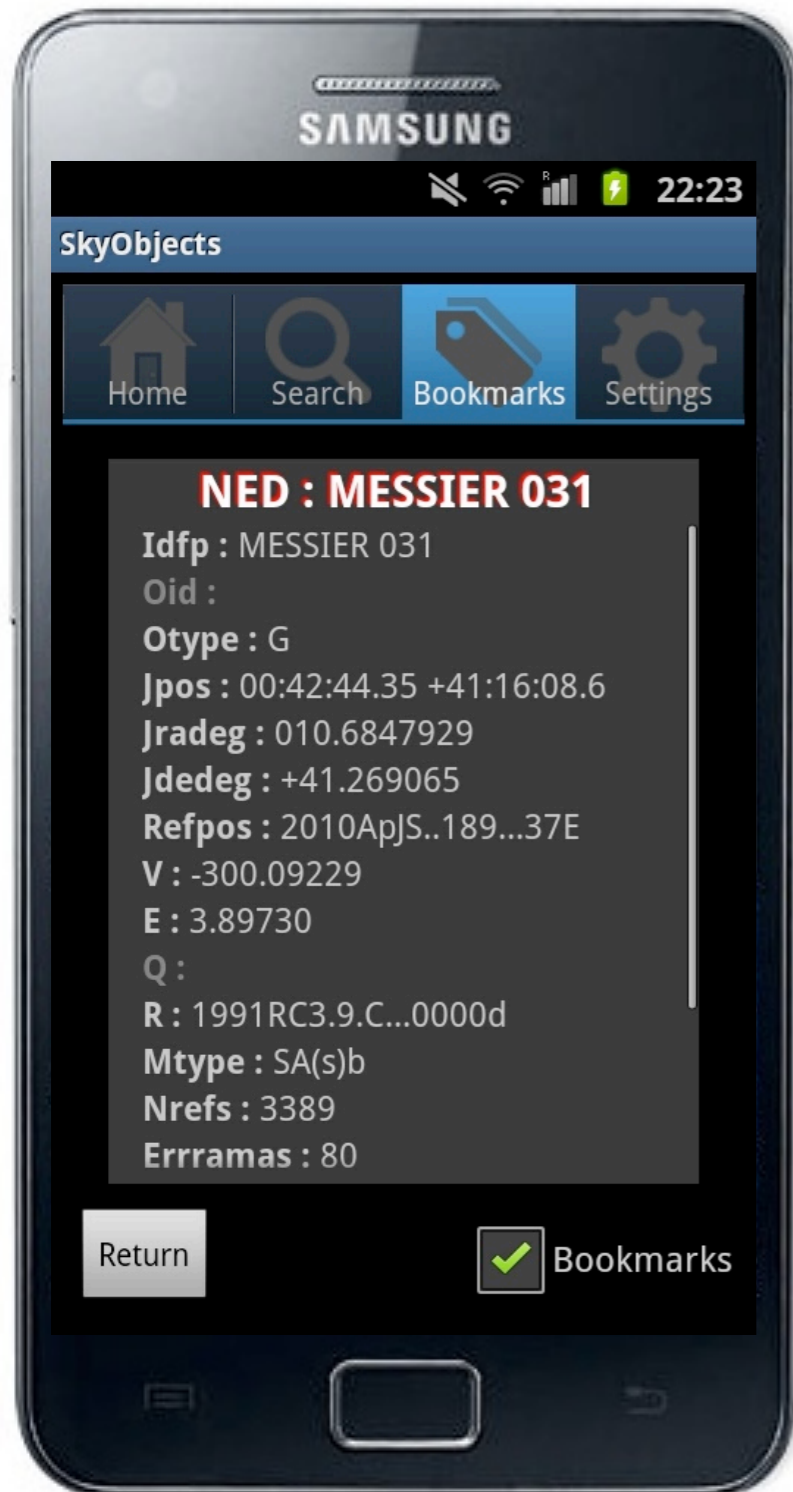
SkyObjects

- Features
 - Name resolver Simbad / NED / VizieR
 - SQLite to store local data (NGC objects are pre-loaded)
 - Go to (GPS and accelerometer / gyroscope)
 - Bookmarks and personal note
 - Image of the day
 - etc.

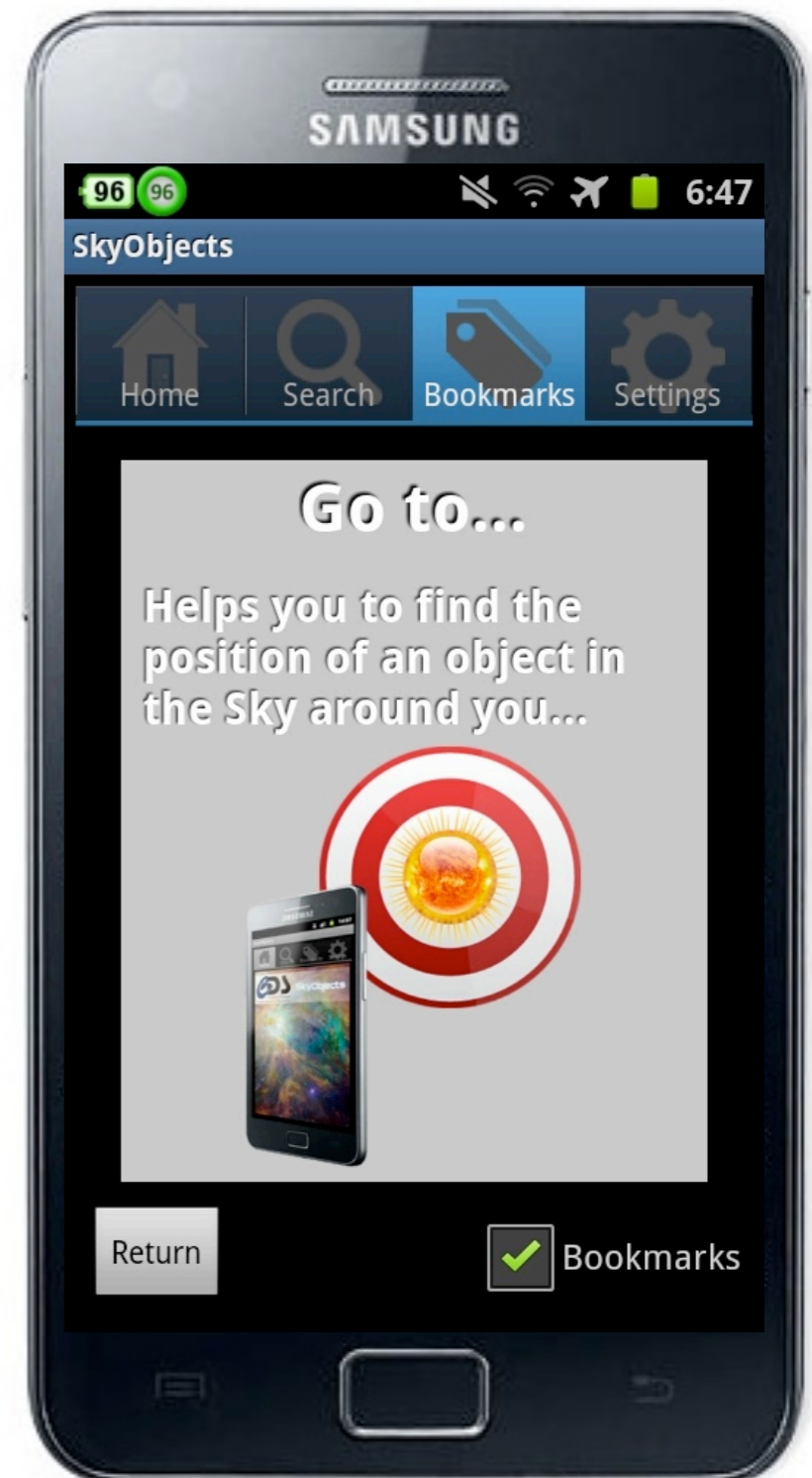
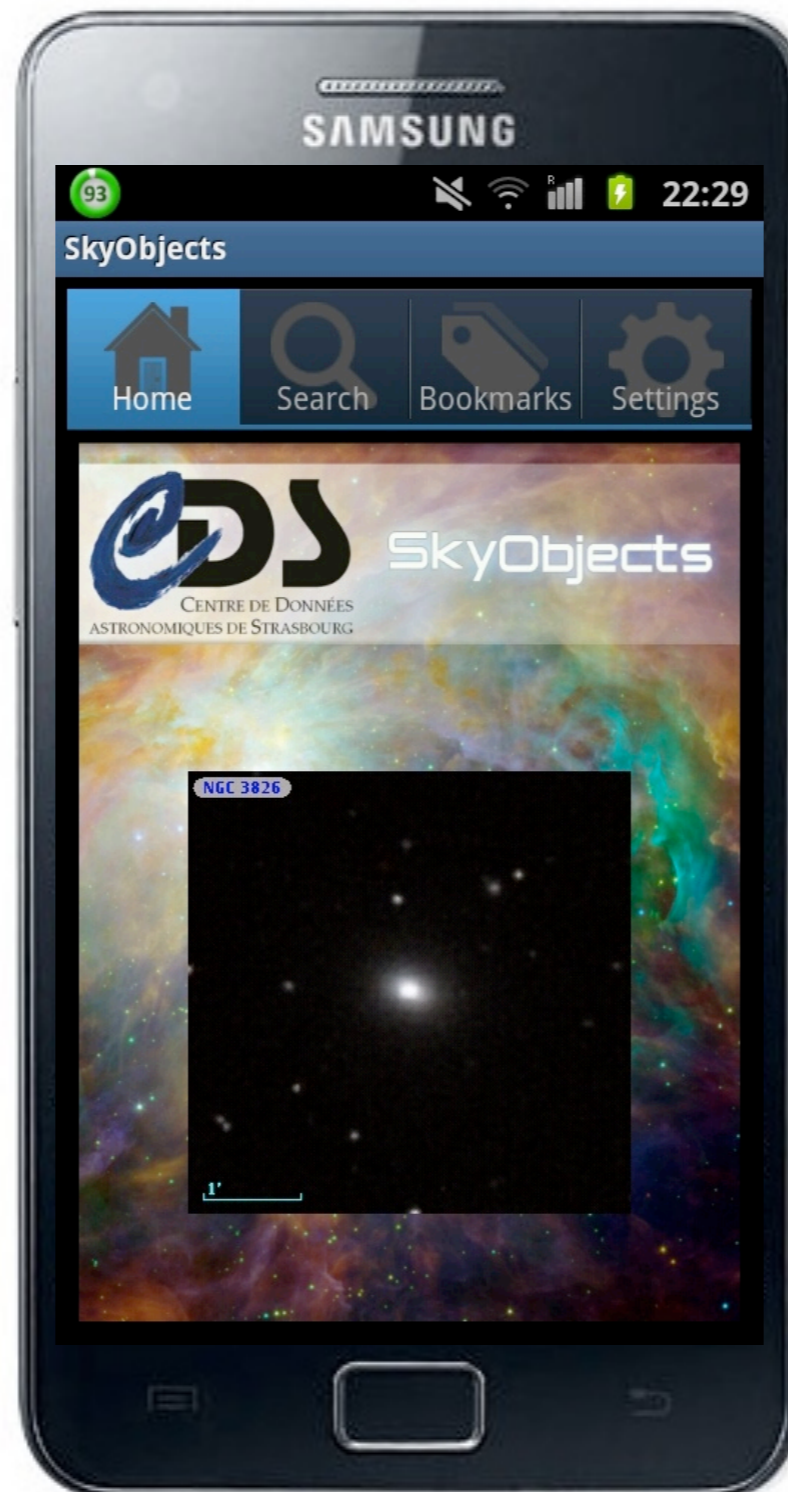
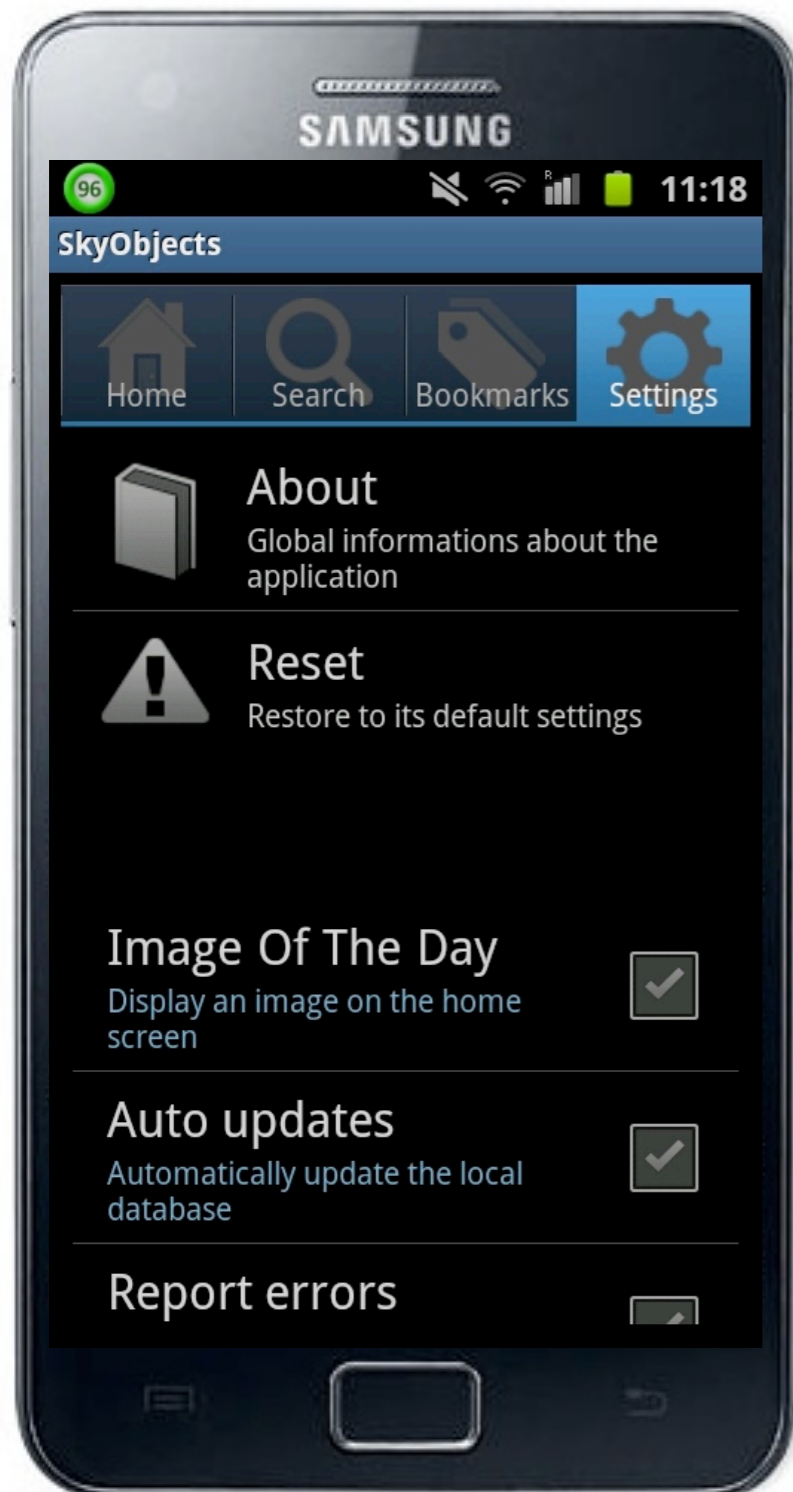
SkyObjects on Android



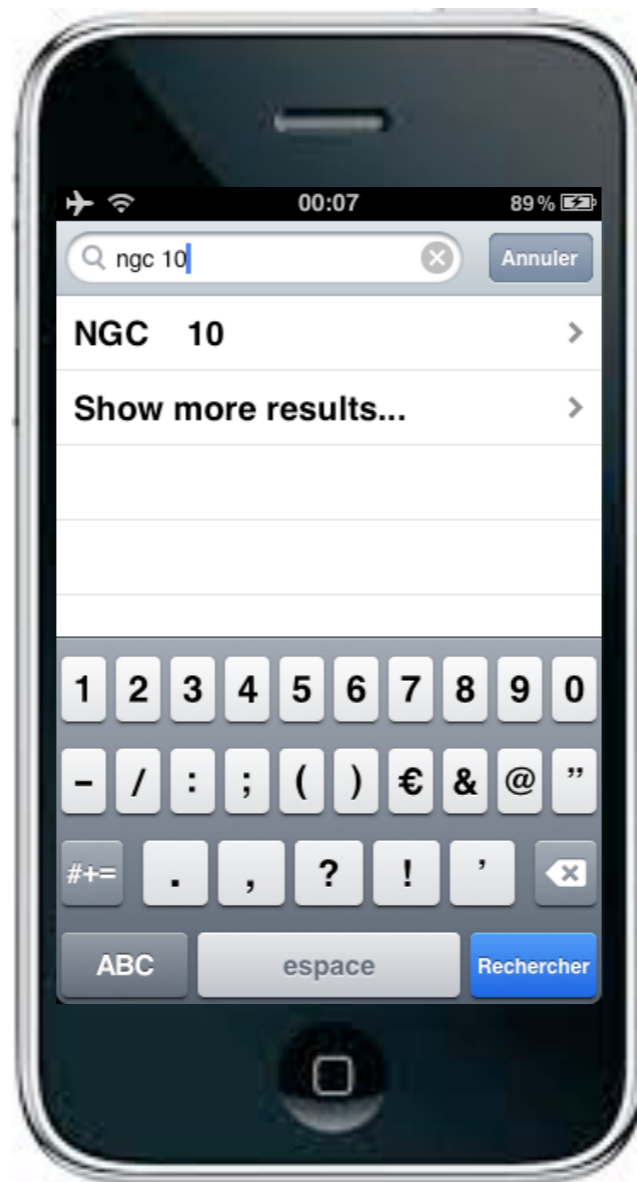
SkyObjects on Android (2)



SkyObjects on Android (3)



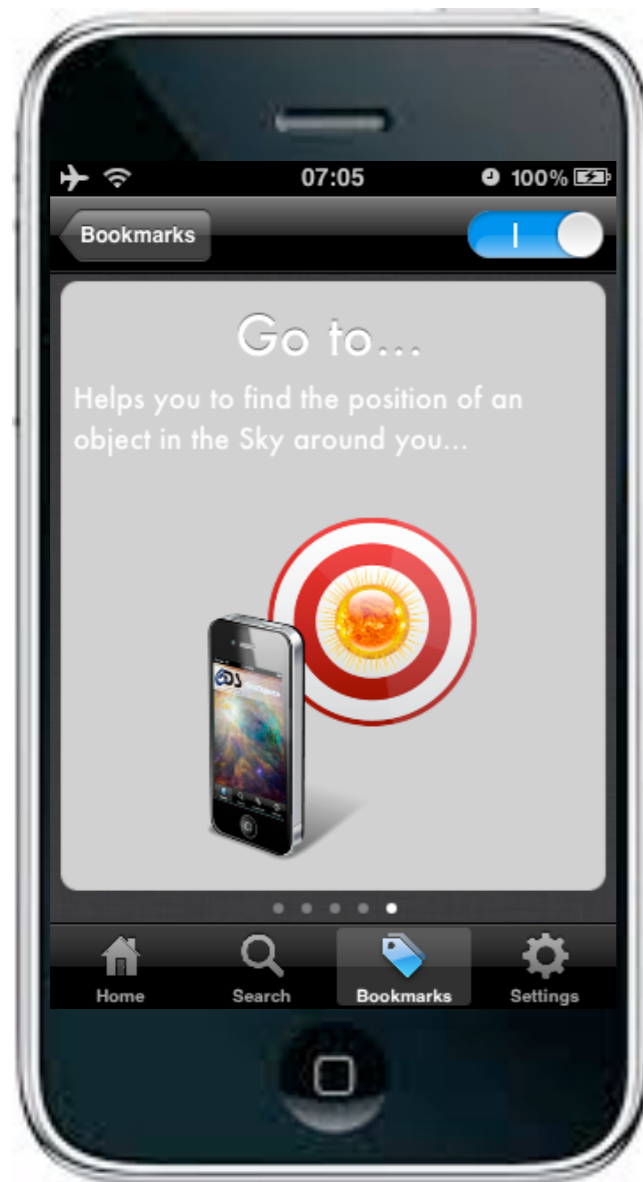
SkyObjects on iOS



SkyObjects on iOS (2)



SkyObjects on iOS (3)



SkyObjects feedback

- Concrete idea about
 - the cost of a development on both Java (android) and Objective C (iOS) of a small app
 - the performances (SQLite, etc.)
- Create an android / iOS app or just a Web app with HTML5 / Javascript ? (visibility in App stores)
- ...

SkyObjects future

- Add another information about objects (bibliography, events, etc.)
- Better name recognition
- Education...

HTML5 / Javascript / WebGL

- Aladin Allsky runs with Java, SkySurveys is dedicated to android devices
- Aim : prototyping as a Web application to run it on all devices (laptops/desktops, smartphones, Internet tablets)

Remarks about WebGL

- OpenGL was very useful for SkySurveys and we made several tests with WebGL which should be an implementation of OpenGL for browsers
- This technology is not mature
 - Not available on iOS, very slow on android when implemented, etc.
- The prototype is based on HTML5 Canvas

Challenges

- Aladin and SkySurveys use the HEALPix Java library which is not available for Javascript
- replace it with an online service ?, download the whole coordinates at each order ?, convert the Java library to Javascript ?
- «prototype» solution : coordinates are stored in HEALPix directories with the images and can be loaded on the fly like the images

Challenges (2)

- Memory management in Javascript (Garbage Collector, several images to download, size of the images, etc.)
- Find a solution to optimize the use of memory (as constant as possible)

How it works ?

- Three.js library to represent a 3D Sphere
- We start at the order 4 with a grid of 768 pixels
=> 768 images are downloaded
- At this order we have the whole sphere
 - But keeping the whole sphere means 3072 images at the order 5, 12288 images at the order 6, etc.

How it works ? (2)

- After the order 4, we manage just a part of the sphere (a lens) to maintain a constant use of the memory
- Zoom : the pixel in the centre of the screen is detected and the 8 neighbours are downloaded
- As we have no HEALPix Javascript library, .neighbours files are stored at the same level than the images. The texture of the 9 pixels is then updated with images of the next order with a better definition.
- 25 pixels at order $n-1$, 9 in the centre are subdivided in 36 pixels at order n
- Memory use : 768 images for the sphere and a «lens» of $25+36=61$ images.

Tests on Internet tablets

- iPad and new iPad (Safari) : very slow and bugs
- Samsung Galaxy Tab (default browser) : very slow
- Toshiba AT200 (default browser) : very slow
- Asus eepad (Chrome beta) : good

Test on a laptop

- Demo

Roadmap

- HEALPix library for Javascript
- Continue the optimization and the tests on different browsers and devices
- Showing and selection of objects
- ...

Remarks

- Android apps
 - Deep tests on a large set of devices are mandatory
- HTML5/WebGL
 - Deep tests on all the main browsers are required
 - WebGL probably a good choice in a few years but it is possible to do a lot of things with the Canvas

Conclusion

- New versions in Sao Paulo