

3D-Visualization of astronomical data in a Web browser



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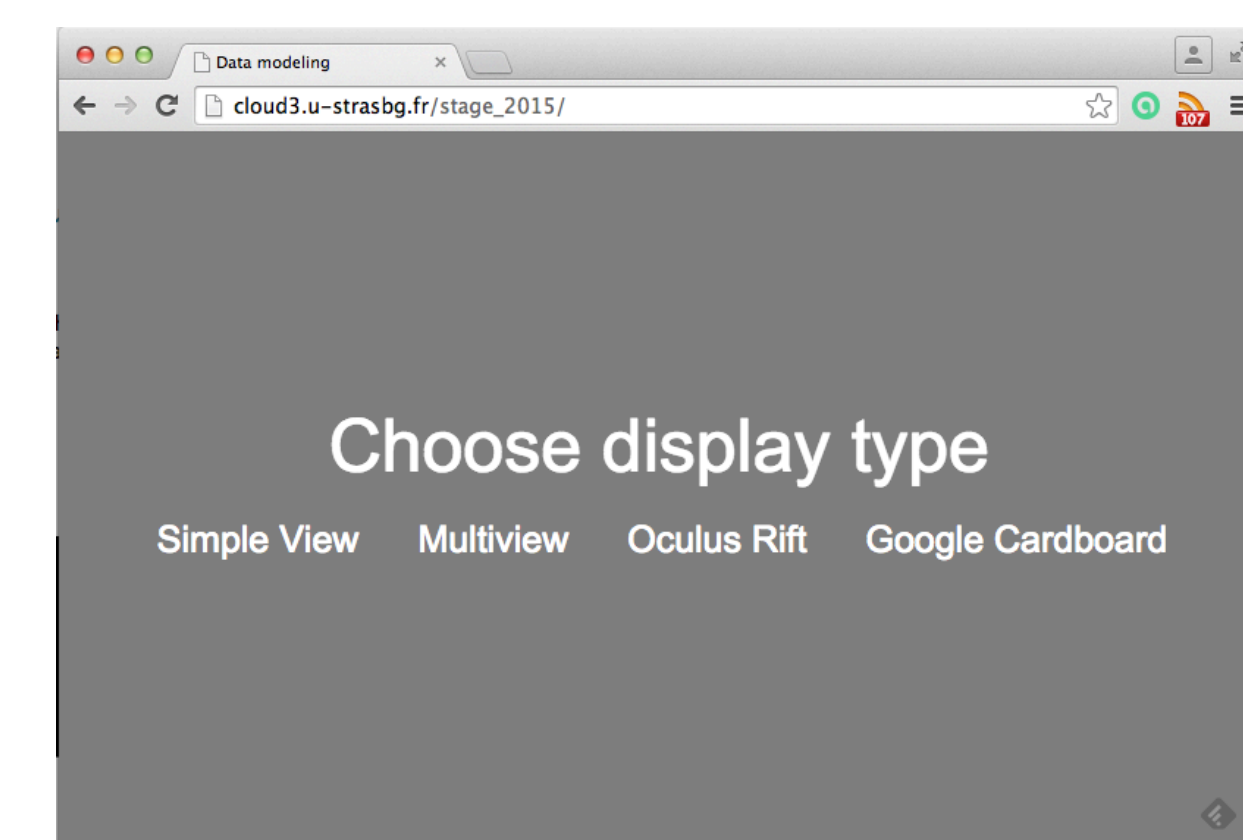
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We present an ongoing work around the 3D-Visualization of astronomical data in a Web browser, including immersive capabilities.

Objectives

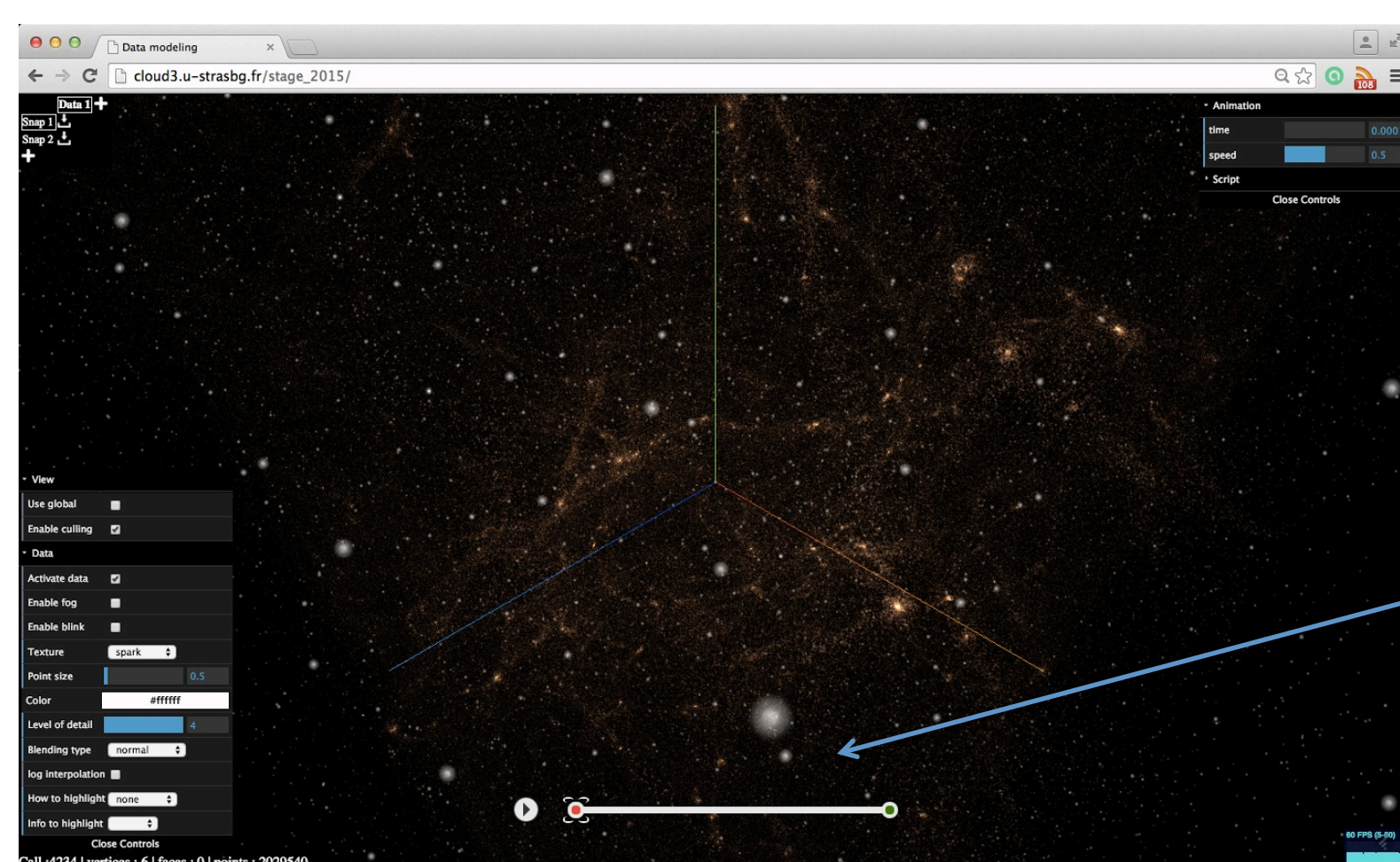
Visualization in 3D of large (simulation and real) datasets with only Web technologies, HTML5 / Javascript / WebGL. The user can load his own data and we propose him functionalities to explore but also to compare his datasets. The Immersive experience is provided as an additional capability through experimental technologies allowing the use of the Oculus Rift with a Web browser. The Google Cardboard use is also studied as an affordable way to provide an immersive experience.

One Web application, four modes



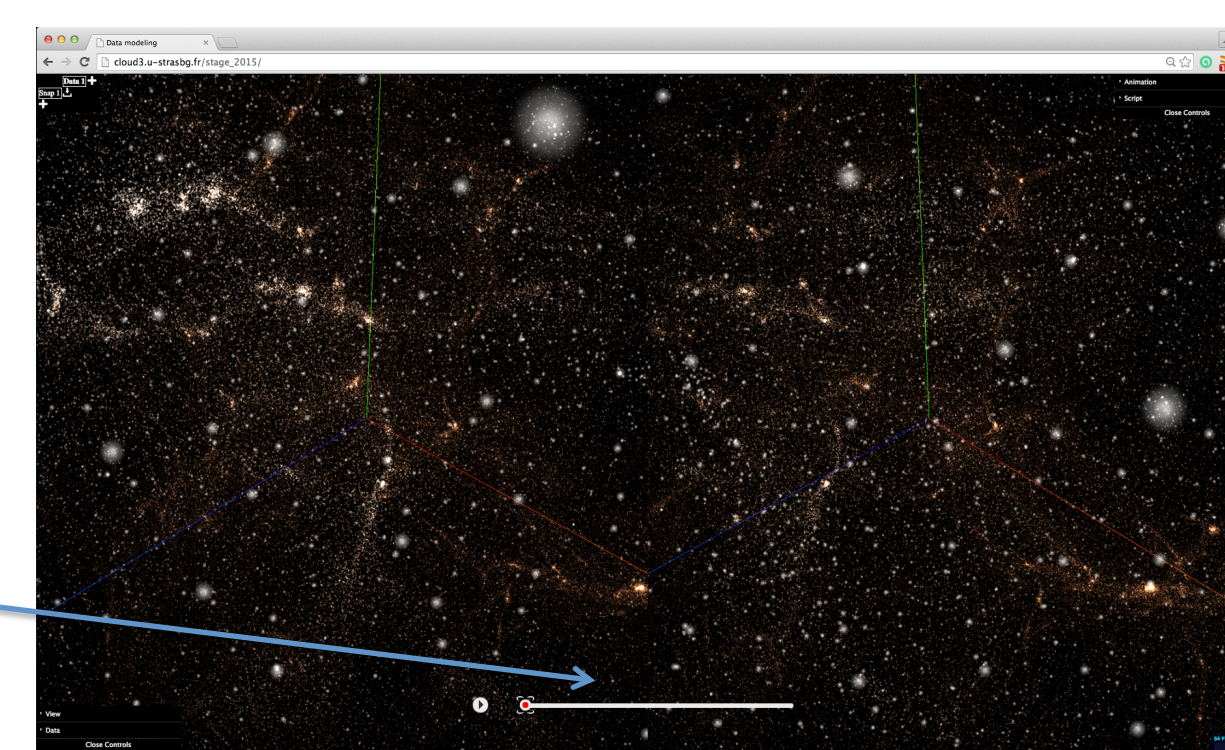
Simple and multi-view

The main modes are dedicated to explore and manipulate the datasets in one or two views. The user can for example load snapshots of his data and switch between them through a slider. He can also load snapshots in two different views.



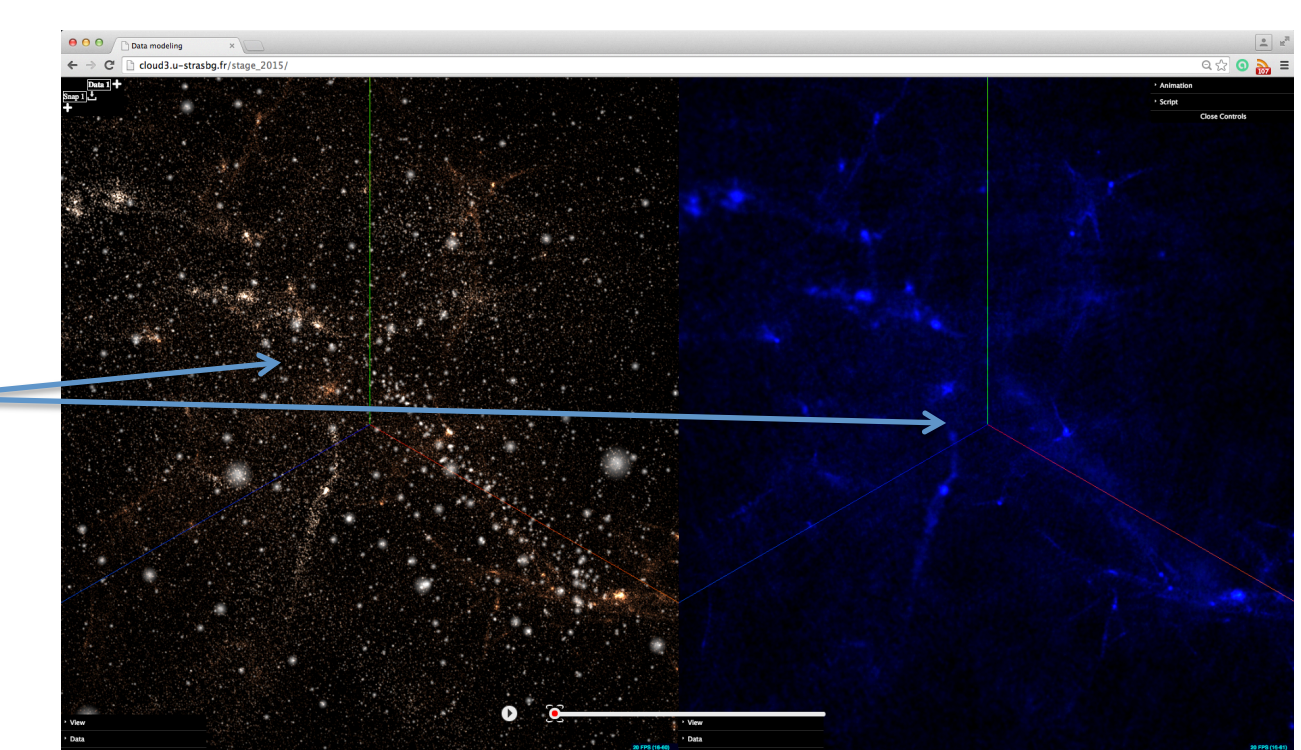
Simple view mode: exploring, zooming, etc.

A slider to switch between snapshots



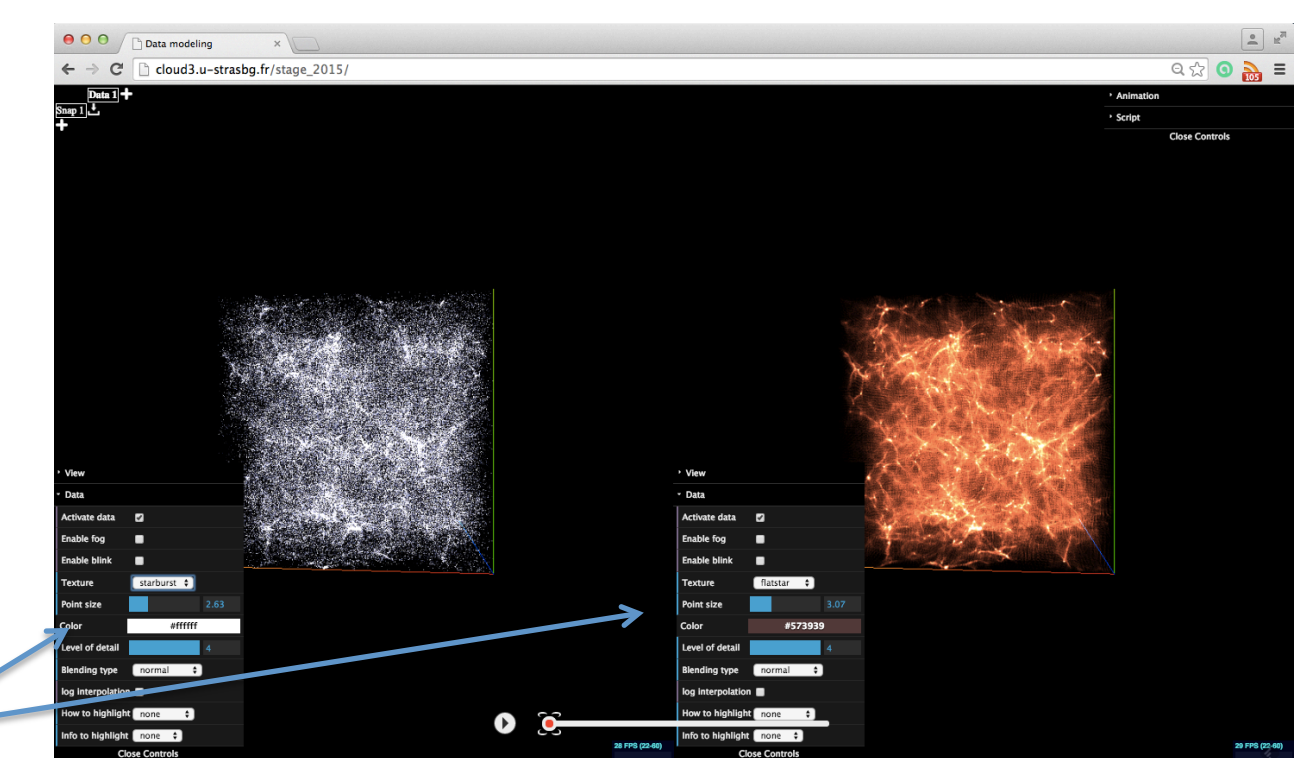
2 different views at the same time

Rendering using different functionalities



2 views of the same dataset

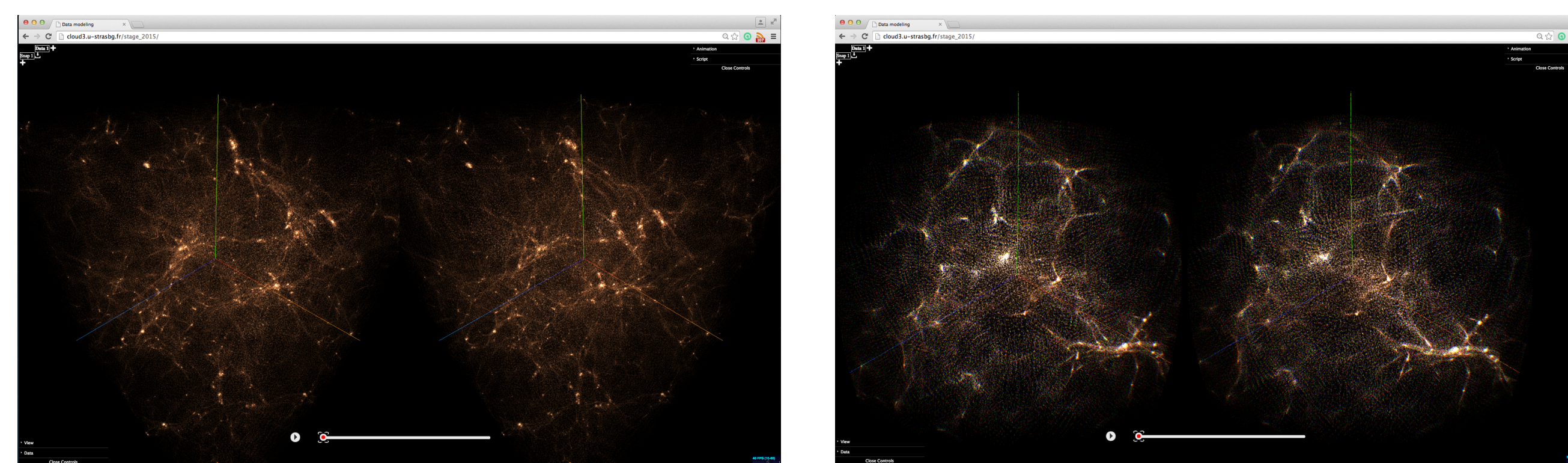
Panels providing functionalities



Rotation of 2 data cubes

Immersive experience

The Oculus Rift capability is limited to specific browsers (like Firefox Nightly with MOZVR). The Google Cardboard is promising but it reduces the usual user interaction, the multitouch screen is only available for the display. We are exploring other ways to interact like the camera or virtual command panels integrated in the scene.



Additional modes for Oculus Rift and Google Cardboard

Credits for all the data examples of this poster:
EMMA: an AMR cosmological simulation code with radiative transfer, D. Aubert, N. Deparis, P. Ocvirk

A best effort development to handle large datasets but with limited hardware resources.
A way to generate quickly 3D views, movies or interactive widgets for publications, documentations, Web pages, etc.
The development is ongoing with data from VizieR catalogues.



For any question, flash the QR Code to send me a mail



Or discuss with me during the poster sessions

