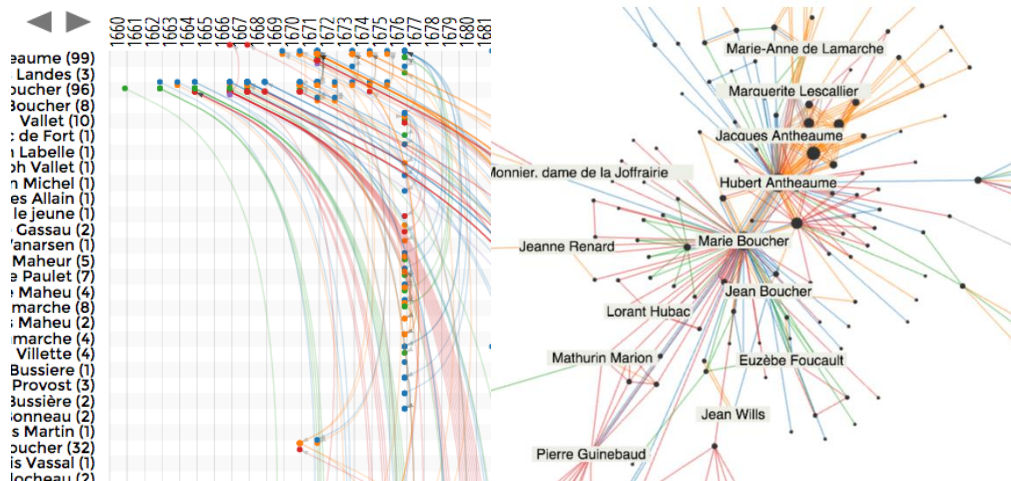




## Testing Visualizations in a Browser

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Two network visualizations provided by the site <http://vistorian.net>

**Topic:** Data Visualization is popular and can now be done over the web using powerful toolkits such as D3.js or lower-level graphical libraries such as WebGL. However, they are almost impossible to automatically test to make sure that modifications of the code does not produce bugs. Standard unit-testing methods cannot be applied to interactive graphics.

This internship consists in exploring methods to create automated tests for making sure that interactive graphical visualizations behave correctly. Popular testing frameworks are called “unit tests”, but they are mostly useful to test libraries. This internship will use an “end-to-end test” that controls a browser to fake interactive operations over it and watch the results. A typical end-to-end testing environment is Nightwatch.js (<http://nightwatchjs.org/>).

The intern will be working on the source code of a public visualization site developed by the Aviz research team at Inria, in collaboration with Microsoft Research and the University of Edinburgh: <http://vistorian.net/>. It provides several network visualization tools to historians and sociologists.

**Location of the internship:** INRIA/Aviz, Bât 660, Paris-Sud

### Position overview

As an intern you will be expected to create a functioning implementation of a test environment, write multiple tests for checking that the visualizations are running as expected both for their graphical rendering and interactions, and conduct scientific research (including literature studies) and write a Master’s thesis on the project.

### Requirements/skills:

- Pursuing MS degree in visualization and HCI, or related computer science topics.
- Experience with software development in JavaScript
- Experience in modern computer graphics (WebGL), visualization programming. Having some experience with testing frameworks would be a plus.