Uroboro visualizing the law-making process

1. Description

Uroboro is a tool aimed at observing and exploring the law-making process by collecting, analyzing and displaying information from online open-data databases provided by LawFactory.
The publication under open licenses ensure the *free* redistribution of these data giving to the citizens a new way to access and manage public data. This approach is now used by a large number of Governments, Administrations and also organizations. But in order to turn *data accessibility* into *effective data use* we need to provide specific tools (Gurstein 2011) to manage contents and help user to gather knowledge and information in order to create a new one.
Uroboro helps to identify law-making patterns, dynamics and emerging issues within the observed space by combining, in a single visually enhanced environment, the ability to gather, analyze and relate different steps of the law process, the text versioning and the discussion between MPs. The tool implements an approach where information visualization assumes a leading role in the whole exploration and investigation process. By taking advantages of visualization's capabilities to provide system's overviews, making hidden relations visible and information more accessible, Uroboro presents new modes to understand and describe the evolution over the time of a bill, which amendments changed it substantially and which are the most discussed subjects. Every steps will keep in consideration the role of the MPs and the Parties in order to discover their different positions as *actors* inside the *system* while unveiling nested and latent connections.
Uroboro is mainly addressed to an expert user but, despite an analytic approach might be the most appropriate, it tries to move away from a *visual analytics* paradigm where the visualization is meant as representation *as is* of the data sources and the interface becomes a mere *dashboard*. Besides from a pragmatic visualizations (meant to support research and scientific reasoning) and artistic visualization (meant to be interpretive and expressive) (Kosara 2007) a speculative approach emerges from this framework (Tanyoung and Di Salvo 2010). Speculative visualization presents socially meaningful data to provoke viewers' interpretation, to elicit discussions, and to envisage possible futures: one of its goal is promoting user engagement in social relevant issues such as the law-making process and MPs activities.
User will be driven into the data exploration through different views of the phenomenon, each view is meant as different points of access (Whitelaw 2012): bill structure , bill versioning and MPs activities. Each point of access could be explored from different level of zoom, starting from a visual abstraction of the *big picture* of the phenomenon to the raw data representation (eg: from the whole representation of one bill proposal through time to the single text line).
Every views, set to different zoom level, could give different visual patterns providing the user different insights which help him to move to a different view/zoom, confirm hypothesis or create new knowledge.
From a technological point of view, Uroboro will exploit the advantages offered by open-source web technologies for both the client and the server-side.

2. Views

The tool involves a strong synergy between a rich interface technology, capable to embed a strong visual approach to the whole user experience. The front-end interface allows the users managing and visualizing the information. In particular, one overall view combined with three main views will constitute the core of the user interface. Not all view/zoom are available for each law step (Committee, Floor, CMP) due to a lack of data [see tlf-scheme.pdf].

We provide file [see tlf-wireframes.pdf] with the wireframes of the application. The images are not intend as final graphic output but as representations of the visual models we will use and as explanation of the application workflow.

2.1 Overall View

zoom 0 [pp. 02-06 of tlf-wireframes.pdf]

This view is specifically meant as the starting point. It gives a *big picture* of the bills evolution over the time and which steps took more.
Each bill is represented by a stacked bar, each part is a step in the law-making process (Committee, AN, Senate,CMP…) and its dimension is proportional to the time it took. By rolling over on a bar generic information about the bill will be displayed (summary, themes, origin…). At the top there's another stacked bar chart which represents the amount of bills that were approved in a specific time span (the timespan can be modified). Thanks to filters (by legislation, by session…) the user can change the amount of bills to visualize.
By clicking on a specific bill the user will be redirected to the structure view.

2.2 Structure View

zoom 1 [pp. 07-09 of tlf-wireframes.pdf]

The main goal of this view is to visualize how the hierarchical structure of the law (chapters, sections, articles…) evolves in each step. The dimension of single article represents the amount of amendments related to it and the colour represents the number of words used in the talks.
By clicking on a single article the user will be redirected to the zoom level 2.

zoom 2 [pp. 10-13 of tlf-wireframes.pdf]

In this view the focus is on a specific article and its relation with the amendments. Each circle represent one amendment, the dimension the number of words used in the talks and the color one of the six statuses (approved, rejected,…).
The visualization at the bottom (stream graph) represents the first 10 most used words (or topics) in the talks related to the MP who took part to the discussion (filters to words/topics can be added). The thickness represents how many times an MP use a specific word (or topic).
By clicking on the bill circle the user will come back to the main structure view.

2.3 Versionize View

zoom 1 [pp. 14-16 of tlf-wireframes.pdf]

The Versionize view aims at providing a synthesis of how a bill evolve in terms of its contents.
The user can browse steps, each step add a stacked bar (the bill) to the visualization. Each part of the bar is an article and its dimension it's related to the number of lines. The different textures display if an article was modified or not. By rolling over on a article all its *path* will be highlighted.
By clicking on a single article the user will be redirected to the zoom level 2.

zoom 2 [pp. 17-19 of tlf-wireframes.pdf]

In this view the focus is on the line and its modifications between two specific steps. The user can click on a line and see if it was modified, added or deleted facing the two raw texts. Additional information will be displayed such as the linked amendments and who proposed them.
Furthermore each line is represented by a color that is linked with the Party who modify it.
In that way the user can see who, in terms of political area, modify the bill.

2.4 MPs View

zoom 1 [pp. 20-23 of tlf-wireframes.pdf]

The main goal of this view is to visualize who took part to the process in each step and see if and how much they participated to the discussions. The visualization represents the real place they have in the hemicycles in that way is more simple for the user to understand the political area.
By clicking on a single article the user will be redirected to the zoom level 2.

zoom 2 [p. 24 of tlf-wireframes.pdf]

In this view the focus is on a single MP. A series of charts will display his/her activity in the law-making

process.

3. Software architecture and technologies

3.1 Backend and API
We propose to rely on API service to retrieve the data we need. The database and the API service should be provided by The Law Factory (RegardesCitoyens) as a possible implementation of the already existing service [1]. Our effort will focus on thinking of the API structure related to the data (and the format) we need for our application.

3.2 Frontend
As we have already discussed above, Uroboro will propose a visually enhanced user interface that will rely on some of the most advanced technologies for cross-browser web development. For the visualizations we will use d3, a JavaScript library recently developed by Mike Bostock (Stanford University) that represents a powerful tool to create web visualizations (and DOM documents in general) using standard HTML elements (i.e. SVG tags). Regarding the data/GUI binding we will use Angular.js a framework library developed by Google. HTML5, Ajax, jQuery, Bootstrap are some of the other technologies and libraries we plan to use for GUI elements, transitions and animations.

4. Development

In our proposal we try to achieve all the research questions discussed in our meeting. We propose several views but and we think the main are the ones related to the Law Structure and Law Versioning.
The development of the MPs view is strictly correlated, in terms of time, to the other steps, so it will be discussed after a first period of tests and development. In the list below we add a value for each point related to the implementation efforts (1 less efforts, 3 more efforts).
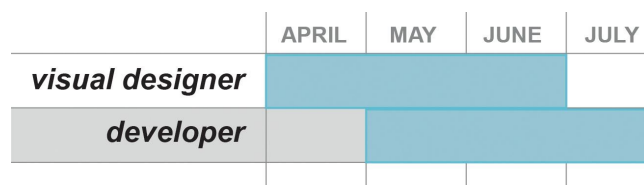The development of the tool will proceed according to the following steps (subject to possible changes).

1   **Preparatory stage** (API structure) [1]
2   **Basic interface framework** (main GUI elements, basic API connections) [3]
3   **Overall views** [2]
4   **Versionize views** [3]
5   **Structure views** [2]
6   **First tests** [2]
7   **Tests and refining** [1]
●   MPs view [2]

Regarding the Financial part we are planning to fully develop the application by the end of July (**4 months**). Two people with different skills will work on it:
○   **Visual designer**. He will work on the interface, in terms of graphic and interaction design.
○   **Developer.** He will work on the data management and on coding the application.
We consider 3 months per person .

	APRIL	MAY	JUNE	JULY
visual designer				
developer				

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1 http://cpc.regardscitoyens.org/trac/wiki/API