THE GEOTOPIA PLATFORM: AN EXAMPLE OF SPATIAL AND TEMPORAL MANAGEMENT OF DOCUMENTS

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BACKGROUND AND OBJECTIVES

The GéTopia project promotes the publication, distribution, exchange, discussion and analysis of archive data of a historic and patrimonial nature. More generally, it is designed to develop georeferencing and spatial and temporal query methods adapted to relatively informal documents of a complex structure, such as images, drawings, texts, and more generally, all types of archivable cultural content produced by man. The GéTopia project led to the construction of the specific GéTopia platform, provisionally deployed based on open source technologies and implemented within the framework of various management partnership strategy, scientific research, and promotional educational projects.

APPROACH & METHODS

The GéoTopia platform performs the conventional functions of a document sharing platform, such as content management, document indexing, document retrieval, and user management. It also incorporates original document spatial and temporal management functions, which may be automatic or interactive. Integration within the mapping tools platform makes it possible to offer collaborative georeferencing functions for historical documents using map markers or repositioning reference points. It is also possible to display documents spatially in the form of layers and to search documents through spatial or temporal queries defined interactively on the screen by the user.

GéoTopia also offers the configurable web service GéoStream and TempoStream spatial and temporal indexing tools specifically developed for texts. These services are based on the encapsulation of process flows developed at the LIUPPA. Data representation models are based on the linguistic hypothesis of a recursive expression of spatial and temporal data using inclusion, adjacency, orientation and distance relations. These process flows mobilize automatic language processing modules that extract and interpret spatial entities and temporal entities within texts. The process involves an initial lexical, morpho-syntactic and syntactic-semantic analysis stage followed by an interpretation of symbolic representations using approximation algorithms that combine geometries with spatial entities and time slots with temporal entities with the help of spatial or temporal operators and resources.

RESULTS

A map interface allows the archiving, consultation and handling of georeferenced documents positioned on a map and on a timeline. Each of the maps has a zoom and temporal query bar. To solve the problem of the overlap of map documents, the platform allows the user to juxtapose and resize them using the associated zoom levels. Map display is synchronized and it is always possible to choose between different basemaps to help the user to get his/her bearings. The GéoStream and TempoStream services are generally used in semi-automatic mode as they offer helpful assistance to users integrating new textual documents into the GéoTopia platform. The result of the spatial indexing is displayed on the basemaps in the form of thumbnail images showing the spatial references extracted from the text. The user can validate all or part of the result. In addition, the user can validate all points and intervals on a timeline that he/she wants to save and that display all calendar references extracted from the text.

CONCLUSION AND FUTURE PLANS

These new spatial and temporal function developments provide users with highly effective document management and annotation tools. Other developments are in the pipeline. Our aim is to make the spatial and temporal representation model compatible with TEI (Text Encoding Initiative) tag language standards, widely used in the literary and historical science disciplines. We have also to connect the platform to more efficient metadata services. In addition to web services dedicated to the spatial and temporal indexing of texts, we aim to develop an online thematic indexing service, based on domain-specific ontologies. A final improvement constitutes the creation of a collaborative historical gazetteer established using the map documents available on the platform.
SCRENNSHOTS

Georeferencing interface:

Mapping interface:
Map Juxtaposition:

Localisation géographique:

Identification

Côté / référence (s’il s’agit d’un livre ou document référencé aux archives, dans une bibliothèque...): Archives
Municipales de Saint-Etienne - 1 Fi Saint-Etienne 300
Support du document (papier, cd, ...): Papier cartonné
Display of spatial indexing results: