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In Environmental datasets describing spatial natural events, it is frequent to find, some temporalities expressed through vague textual expressions such as: «around Christmas», «Before 1960s », etc.

The presence of such expressions in the data sets makes them hard to be exploited or mapped. For this, we propose an approach (fig.1) that intends to improve the localization and the cartographic representation of vague spatio-temporal information (STI).

The STI expressed in natural language is represented in a semi-structured format relying on the SpatialML and TimeML schema (Step.1), that we have extended allowing the representation of the imperfection of the type of vague and imprecise (step.2).

With this extension graphic and cartographic components are associated whose goal is to display an initial localization zone of the STI qualified as vague (step.3). Using these components the expert can propose a re-localization (Step.4) aiming at reducing the initial set of possible localizations.

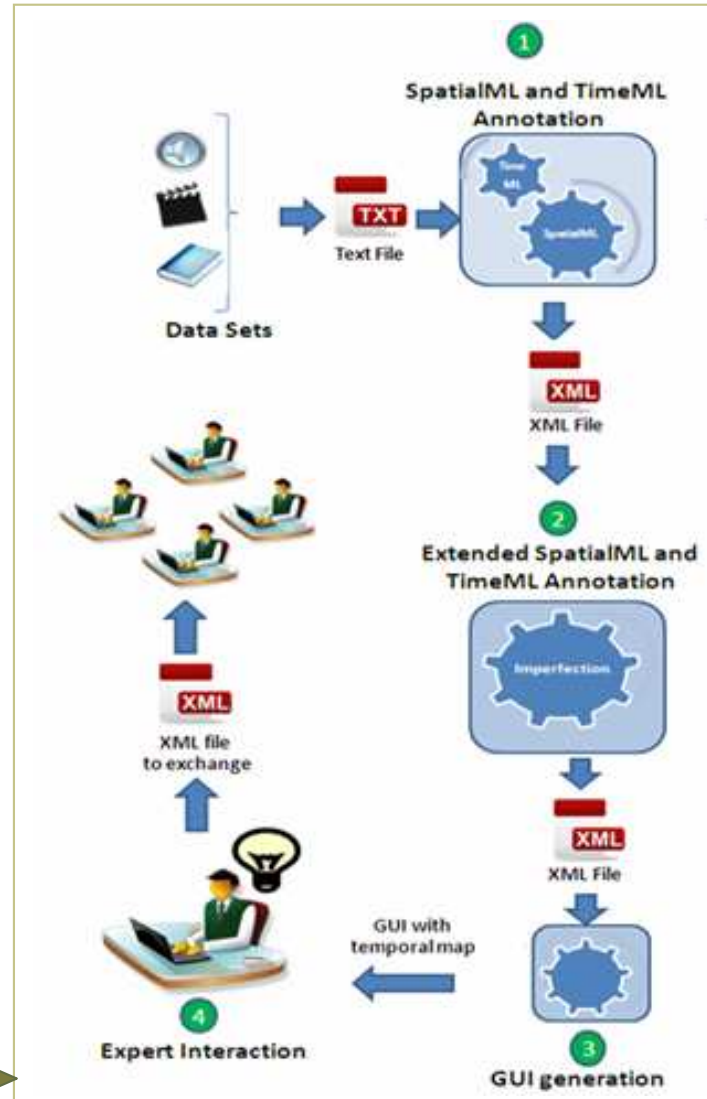


Fig. 1 Our approach

Abstract:

Natural hazards analysis uses alphanumeric data sets from different sources. The content of these data sets is mainly expressed using natural language describing where and when natural hazards events (eruption, avalanches, flood, etc.) took place. However, natural language contains a lot of vague expressions and especially those used to indicate places (around, near to, north of, etc.) and dates (at the beginning of the century, Before 1986, etc.). For a better exploitation and exchange of this kind of data sets, a spatial and temporal representation based on markup languages (SpatialML and TimeML) can offer a good interoperability and an easy share of such data. However, none of the existing markup languages handles the representation of imprecise and vague spatial/temporal information.

Additionally, none of the existing GIS tools can handle the representation of this kind of data. For this purpose, firstly we propose to extend the SpatialML and TimeML mark-up languages to explicitly integrate the representation of vague spatio-temporal information.

Secondly, we propose some graphical and cartographical components to improve the localization and the cartographic representation of vague spatio-temporal information.