A Markup Language for Narrative Knowledge Annotations, Mining, and Management

Jens Fendler
jfendler@polytechnic.edu.na
Department of Software Engineering
Polytechnic of Namibia

Narrative Knowledge, as the name implies, is not naturally bound to any media other than speech. In order to preserve this knowledge and make it accessible through computer systems, a formal and standardised basis needs to be identified, and to be integrated with other information sources.

While Audio and Video recordings of stories (Biddle et al., 2011) are tempting due to the simplicity of their creation, attempts have not yet resulted in significant progress regarding formalisation, querying, or further IP-based processing. Though tools such as Areti (Kapp, 2011) can be used to manually add meta-data and formal aspects to the recordings as a later stage, such recordings remain highly exploitable - and thus limited - source of story information for IT systems.

The author argues that narrative knowledge should be primarily stored in a format as closely related to the verbal content as possible, while providing sufficient means of formalisation and automated processing capabilities. For this purpose, the Narrative Annotation Markup Language (NaML), a XML-based narrative language (XML) 2008) for story representation and annotation is being proposed.

Initially capturing narrative stories in their written form in a standardised format, NaML documents can later be extended with meta data and reference links to related sources or additional external information to form a comprehensive and fully navigable story repository. Ready available XML technologies such as XPath (Cary et al., 1999) or XSLT (Cary, 1999) can be used to query and export selected parts for the interested individual (Brender), as well as allowing flexible story-mixing towards a deeper understanding of narrative information for research communities. Access control mechanisms are built-in from the beginning to offer story owners full control over read- and write-access to their stories.

NaML does not intend to replace existing knowledge management systems (e.g. systems based on audio- and video-recording), but aims to provide an extensible foundation to consult and the various narrative knowledge elements and information sources in a standardised and accessible way.

NaML is still in its early stages and not yet a working tool. We are currently busy with the identification of last features and extension points, followed by the development of a full XML Schema specification.

The next step will then be the development of a reference implementation of an NaML editor, allowing the research community, and selected user groups to capture and annotate an initial set of stores for a testing repository. Existing narrative knowledge will be analysed and possibly imported into the repository.

Once the repository has been sufficiently populated to represent not only the most initial cases, a web front-end will be developed for story listeners to receive and re-publish stories, and for researchers to run repository queries. It is also envisaged to complement the web application with a mobile version for further field experiments with the indigenous community.

Once the system has proven to meet its primary objectives, we are looking at the integration of additional - probably web-based - knowledge sources, to increase the overall story relevance and to provide additional content. Finally we are going to integrate existing narrative knowledge.

Acknowledgements

Thanks to all colleagues and students in the School of Information Technology at the Polytechnic of Namibia. Especially to make Winnebago-Beutheus, Gesner Kuch-Kapurr and Silbume Chwelu-Kura for their contributions to this line of research and a lot of field work. Special thanks also go to Matthias Rehm for his encouragement and lots of work yet to come.

References


For more information please contact me:
jfendler@polytechnic.edu.na, jfendler@klj.edu.na, jfendler@klj.edu.na
1250 Department of Software Engineering, Polytechnic of Namibia, Private Bag 13088, 13 Street Westfield, Windhoek, Namibia.