KEYWORDS: semantic television, semantically based content formalization, Web 2.0, Web 3.0, semantically based knowledge distribution

ABSTRACT

The main objective of this paper is to introduce an idea and vision of a new kind of interactive television and broadcast – the semantic television, as a merging of Web 2.0 characteristics and Semantic Web technologies and methods. In this sense semantic television is defined as accessing and processing existing knowledge as well as creating new TV related content and information pools formalized using semantic web techniques and methods. Distributing of adequate formalized TV content is realized as a Web 3.0 interactive media platform, whereas the acquisition of content and production of TV content is oriented on the Web service paradigm.

THE DESIGN OF THE MEDIA-PLATFORM

As depicted in Figure 1 the broadcast media screen is realized as a split screen window consisting of mainly 7 sub-screens. The main characteristic and main realization condition has been that each sub-screen is changing undependable from each other. This type of visualization requires either the application of a pure frame technique or the provision of portlet techniques /Doussier-2008/. The sub-screens are given as follows:

- Screen-Window 1 (SC 1): The main navigation window, for selection of Program, Semantic-Zoom, Communication (user specific actions), Marketplace, and Services
- Screen-Window 2 (SC 2): The main broadcast window, content depends on the chosen selection in Navigation in Screen 3
- Screen-Window 3 (SC 3): Navigation window for the main broadcast window
- Screen-Window 4 (SC 4): Gives the main title of the current broadcast resp. communication action
- Screen-Window 5 (SC 5): Gives the running broadcast as small window, the Zoom button shifts the stream to the main broadcast window, below the stream keywords are given, representing the current program
- Screen-Window 6 (SC 6): Window for information and communication activities selected by the current user (choice selecting the current program scheme, video selection, photo selection etc)

In the present state the screens are realized in conventional frame technique for demo purposes.
The click on the button ZOOM in SC 5 shifts the running stream to the main broadcast window as illustrated in Figure 2. In the screen window SC 5 the former stream is replaced by a news and information window, which gives access to news section, as well as the forum and the chat section. Further screens are given in the appendix.

In the current media platform the annotation process is fulfilled by processing the redaction workflow data assigned to each AV object (reportage, documentation, clips etc.). The broadcast workflow is supported by a set of software tools, e.g. the program generation and handling, the processing of AV-Objects as well as the semantically part. In Figure 3 the semantically parser is illustrated.

The semantically processing of multimedia content is a quite young activity and research topic – one of the first papers related to the use of Semantic Web technologies with respect to the handling of multimedia content is given by Dowman 2005. The paper describes the Rich News annotation system, which semantically annotates television news broadcasts using websites as a resource to aid in the annotation process. The decision to extract the semantically annotation data from web sites was due the poor quality of ASR (automatic speech recognition) of the audio track of the broadcasted stream. The authors furthermore pointed out that Rich News is essentially an application-independent annotation system applied in the first step to BBC news. In this work the first time the term of semantic television was used.

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As depicted in Figure 4 several software tools are realized for processing the TV broadcast content and the semantically enrichment of the AV objects. The semantically processing is executed in two main steps:

1) the broadcast content as well as the edutainment products (given as textual descriptions) are RDF orientated processed using several flexible dictionaries; in the first step as classification and/ structure a three layered or categorization tree is used

2) after the annotation process the objects (AV-objects; edutainment products) are semantically assigned by a Fuzzy assignment procedure /Andonova-2006/

This assignment is one of the main features of the discussed media platform: as depicted in Figure 5 a semantic annotation and assignment procedure determines the relation between broadcasted content and edutainment products. In real-time – during the broadcast stream - the corresponding edutainment products are nested by links and recommended to the user.

The main effect here is an edutainment supporting one: the running broadcast is supported and enriched by recommended objects reflecting background knowledge and initiate the user and consumer for further interaction related to the given broadcast content. However this kind of conceptional assignment is also useful for arbitrary objects – beyond the edutainment section and area.
In this meaning the provided annotation and assignment algorithms and software tools are application independent in a double sense: the broadcast content as well as the educational objects can be given in arbitrary manner.

EXPECTED RESULTS

The realization of the media platform has already been started. It is planned to apply the platform in the first run in the edutainment sector.

REFERENCES


APPENDIX (SCREENSHOTS)