

SWWS Position Paper : Semantic Web and Adaptive Multimedia Access

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Introduction

Digital broadcasting systems have been coming into wide use all over the world. Efficient use of bandwidth allows us to transport hundreds of TV programs through a single broadcasting satellite to millions of user terminals simultaneously. On the other hand millions of multimedia contents, including TV-like live programs, are streaming over the Web. In order to make the most use of the digital information infrastructure, various forms of information must be well-structured in common ways between TV and the Web environment from every point of view such as authoring, delivery, browsing, searching and retrieval. Well-structured information will allow us to navigate in floods of services between TV and the Web seamlessly. In these senses, we have reported basic ideas on a future framework for integration of TV and the Web^{[1][2][3][4]} and a further study on the "Integrated Broadband Environment for Personalized TV Experience (IBEX)"^[5] as a TV-Anytime^[6] service platform. We are expecting that the idea of the semantic web will help us to improve future multimedia access environment and our IBEX will be a good application for the semantic web in this area.

Our Positions on the Semantic Web

What is our view on the Semantic Web? What is the interest of our organization in the Semantic Web?

Our interests lies on the adaptive multimedia access through the integrated broadband environment. As a way of providing consumers

adaptive access to favorite contents and metadata customized not only for user preferences but also terminal capabilities, we are expecting that the Semantic Web will be one of the most important ideas.

Are we planning to provide services and machine readable data on the Web? How? Access requirements?

Currently we can't appoint the exact date. It is because there is a great difficulty in involving multimedia content industry who can provide high quality contents such as TV programs and movies. In most cases such content industry has their customs much different from the consumer industry. We are expecting that numerous amount of efforts must be made to interconnect each other.

Which languages and tools are we currently using?

Our initial proposals^{[2][3][4]} for describing metadata of TV programs were based on the RDF data model because we considered that it was easy to understand and enough to represent semantic relationships between and within TV programs. However, as the later trend moved to XML Schema, MPEG, which is ISO working group in charge of multimedia format, decided the use of XML Schema as a multimedia description definition language, and then TV-Anytime, which is TV industry forum working on TV metadata standardization, is following MPEG. Considering such background, currently our prototype system will be mostly based on the MPEG and TV-Anytime specifications although we are still expecting the use of RDF for our future development in appropriate manners.

What do we envision to be the most important practical uses of the Semantic Web in a few years ?

Because of the difficulty in involving content industry, it is difficult to provide practical services in a few years. But we are sure that the adaptive multimedia access through heterogeneous networks with heterogeneous devices will be one of the most beneficial uses of the Semantic Web.

What applications in our organization would improve by making use of the Semantic Web?

As functions of the IBEX - Integrated Broadband Environment for personalized TV experience

- Adaptation of program selection based on user preferences
- Adaptation of content and metadata presentation based on device capabilities
- More to come..

What new research and tools need to be done to support our use of the Semantic Web?

- Efficient production of metadata because it is resource consuming
- Establish practical metadata schemas to provide beneficial services for users
- Digital rights management of content and metadata
- Interconnecting efforts between content industry and consumer industry rather than technical research

References

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