W3C Multimedia Semantics

Note: to do http://www.w3.org/2006/10/02-mmsem-minutes.html#action09 'Patrizia and Massimo report on similarities among use cases.'

Similarities among the various use cases

Patrizia Asirelli, Suzanne Little, Massimo Martinelli, Ovidio Salvetti

1. Introduction: Motivation

- **The goal of our group:** To show that there is the need for multi-media treatment: semi-automatic extraction of information, representation, intelligent search…. and that this can be done by means of Semantic Web Technology.

- **The goal of the use cases:** to illustrate that there are potential applications dealing with multimedia that cannot be dealt with now, or, at least, they cannot be dealt with in a efficient and comprehensive manner. Furthermore, they should highlight possible solutions, by means of Semantic Web technology.

The issues that we have considered when reading the use cases are the following:

a. The initial impression, reading the use cases, was that the various use cases were concentrating on a class of media and, around that particular media the need for some functionality was shown. The functionality that was considered, or proved necessary, was almost the same in all use cases (semi-automatic extraction of information, intelligent search/retrieve, and thus 'semantic' annotations etc). Thus each use cases seemed to prove the same needs but focussing on a particular class media. It turns out that the only use case concerning multimedia documents (presentations), according to the traditional definition of 'multimedia', is 'Semantic from Multimedia Authoring'.

b. The separation between the two sets of use cases regarding 'problems with integration' and regarding 'representation' problems, that is the different types of use case.

2. Possible gaps in the use cases

a. Multimedia examples

At this stage, **one question** arises: is the 'Semantic from Multimedia Authoring' the only use case dealing with multimedia documents we can find? If this is the only need for dealing with multimedia documents it does not motivate all the effort. That is, **we should find other use cases that show example applications where there is the need of dealing with multimedia documents/presentations.**

In particular, in the other use cases the very need for **multimedia** seemed to be emerging when dealing with annotations. THUS: With respect to the goal of finding use cases where MULTIMEDIA is necessary it seems that the answer given is 'Annotation for intelligent search of documents' whatever 'document' means: it can be text, video, image or even 'multimedia' itself. Then the answer to the above question maybe is: **a use case:** '**Annotation of documents for Intelligent Search'** in the sense that the annotation of documents (what ever format it has) can be a 'multimedia' document itself where text, image and sound are used altogether to describe relevant information concerning the document itself (e.g. annotations can be (1) a

recorded voice describing one image and the event in which the image took place or (2) the image can be a snapshot of a video, thus the annotation can be given by a multimedia document: a video annotated with a peace of text (or voice) that specifies which snapshot of the video the image refers to.

b. Other purposes

Current use cases focus on semi-automatic extraction of information, intelligent search/retrieve, semantic annotations and integration. It could be valuable to consider some other area. For example, applications such as Knowledge Representation and Management, Workflows, Aggregation etc.. Furthermore, domains such as Education and Science could offer interesting examples.

Furthermore, a solution to the problem of integration, that seems to be suggested by all use cases, is the same: **a multimedia metadata standard.** And we seem to come to the same usual point: the standards. In that respect MPEG 7 seems the more studied and mature BUT it is not sufficient and we need to suggest better standards or ways to extend what we have. In fact MPEG7 is lacking in the ability to deal with Semantic annotation.

3. Classification of use cases

The use cases have been classified according to 'Integration' and 'Representation'. The use cases in the 'Integration' part are in fact all dealing with problems of integration of data or metadata, but some of them can be considered as concerning tools for media/multimedia handling e.g. the MPEG7, the Tagging and the Low level feature extraction use cases. These use cases deal with what can be considered tools or solutions to particular problems for other use cases. For these kind of 'tools' use cases there exist both a problem concerning the kind of information that should be 'represented' (Representation Problem) and managed and integration problems (Integration Problems).

The same applies e.g. to the Algorithm use case. From one side it can be considered as a use case where there is a 'representation' problem (how one can represent algorithms and how to represent their semantics e.g. in terms of I/O relations etc) but at the same time it can be seen as an example of tools to solve problems in the multimedia world. That is e.g. it can be seen as a problem of assigning the semantics (operational) to a document, in the sense of 'how the document was produced' or, more in general, 'how a type of document can be produced' in terms of 'algorithms' applied to a starting document or as a 'sequence of algorithms' or 'processes' applied to a starting document.

Thus, one could perhaps better **distinguish between use cases that serves as the final application-user** examples, while others could be characterized **from the point of view of the developer/implementor.**

Alternatively, classification could be according to application type, or to the purposes of the application. For example: Knowledge Representation and Management, Workflows, Aggregation, Semantic Annotation, etc.

Finally, classification of use cases should take into account the main purposes of the working group.