Adaptivity, Personalization, and the Semantic Web

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ABSTRACT

The aim of this workshop is to bring together researchers and practitioners in the fields of web engineering, adaptive hypermedia, semantic web technologies, knowledge management, information retrieval, user modelling, and other related disciplines which provide enabling technologies for personalization and adaptation on the World Wide Web. The workshop will consist of 6 papers (4 full, and 2 short), followed by a panel discussion.

Categories and Subject Descriptors

H.5.4 [**Information Interfaces and Presentation**]: Hypertext/Hypermedia - architectures, navigation, user issues;

General Terms: Design, Standardization, Theory

Keywords: Adaptive Hypermedia, Interoperability, Personalisation, Semantic Web

1. INTRODUCTION

The most famous Hypermedia environment, the World Wide Web is now an integral part of numerous online applications. In these applications a user may interact with a service provider, product sellers, governmental organizations, friends and colleagues. Content and services are available at different sources and places. This multiplicity of available services can be very confusing for the lone user, to address this Web applications need to combine all available knowledge in order to form personalized, user-friendly, and business-optimal services.

Personalization and adaptation [1] to both user and vendor needs, as well as network or machine requirements is therefore an important topic for current hypermedia research and development. In commercial environments, this is known as "the client is the king". In learning environments, this is "learner centred education". Although this approach is much sought after and has long been considered useful, up until recently, adaptive solutions were not widely adopted. Amongst the reasons for this, was that these applications were mainly stand-alone implementations, only aimed at specific systems. This created a serious problem when these systems inevitably became obsolete, and the created material was not exportable (due to proprietary content lock down). For authors, this caused great difficulties because it meant that each time they had to change the system they used (because of technology updates or software obsolescence), the material they required to use had to be created from scratch again. From the point of view of the user (be they buyers or learners) they had to contend with learning and using many different environments with different personalised reactions, representing an additional layer of unwanted complexity. Adaptive solutions being therefore difficult to author/create, to maintain and to use, it is no wonder that, although considered desirable, not many were employed.

The Semantic Web has been built from the very beginning with the goal of reuse, via standards, tools, technologies, and machine-interpretable semantics. Many of these initial goals have been well developed, and now Semantic Web research is moving towards reasoning and personalisation mechanisms, therefore possibly creating the basis of exchanging adaptive solutions. In fact, full-fledged ontologies have structures with embedded reasoning mechanisms, so they can only be reused as a package. This means that structure and reasoning cannot be reused separately; in authoring of adaptive hypermedia research, however, structure and reasoning on it benefit from being kept apart: for instance, in LAOS [3], reuse of both domain or lesson maps, is desired, apart from the exchange of adaptation strategies.

Adaptive and personalised hypermedia systems can benefit from the inclusion of Semantic Web technologies by adopting standards and interoperable semantics. Research has already started in Adaptive Hypermedia to address the problems of stand alone adaptive systems [4], with a bottom up investigation at system interoperability. With the inclusion of Semantic Web standards the AH community can look forward to a seamlessly integrated adaptive web.

The Semantic Web can benefit from the previous research and application of adaptive, personalised systems. Adaptive Hypermedia research includes addressing the issues of modelling the content domain, the user, the delivery environment and the adaptation mechanism. The lessons learnt by the Adaptive Hypermedia community will feed into the SW standards enabling a rapid uptake of the requirements for a personalised Semantic Web.

APS'06, August 23, 2006, Odense, Denmark.
ACM 1-59593-453-7/06/0008.

1 WORKSHOP

The aim of this workshop is to bring together researchers and practitioners in the fields of web engineering, adaptive hypermedia, semantic web technologies, knowledge management, information retrieval, user modelling, and other related disciplines which provide enabling technologies for personalization and adaptation on the World Wide Web. The subjects discussed in the accepted papers are:

1. Kravčík [5] aims at addressing the issues of missing standards in the area of adaptivity and personalization, what causes interoperability problems that are usually solved by means of the Semantic Web.
2. Saksena [6] describes steps taken towards creating more efficient generic semantic authoring for adaptive hypermedia, starting from an existing framework, LAOS, an existing system, MOT, and evaluation results thereof. This system is to make use of existing appropriate Semantic Web techniques.
3. Stewart [7] describes the research into interoperability of user models between AEH systems via a 1-to-1 conversion between two AEH systems, MOT and WHURLE. Here, they identify the differences and commonalities and address how these influence the efficiency of the conversion of the two systems' user models.
4. Rigou [8] introduces an algorithm for personalized clustering based on a range tree structure, used for identifying all web documents satisfying a set of predefined personal user preferences. The returned documents go through a clustering phase before reaching the end user, thus allowing more effective manipulation and supporting the decision making process.
5. Alrifai [9] propose a mechanism for enabling consistency maintenance of Learner Profiles shared between collaborating adaptive learning systems.
6. Velart [10] present behaviour patterns which were observed in the course of programming in C++. Three behaviour patterns were observed in the data representing users progress in individual chapters: sequence pattern, skipping pattern and condition-first pattern.

2 PANEL

The panel at the workshop inherits its name from the workshop: "Adaptivity, Personalization and the Semantic Web"; the main focus of the panel is "Mutual Benefits between Semantic Web and Adaptive Hypermedia". The panel aims to discuss the research and development of both adaptive hypermedia and the Semantic Web and identify the areas of overlap, the areas that each discipline should be addressing (form the other ones point of view), and identify a roadmap for future collaborations. Specifically, our planned outcome is to merge these two streams, extracting elements necessary to interface and exchange partial or complete adaptive solutions, based on the experience of these two communities of research: AH and SW. The panel will include an author from each paper to represent the multiple view points in these fields.

3 ACKNOWLEDGEMENTS

The research leading to this paper was supported by the European Commission under contract FP6-027026, Knowledge Space of semantic inference for automatic annotation and retrieval of multimedia content - K-Space, and contract 507310, the ProLearn Network of Excellence.

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