

TOWARDS DYNAMIC, USER-DRIVEN CONTENT CREATION AND DELIVERY IN IPTV ENVIRONMENTS

Nikitas M. Sgouros
Dept. of Technology Education & Digital Systems
University of Piraeus
Karaoli & Dimitriou 80, 18534, Piraeus
Greece
E-mail: sgouros@unipi.gr

KEYWORDS

IPTV, content synthesis, peer-to-peer networks.

ABSTRACT

Novel IPTV platforms offer new creative possibilities for dynamic, user-driven development and delivery of multimedia content. This paper describes an approach for building a new generation of authoring and presentation environments for IPTV applications capable of allowing an unlimited number of users to modify existing programming content and post their changes on the net. In addition, these environments should allow users to tailor the presentation of IPTV programming content to their taste by selecting a desired subset of changes implemented by other users in it and dynamically viewing and/or broadcasting a version of the material implementing all the desired changes.

INTRODUCTION

The rise of IPTV platforms, massive multimedia publishing sites, peer-to-peer repositories and technologies along with various e-commerce sites has changed dramatically the way content is being distributed, managed and reviewed by its audience. More specifically, content consumption and review is now immediate and massive, leading to the creation of a large amount of content meta-information including audience reviews that may suggest useful ways to improve its quality. On the other hand, IPTV platforms have an insatiable appetite for new content as they need to offer a large number of viewing alternatives to their customers in order to remain competitive. Given that professional IPTV content development is in general very costly, this puts a significant financial strain on novel IPTV efforts and discourages the development of serious alternatives to existing old-fashioned TV broadcasters. Consequently, new creative possibilities for dynamic, user-driven development and personalization of multimedia material on a large scale open up, as IPTV broadcasters can explore new sources of content by tapping into the large number of media professionals or talented amateurs willing to publish or modify original multimedia content in order to improve its impact. These processes can be compared with the incremental creative processes by which folk cultural material and 'open source' software are developed.

On the other hand, geographically distributed, creative teams involved in IPTV content development need to have affordable and efficient ways of implementing their work

given the large computational and financial demands of multimedia production. Unfortunately, content creation and management shaped by all these and possibly other types of social interaction is hampered by the scarcity of appropriate web-based environments that can effectively manage the fusion of original multimedia content with the modifications proposed and implemented by creative groups. This unfortunate situation is further exacerbated by the lack of appropriate personalization tools that can allow users to dynamically compose and view desired versions of available multimedia material.

RESEARCH APPROACH

We seek to respond to these trends through the development of a new generation of participative authoring and presentation systems for dynamic, user-driven development and dynamic personalization of multimedia content in IPTV platforms. In particular, our approach aims to develop novel media management methods for:

- Describing adaptation/enrichment of existing content through the formalization of appropriate annotation meta-data and the provision of
 - low-cost tools for meta-data composition and inclusion in the
 - collaborative workflow using encryption-based watermarking techniques.

The meta-data will effectively capture the types and relations between the editing actions performed on the content by its users along with issues related to the identification of the contribution of each author in each modified version and the access rights for the content.

- Personalizing content presentation through the use of dynamic content composition techniques allowing users to select, view or broadcast modified versions of existing multimedia material. These versions will automatically incorporate user-selected subsets of adaptation actions implemented by other users. Content personalization will be facilitated with the use of 3D visualization techniques enabling users to view the existing annotation meta-data associated with a multimedia asset and freely select a subset of them in order to be presented with a version of the material implementing all the selected actions.