Abstract

This dissertation is associated with the conclusion of the MSc in Informatics and Computing Engineering and it was proposed by the company MOG Solutions. The aim of this work is to develop new tools to allow producers of audiovisual content to insert additional interactive content in Smart TVs, using a layer of metadata and software.

The television has been losing relative importance, mainly due to alternative content consumption devices with Internet access, like computers, tablets or smartphones. These devices allow new ways of interaction with content that are not possible with the current television model, leading to a loss of viewers that translates into loss of revenue and decrease in the quality of the final product. The development of complementary services has been tried, but these solutions required additional equipment and revealed to be difficult to implement and synchronize with the linear signal.

The aim of this dissertation is to design and develop a solution of interactivity in the context of linear television consumption in Smart TVs. The solution must also avoid complexity and synchronization problem referred. To achieve this goal, a number of challenges need to be addressed notably:

- Identification of the type of interactivity that should be offered to the user;

- The type of metadata required and how to represent it;

- How to add this additional metadata to the linear TV signal;

- Specification of a software layer to handle the metadata at the client side and how to deliver it to and run it in the client;

- Creation of a prototype to demonstrate the possibilities of the proposed solutions, streamlining the TV enhanced content to the consumers and allowing them to interact with it.

We suggest the use of an extension to MPEG-7 to annotate the content and the HbbTV®standard to send a generic HTML application to client's Smart TV. This application will receive, process and convert the metadata to an interface usable by the user. The additional assets, like images, can be downloaded from the Internet or can be embedded with the application.

As a demonstrative use case, complementary information to an ad is showed, and the same ad is associated with a specific temporal moment of a television program. To assess the fulfilment of the objectives, it is verified if the complementary information reaches the client, if it is presented according the specified in the metadata and if it is synchronized with the linear programming.