

User-Centric Personalized IPTV Ubiquitous and Secure Services

UP-TO-US aimed to elaborate, prototype, and evaluate an open European solution allowing IPTV services personalization over IPTV systems with different architectures belonging to different network operators and service providers. This was achieved through content personalization, according to each user, to the network and devices' contexts while preserving users' privacy.

Main focus

"Context" is any information that can be used to characterize the situation of an entity. Personalization of services by context-awareness is well known in the Internet world. Popular on-line commerce services propose products based on our previous purchases, while some websites display advertisements profiled to our search topics and network localization. However, context-awareness paradigm for IPTV services is relatively a new research area, explored by UP-TO-US project.

A context-aware service automatically adapts its behavior to the current context. For example, an IPTV portal would display a selection of several movies taking into account user's preferences, time of day, localization, etc., out of thousands of items in the whole VOD (Video On Demand) catalogue. Thus, the TV service becomes more "intelligent", enabling easier and user-centric content discovery.

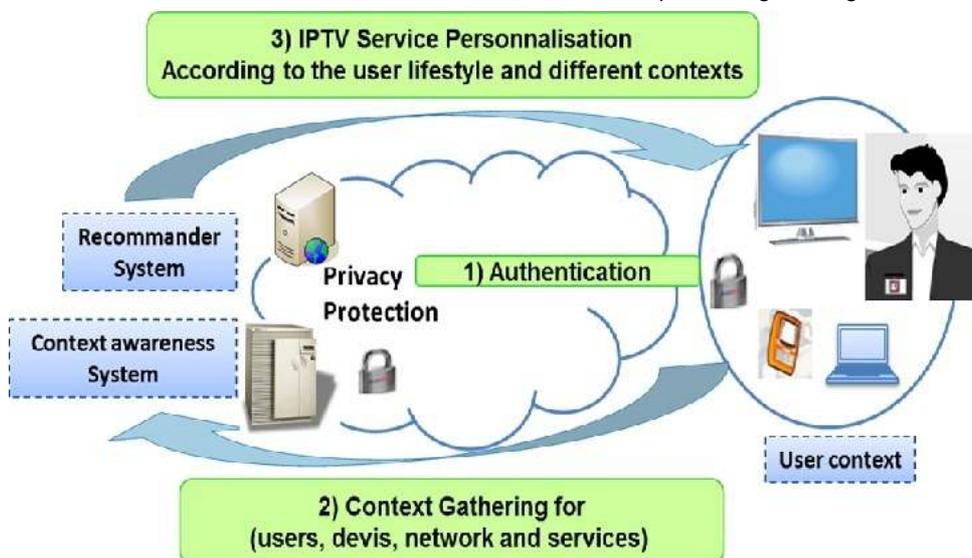
UP-TO-US focused on two use-cases for service personalization: users in nomadic situations. For instance this would allow a user to access his personalized IPTV content in a hotel and receiving his own bill as "My Personal Content Moves with Me") The second use case would be on users' mobility in his domestic sphere, allowing the user to move around within his domestic sphere while being continuously accessible.

This IPTV service personalized according to his location and devices in his proximity "My Content Follows Me in a Customized Manner". In order to achieve the objective of UP-TO-US, some enabler technologies were developed and integrated to different IPTV systems. These mainly included: a context-aware module, a profiling management module, and a privacy management module. Consequently, content is personalized according to users' preferences, and different contexts, while fostering trust between viewers and broadcasters through an efficient privacy management.

Approach

UP-TO-US has mainly addressed and implemented the following technical problems challenges.

- ◆ **Full user interactivity** with the IPTV system including a **context-awareness module** capable of gathering and man-



UP-TO-US

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www.celticplus.eu/Projects/Celtic-projects/Call7/UP-TO-US/uptous-default.asp

aging different types of context information related to users, networks, terminals and services. Project partners agreed on a generic context model, extending standard TV Anytime metadata description format. It provides unified data structures for storage and exchange of situational data.

- ◆ **Enhanced nomadic services access** as well as services continuity: allowing each user to access his personalized IPTV content in nomadic situation (for instance, while being in a hotel) and be accounted on his own bill, which in turn will create new business opportunities between different actors in the IPTV value chain.
- ◆ In addition, **user mobility within his personal sphere** will be considered, allowing the user content to follow him to the more appropriate device according to context.
- ◆ **User profile and content adaptation: allow dynamic updating of users' profiles** according to different contexts (including user contexts, networks and terminals contexts)
- ◆ In turn the **IPTV content personalized** in a continuous manner according to the users' profiles.
- ◆ **Users' privacy guarantees:** giving users full control of their personal data by structuring user context information in privacy

levels according to users' preferences.

- ◆ **A platform for a user-centric, ubiquitous and secure IPTV services:** prototyping a novel personalized IPTV system functioning among different architectures (managed IPTV and Web TV) that could belong to different operators.

Achieved results

UP-TO-US project has designed a modular Context-Awareness System for gathering, processing and delivering situational information to context-aware TV applications. The project has elaborated methods for analyzing user's consumption traces matched with consumption context, to produce a **dynamic user profile**.

UP-TO-US has deployed a system for producing **personalized recommendations of IPTV content, considering user's lifestyle, context and infrastructure constraints**.

UP-TO-US studied advanced methods for context-aware management of user's mobility within domestic sphere. Nomadic access is also supported, making possible the access to my IPTV services from my friend's house, or from a hotel room, served by a different IPTV provider.

A prototype UP-TO-US system has been implemented. It is worth noticing that a common UP-TO-US data model has been applied for different deployment

types: **managed IPTV**, as well as for **WebTV**. Despite quite different architectural principles, the generic UP-TO-US data model and interface APIs proved its value for managing contextual information in all cases.

Main results

- ◆ A Content and devices abundance don't allow tv users to chose their programs in a clever way. They need a personalized guide. Before, the users had to declare their preferences manually. Almost 5 % of customers are using this functionality.
- ◆ During a trip in a hotel, users cannot receive their personalized programs.

With up-to-us:

- ◆ My personal content: Users can ask for personalized programs from their Smartphone very easily in a secure way. Their personalized programs are calculating from all context data, their user's preferences and all information are updated dynamically.
- ◆ My personal content moves with me: users can receive their personalized programs when they change of location (friends, family, hotels,...)
- ◆ Users always can decide of the personalization, they manage their privacy. They can easily access to non personalized programs.

Impact

These products will improve the image of providers (confident partners

End-users (customers) were involved in the requirements definition phase to know their expectation from a personalized IPTV system, and now they have as a consequence a better image of their provider.

UP-TO-US results are very soon expected to open new market opportunities and allow the creation of new services through advanced services personalization.

The results of up-to-us will be inputs for a new research project: "End to end adaptation based on global QoE".

About Celtic

Celtic is a European research and development programme, designed to strengthen Europe's competitiveness in telecommunications through short and medium term collaborative R&D projects. Celtic is currently the only European R&D programme fully dedicated to end-to-end telecommunication solutions.

Timeframe: 8 years, from 2004 to 2011

Clusterbudget: in the range of 1 billion euro, shared between governments and private participants

Participants: small, medium and large companies from telecommunications industry, universities, research institutes, and local authorities from all 35 Eureka countries.

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