

Web Services and TV

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Background

Aalto University (previously Helsinki University of Technology) has been researching web and TV since 1998. The research work was started in a project Future TV that studied interactive services of digital television. Initially, we looked at different digital television programming frameworks such as Multimedia Home Platform (MHP) and Multimedia Hypermedia Expert Group version 5 (MHEG-5). Later the research work focused on integration of web technologies and TV.

The research results were utilized in the development of the Finnish digital television. Also, we started a spin-off company called Sofia Digital [1], which is still operating and currently is focusing on mobile TV.

Later we have researched, for example, mobile television in Podracing [2] project together with Technical Research Center of Finland (VTT) and University of Tampere. In addition, we have studied the digital television graphics architecture in Brocom project [3].

Aalto University has also been W3C member since 2002. We have participated, for example, the XForms, Compound Document Formats, and SMIL working groups.

Web Services and TV

Aalto University is especially interested in how TV can be used as platform for web services. Also, we are interested in new TV devices, such as mobile television. In practice, this means also integration of TV and web content.

In our opinion, the HTML5 and web widgets are important technologies for implementing web services in TV. However, these technologies are currently not optimized for TV devices. For example, navigation has to support remote controls. Also, we see that the Javascript environment and related APIs have to include support for typical TV functions.

In addition, we are especially interested of the development of 3D graphics support and how the evolving 3D web specifications could be used in TV. This requires also optimization of the graphics architecture in TV sets and mobile TV devices.

Finally, we see that TV very important role in the development of the social services, currently offered on top of web platform. These services require special support when used in TV sets. For example, better real-time communication and push technologies, such as web sockets and remote events, should be supported.

Concrete Examples

Next, we would like to present three concrete use cases that we currently working on:

1. Recommendation of media items
2. Shared widgets
3. TV in assisted elderly care

Figure 1. depicts example of the recommendation of media items service. The idea is that the users of media service can share individual media items, such as news, advertisements, etc. Instead of posting them by email or sharing them trough social media service, users can share the media items directly on the media site. This increases the stickiness of the media site. Also, users can have private conversations in small groups instead of public anonymous postings, which often contain just negative comments. However, the real-time distribution of the comments requires efficient architecture. One possibility is to utilize push technology, such as web sockets or Extensible Messaging and Presence Protocol (XMPP) [4].



Fig. 1. Toolbar for sharing media items.

Many TV manufacturers have already announced that their future TV models will support widgets. The viewers can select form available set of widgets and use them on their big TV screen. In our research work, we have studied how users could share widgets. The idea is that users can compose their own widget spaces and share them with other users (cf. Fig. 2). We believe that this kind of web service sharing is a natural extension of the social TV experience.

We are currently also looking at elderly care as one application area of web services. Elderly persons can live longer at home if they are provided with assisting devices, such as medication clock, cooking alarms, health monitors, web cams, and sensor floors. Often, these devices are connected to a web based service. Unfortunately, each device has usually is own service. The services would be much more usable if their were integrated as one service portal. Then, the different devices can be interconnected to the portal using REST based architecture (cf. Fig 3.), such as oBIX [5]. For home and especially elderly users, TV would be a natural device to use the service. This would require better web technology support from TV devices.

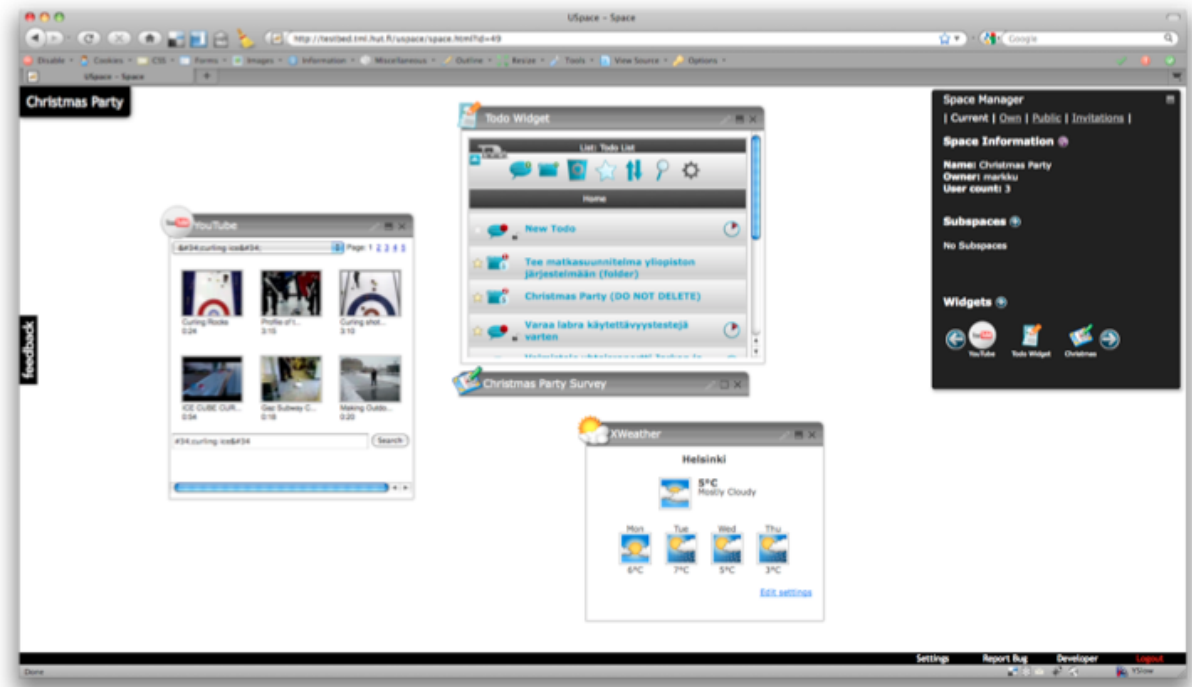


Fig. 2. uSpace service for social sharing of widgets.

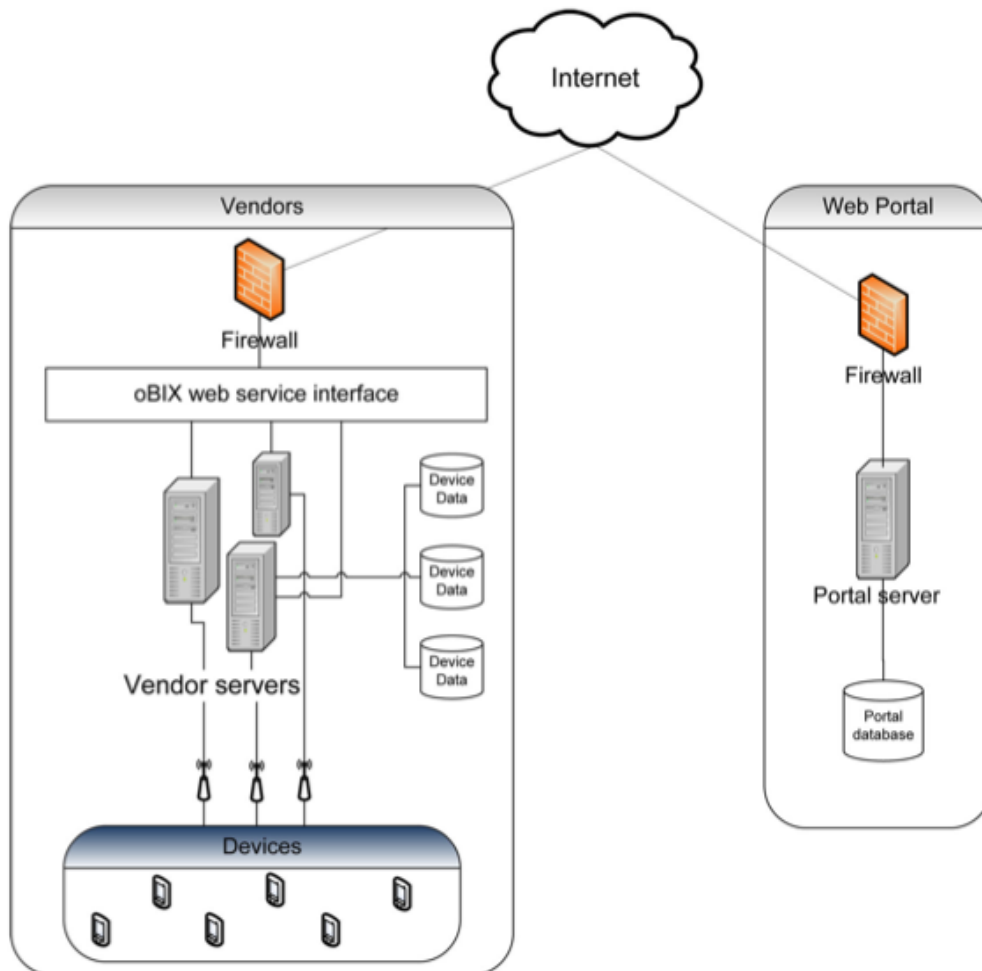


Fig. 3. Elderly care service architecture.

Summary

Based on the above use cases, we summarize our list of requirements for Web services and TV as follows:

- definition of TV requirements of HTML5, CSS, SVG, and ECMAScript
- support for TV remote control based navigation
- social media support (especially, real-time events and push technology)
- support for widgets and TV related APIs
- REST based interconnectivity of consumer electronics, building automation, etc.
- web 3D Graphics support in TV

References

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