Expression of Interest in Participating in the Workshop : Rich User Experience through Multiple Screen Collaboration

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Participant's Interest

Our primary research interests are multiple screen collaboration services and web based service oriented architectures to provide the users with rich user experience, especially on the methodologies for realizing so-called nomadic UI or UI migration. We believe the future Web TV with complex content and interactive applications rendered on a single screen could be more efficiently consumed by distributing them across multiple screens. The standardized markups and protocols based on the web technology are the way to realize such environment.

We have designed numerous future user scenarios where a Web TV collaborates with the "second screen or more" to both overcome the limitation of the single display content and to provide richer user experience. We studied various standard specifications from W3C WEBAPPS[1] working group to MWBP[2] working group's recently published recommendations, OIPF's CE-HTML[3], and IETF's protocols[4] were also investigated. We found that there exists a great need of supplementation in bits parts of each standard sector. It would be a good opportunity for us to share our scenarios and results to provide some insights to the participants as well as discuss possible standardization needs for the Web TV.

Point of View

Our point of view is that the Web TV is a highly lean-forward media, which engages the audience actively both indoors and outdoors. The distinctive characteristics of the traditional TV would remain, along with the new features of accessibility. For example, TV itself was static media in terms of the hardware. However if the content is able to migrate to another portable display device, it becomes dynamic media. This "seamless migration" has been mostly standardized by W3C SMIL[5] and DVB-H[6] seamless handover. But Web TV requires beyond the "media

migration". It may incorporate web pages and application migration or even the simultaneous use of both the TV and the second screen.

The content or web applications accessed from the Web TV will be rendered to the user at a certain level of UI, just like a conventional web page from a browser. We are convinced that if the UI is designed to be fragmented and can be directed to another display device, it can flexibly distribute and compound contents to any web accessible device. This enables incorporating multiple displays for a single TV program or application and provides the user with richer user experience. Followings are some examples.

Example of Interest

#Purchasing a product during a TV program

Assume there are two people watching a TV program on the single Web TV. One wants to purchase the product shown on the TV. He can press the "purchase" button on the screen, but the pop-up menu or the window may hinder the visual of content the other audience is watching. Moreover, if the purchase procedure continues on the TV, the personal information such as the credit card number may be exposed to the public. This issue can be handled by migrating the "purchase UI" onto his personal device.

#Content sharing and posting

While a family is watching a TV program, one gets curious about the TV character. He personally searches on his smart phone and finds the TV character's profile description with a photo and many other search results. Then he selects the profile description and photo section or frame from his mobile web browser and "posts" to the Web TV to visually share with rest of the family. One of the family members likes the photo and "retrieves" the photo onto his personal device.

Concluding Remark

The requirements for supporting above scenarios are as follows:

- The web application or web page structure based on the (tentatively) UI migration markup language

- UI migration protocols defined with a API (both manual and automated migration)
- Session management for the set of inter-linked devices
- UI migration security and policy

We have designed multiple scenarios on the TV centric UI migration and partly implemented a prototype based on our own markup language called PDML(Pervasive Display Markup Language). It enables UI fragmentation and annotating the attributes of each UI fragments for the migration and rendering behavior. We expect to share our ideas and contribute to the W3C Web and TV members.

Introduction about us

We are a research center at KAIST, fully funded by the Ministry of Knowledge Economy (MKE) Korea, as well as Korea Communication Commission(KCC). We are participating in Korean government's various future technology roadmap planning including the smart screen and mobile service technology sectors. Current research is focused on the future pervasive display services for multiple screen collaboration.

References

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