Statements of interest in participating in the Workshop on Web-based Signage

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Participant's interest

The competence center Future Applications and Media (FAME) at the Fraunhofer Institute for Open Communication Systems (FOKUS) concentrates on the research and development of prospective interactive web technologies focused on Cross Platform Applications, Smart Media, future IPTV and Entertainment Personalization. These technologies enable smart personalization and support future web functionalities on various platforms from diverse domains. Regarding to the *Web-based Signage* topic, the FOKUS Competence Center Future Application and Media FAME is highly interested in the research and development of an open Web platform for interactive and personalized Web-based Signage. This platform addresses different challenges, such as interactivity, discovery and binding of devices and services, content sharing and distribution, content interoperability, UI adaptation, state/app migration, personalization and context-awareness. Fraunhofer FOKUS will bring expertise in the following domains:

➢ Design and implementation of open service infrastructures.
➢ Human-centric applications for multimodal interaction and multi-device experience.
➢ Intelligence functions as recommendation systems and community services.
➢ Service integration and collaboration for mobile middleware solutions and Mashup services.

Knowledge of those environments, preferences, and situation will be taken into account to offer a suitable added-value to the user in simplifying and improving the interaction with computer systems.

Point of View

From our point of view, the following use cases could be relevant for future *web-based signage* scenarios:

➢ Public multiplayer games: Let persons participate in cooperative or competitive games running on public screens (e.g. in waiting rooms, airports, public spaces, etc.), by integrating personal devices into the game experience. For example, smart phones could be used as controllers or for displaying extra information.

➢ Usage of personal devices to augment public screen content with additional context, e.g., personalized audio streams.

➢ Transfer of extra information relating to public screen content to mobile devices on demand, e.g., when a user catches interest in an advertisement and wants to review the material at home.

➢ Smart Interaction: Shop window mode for public screens, presenting products to customers. Usually, shop owners cannot provide individual consultation service outside their opening times. With a specific mobile web app customers could easily interact with advertising and product information web sites without requiring shop owners to install a complex and expensive system setting. Just by using a web enabled device, customers can get the information they want about the products at the local shop at any time. This mode is also useful when presenting web applications at exhibitions where, for example, text input via keyboard and mouse are hindering.

➢ Collaborative editing: For example, a digital whiteboard realized as a web app running on a public screen benefits from the fact that the application does not have to be controlled by one user/client exclusively. Using a convenient coupling mechanism, an arbitrary number of clients may interact within the same Web application.

A set of web technologies could play a central role in realizing such use cases. Some of these technologies are listed below:

➢ Novel HTML5 elements and capabilities, specifically those associated with audio, *video* and *canvas* tags.
➢ WebRTC for real-time communication between browsers running on different devices/screens.
➢ WebSockets API: Enables web pages to use the WebSockets protocol for two-way communication with a remote host.
➢ Web Storage API: Enables web pages to store structured data on the client side.
➢ Geolocation API: Provides a high-level interface to access location information associated with the device hosting the implementation, such as latitude and longitude.
➢ Web Intents API: Provides interfaces for client-side service discovery and inter-application communication.
➢ MediaSource API: Allows client-side JavaScript to generate media streams for playback in HTMLMediaElements and thereby enables use-cases like adaptive streaming.

Open Issues:

➢ Device/service discovery and binding.
➢ Performance of web technologies on mobile devices, considering battery capacity constraints.
➢ Security and privacy issues related to sharing content between public screens and personal devices.
➢ UI adaptation and state migration of multi-screen applications running on screens with different sizes/resolutions and device capabilities.