

Position Paper “Multiscreen and MMI” for W3C Workshop on Rich Multimodal Application Development

Fraunhofer Institute for Open Communication Systems FOKUS
Kaiserin-Augusta-Allee 31, 10589 Berlin, Germany
Stephan Steglich <stephan.steglich@fokus.fraunhofer.de>

The FOKUS Competence Center Future Applications and Media (FAME)¹ concentrates on the research and development of prospective interactive web technologies focused on Cross Platform Applications, Smart Media, future IPTV and Entertainment Personalization. Multimodal Interaction and Multiscreen Experience are two of the key topics we focus on in our research activities. In this context, FAME organized in March this year the 3rd FOKUS Media Web Symposium² about “Applications, Content and Technologies for a Multiscreen World” and attracted 160 international experts from 19 different countries. Furthermore, our team is currently working on a Multiscreen Application Framework called *Famium* which allows developers to build Multiscreen Applications using standard Web technologies. The *Famium* application model implements best practices regarding modular application design and separation of concerns as in most modern development frameworks. Applications or even single components of an application like a menu or content pane can be moved from the main screen to appear on the screen of a connected companion device seamlessly. *Famium* combines the main enabling technologies for building and running Multiscreen Web applications and is closely aligned with current research and standardization processes. One key feature supported by *Famium* is the Network Service Discovery and Advertising module, which allows web applications to discover and bind to services exposed by other application components by implementing a Binding to existing technologies and protocols like uPnP/DLNA, Bonjour and DIAL. On top of the discovery mechanisms the *Famium* environment utilizes other advanced upcoming HTML5 APIs like Media Source Extensions or Encrypted Media Extensions to enable the generation of feature-rich multimedia applications.

We believe that our work addresses several aspects targeted in the MMI architecture in terms of facilitating integration and multimodal interaction management between heterogeneous input and output devices. A “Screen” in a multiscreen environment can be considered as a generic entity which exposes one or many input or output modality components in a MMI environment depending on the capabilities of the connected device. E.g. a Web application running on a smartphone can expose *Touch* and *Device Orientation* capabilities as input modalities and *Display* capability as output modality in a MMI environment. These exposed input or output modality components can be advertised in the local network including device metadata and modality-type identifier by using underlying network protocols addressed in *Famium* (e.g. uPnP, SSDP, Bonjour, mDNS, etc.). Applications can discover these modalities by using the modality-type identifier as search query. E.g. the modality-type identifier *urn:mmi-w3c:service:keyboard-modality:1* can be used to discover keyboard modalities in the local network by using uPnP. In case multiple modalities from the same type are discovered, the application can decide which modality to use either by analyzing the device or modality metadata or by asking the end user to make a decision. Example: Control my TV (Display Modality) in the living room using my smartphone (Touchscreen Modality). Supposing there is another Display Modality available (e.g. TV in the bedroom), the application can ask the user to select a device from the list of discovered modalities.

¹ <http://www.fokus.fraunhofer.de/go/fame>

² <http://www.fokus.fraunhofer.de/go/mws>