Media Web Runtime 2012

Fraunhofer

FOKUS

Bringing Rich Internet Applications on Mobile and CE Devices



#### Rich Internet Applications on Mobile and Consumer Electronic Devices

At a Glance

Device categories are converging, operating systems proliferating and physical devices are becoming more and more interconnected. However, to develop an application for different devices is extremely difficult and complex. To support application developers, Fraunhofer FOKUS Media Web Runtime 2012 extends common web engines and exposes multiple host and cloud services via the JavaScript stack to applications. Standards and standard recommendations (such as BONDI, W3C, WAC) are applied to enable crossplatform and cross-domain application developments.



Fraunhofer FOKUS Media Web Runtime 2012 (MWR2012) is the third iteration of the successful MWR runtime. MWR2012 supports software developers in realizing cross platform, rich Internet applications targeting the mobile, consumer electronics, and desktop domains by extending traditional web browsers. The MWR2012 runtime enables web applications to use local device functions, such as the device's camera, to facilitate video streaming from one web application to another. Both common web application types, web pages and W3C widgets, are fully supported. Here, W3C widgets are installable client-side applications that are designed for using web standards like HTML, CSS and JavaScript. To support the vision of platform independent application development and deployment, MWR2012 also acts as the client for the Fraunhofer FOKUS MEGASTORE, which facilitates the convenient creation, administration, distribution and updating of applications for a broad variety of terminal devices, including mobile gadgets, but also set-top boxes or off-the-shelf TV sets.

### **Device APIs**

As with previous innovations such as Ajax, MWR2012 brings new application programming interfaces (APIs) to the local web and JavaScript runtime environment. These APIs feature access to mobile device functions and support the realization of network-supported rich media services with access to the device's local calendar, location, or address book. Access to media sources like camera or microphone is provided to web pages and widgets as well. Another API can be used to control media sessions based on NGN compliant signalling, e.g. SIP or XMPP. MWR2012 provides media playback APIs for several audio and video formats for legacy use in cases of non-existent HTML5 media elements.

The specific device APIs follow the latest industry recommendations of the former Open Mobile Terminal Platform (OMTP) project BONDI (http://bondi.omtp.org), the Wholesale Applications Community (WAC, http://www.wacapps.net/) and the recommended W3C standards where relevant specifications exist. Special regard is given to the device API specifications of the W3C Device APIs and Policy Working Group, the location and sensor APIs of the Geolocation Working Group, and the widget standards family of the Web Applications Working Group. MWR2012 also comes with additional APIs for features that are not covered by the standards, such as sensor based gesture detection, audio recording and streaming and real time state synchronization.



## **Device and User Context**

In addition to accessing device and network APIs, MWR2012 comes with a context framework that provides mechanisms to trigger applications or services on demand based on contextual descriptions. MWR2012 provides information about the user's environmental and social context for applications to adapt accordingly. Therefore, technologies for describing and acquiring contextual information such as device capabilities, network access, user identity and preferences, location, and the user's social network are provided.

# Personal Device Cloud

MWR2012 explicitly encourages the development of cross-platform applications running on multiple devices either by providing the same service on each platform or by smartly integrating the features of each platform into one compelling application. Applications that are aware of the ,device environment' of a specific user are able to offer additional functionalities and supplement features missing on one device with features found on another device. (Examples: "Do you want to use the virtual keyboard on the TV screen to insert this text or do you prefer to type this on your mobile phone instead?"; "Should I continue to play this song from the car radio on your connected MP3 player?").

### Components

The heart of MWR2012 consists of a service container extending the web runtime and providing web browser and widget runtime functions. The container manages all service and API access to system resources, while a policy subsystem secures exposure of services to the JavaScript runtime environment, ensuring that only trusted applications have access to provided services and APIs. MWR2012 allows rapid creation and distributed execution of mashups across multiple devices. For example, MWR2012 allows an easy-to-create web application that can request the current position from the device, take a picture with the device's camera, and publish the data to specific cloud services – all in HTML/JavaScript without native coding. In addition, these functions just need a few lines of JavaScript code with MWR2012 – in contrast to realizations in native development environments.

## Solutions and Services

MWR2012 is available for Google's Android Platform (Version 2.1 and higher) as proof-of-concept implementation. Further platform support will be available on demand. MWR2012 can be licensed for non-commercial showcases and application conformance tests.

In addition, Fraunhofer FOKUS offers:

- Training sessions in MWR2012-based application engineering
- Tutorials about mobile web technologies, including WAC, BONDI, HTML5, and W3C
- Specific extensions of Media Web Runtime on demand

Android Download



MWR2010 Webpage



André Paul

+ 49 (0)30 3463 7336 famecontact@fokus.fraunhofer.de www.fokus.fraunhofer.de/go/mwr

Fraunhofer Institute for Open Communication Systems FOKUS Kaiserin-Augusta-Allee 31 10589 Berlin, Germany

www.fokus.fraunhofer.de



FAME Future Applications and Media