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FAMIUM Internet of Things

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What is FAMIUM?

FAMIUM is an end-to-end prototype implementation for early technology evaluation and interoperability testing developed by Fraunhofer FOKUS' Competence Center Future Applications and Media (FAME). FAMIUM facilitates multi-screen content presentation and synchronization, adaptive media streaming and content protection.

FAMIUM includes a Chromium build with extended features of upcoming Web and streaming standards to allow early prototyping, experimentation and testing. These for example include W3C Presentation API, DIAL, Network service discovery, UPnP / DLNA, W3C TunerControl API, W3C Media Source Extensions (MSE) and Encrypted Media Extensions (EME). Furthermore, FAMIUM supports Dynamic Adaptive Streaming over HTTP (DASH) and Digital Rights Management (DRM).

FAMIUM IoT

FAMIUM IoT contains a common interface for IoT devices to make them available on the Web. This, for example, includes devices such as mobiles, TVs, home appliances or wearable computing devices. Connected devices are exposed through a set of extensive Web APIs that developers can leverage in applications. Web APIs abstract away from communication protocols, including the wide range of IoT technologies used at the network edge to connect to sensors and actuators. FAMIUM IoT allows straightforward access to sensor data streams and controls actuators. Device data is available through CoAP, MQTT, REST and Web Sockets. FAMIUM IoT allows developers to query devices from various application domains such as activity tracker, drones, Hue light bulbs, Arduino, Raspberry Pi, Spark, Flyport and many more.

FAMIUM IoT

FAMIUM IoT
Dashboard

Marketplace   Composer   Device Manager   Devices

FAMIUM IoT API & SDK
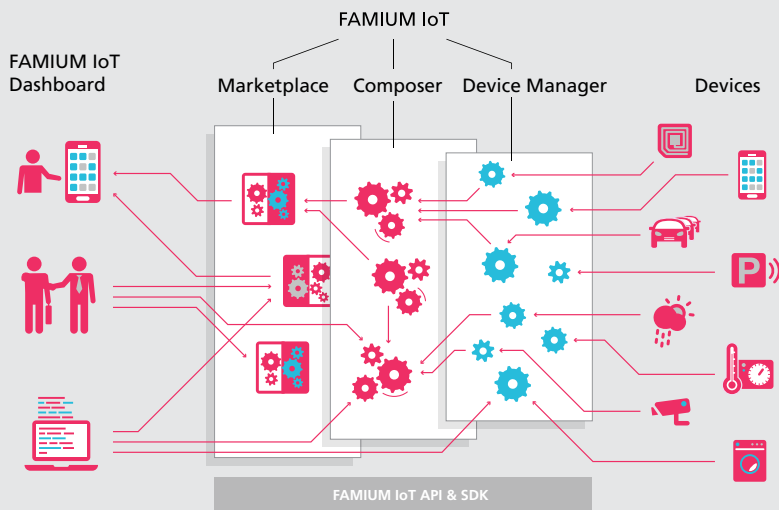
FAMIUM IoT Architecture

Benefits

– Take advantage of automation technology and control mobiles, TVs, wearables, computing devices and home appliances
– Remote access to systems including home appliances, music and multimedia devices throughout the home
– Provide advanced security systems with cameras and motion sensors
– Feature accessibility technologies such as voice-command systems to control lights, lock doors, operate a telephone or use a computer
– Set a schedule for automatic tasks like watering the lawn, removing the need to perform these labor-intensive tasks on a regular basis
– Offer enhanced energy-efficiency: lights can shut off automatically when no one is in a room, and the thermostat can be set to let the indoor temperature drop during the day before returning it to a more comfortable level just before residents arrive in the evening

Features and Assets

– Web APIs for IoT device communication (pushing data, retrieving data, composing data)
– Multi-tenant data processing support with permission checking
– JSON-based data models for device updates and the description of processing elements
– Subscription mechanism for device activities
– Scalable architecture based on the following components: Node.JS for fast, event-driven operations; searchable device directory API for registering and discovering devices; device credentials for authentication, API calls and subscriptions
– Support extensibility for future IoT devices

Key Technologies & Standards

– Constrained Application Protocol (CoAP)
– Message Queue Telemetry Transport (MQTT)
– RESTful APIs, HTTP, TCP/UDP
– ZigBee, Bluetooth, GPIO, Serial
– W3C WebSocket API

At a glance

FAMIUM IoT provides a common interface for Internet of Things (IoT) devices to make them available on the Web. This, for example, includes devices like mobiles, TVs, home appliances or wearable computing devices. FAMIUM IoT gives straightforward access to sensor data streams and allows controlling actuators via a set of Web APIs.

Illustration: Felix Westphal