

**ARTEMIS 2013 AIPP5**

**EMC²**

**A Platform Project on Embedded Microcontrollers in  
Applications of Mobility, Industry and the Internet of Things**

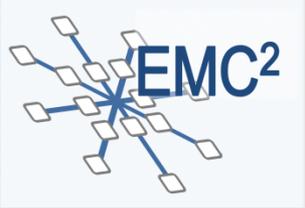
**Internet of Things and Multimedia Applications**

**Mixed-Criticality Cluster Workshop**

**Barcelona, November 22, 2016**

**Elías Pérez**

**Quobis Networks**

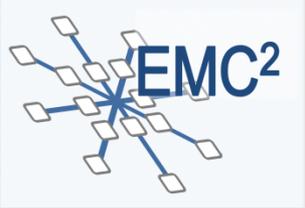


# ABOUT QUOBIS



- **Founded in 2006 as a VoIP system integrator.**
- **No VCs, privately held**
- **Addressing the software service provider market.**
- **HQ in Spain, worldwide sales through partners.**
- **Small size (~25 engineers).**





# ABOUT WebRTC



## WebRTC

... is an opensource project that makes possible to manage multimedia communications in the web browsers, using simples API's in Javascript, in a native way.

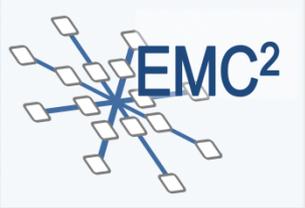
Opensystems, with no proprietary implementations

¡No plugins!



Multi-platform... and multi-device!





# QUOBIS and WebRTC



**We play a key-role in WebRTC industry, working on topics like standardization and dissemination in different groups and events:**



Co-authoring different standards and drafts, like the RFC7118 standard for SIP over Websockets, SIPoWS

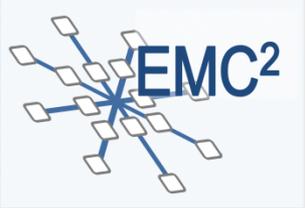
Quobis' is co-chairing the SIP Forum WebRTC Task Group, whose objective is to enable of WebRTC for SIP-based domains



Quobis is member of the ATIS DSI initiative, which is leading the ORCA.js API to be exposed by telcos

Authors of QoffeeSIP, an opensource Javascript stack for WebRTC





# QUOBIS proposal for WebRTC



- We're focused on reducing the complexity of the deployment of **WebRTC applications and clients** by telcos and enterprises
- Our solutions interops & complement the offering of **leading vendors in the telecom space**

## WEBRTC APPLICATIONS

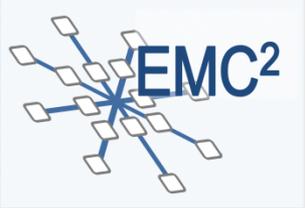
Web collaboration, click to call, net Apps connectors, ad-hoc applications, etc.



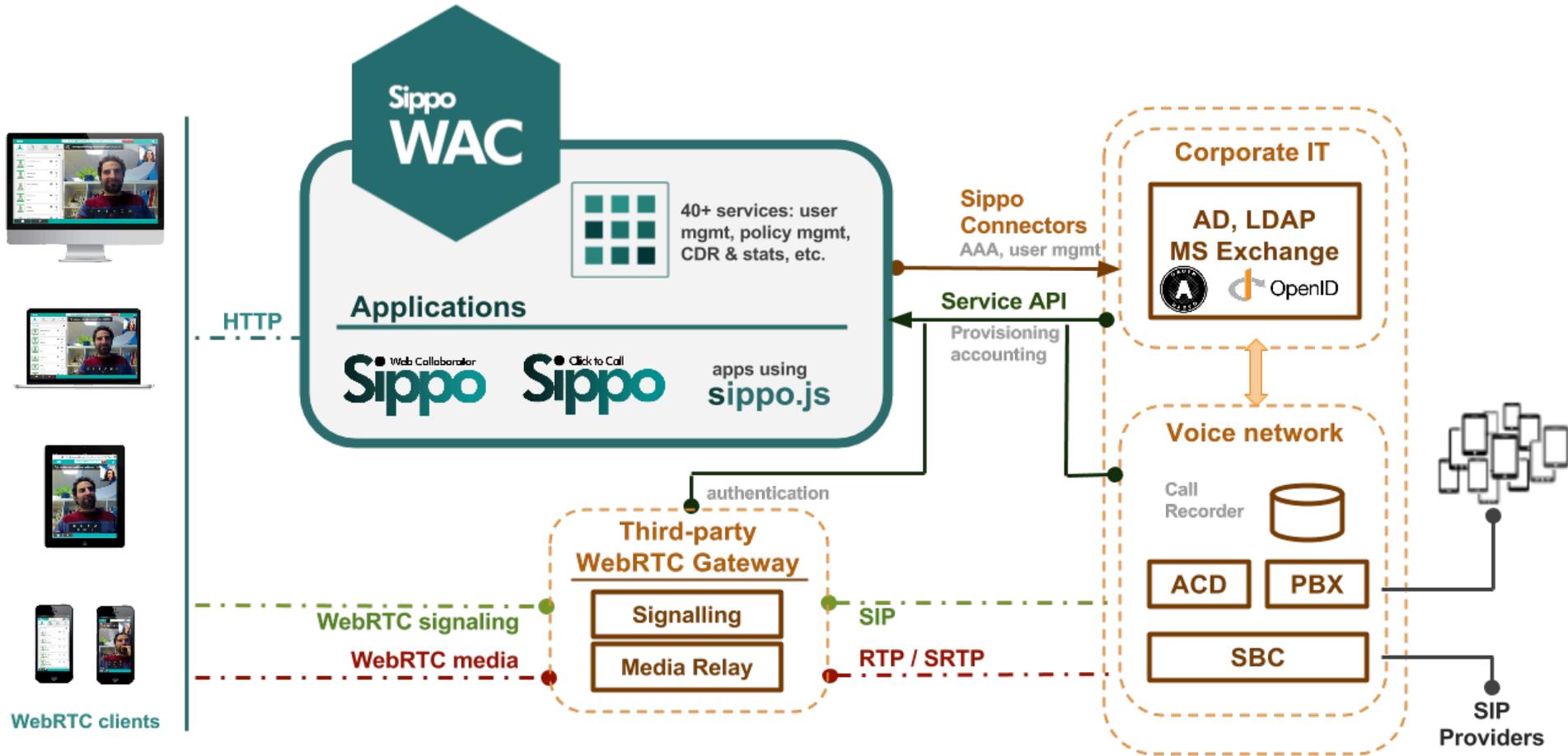
## WEBRTC APPLICATION CONTROLLER

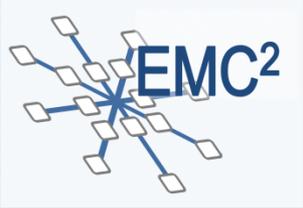
Software based solution to abstract interconnection complexity, provide a complete set of API to develop applications fully interoperable with legacy architecture.





# Sippo WebRTC Application Controller





# The role of Sippo WebRTC Application Controller



The WAC enables the integration of browser-based real-time services with existing IMS/NGN or UC networks

1

Hides complexity of different implementations of WebRTC by browsers, including those that need a plugin to support WebRTC. Provides hybrid applications for smartphones like **Android** and **iOS**

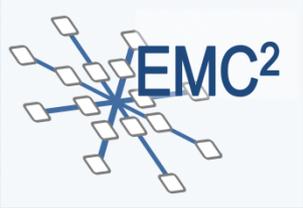
2

Manages different signaling protocols (SIPoWS, JSON, proprietary APIs, etc) to being able to use **any industry WebRTC gateway**

3

As a host of WebRTC applications, provides security mechanisms to avoid traditional VoIP attacks and pure web and **WebRTC threads**





# The role of Sippo WebRTC Application Controller



4

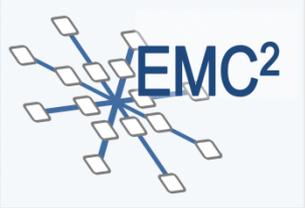
WebRTC applications are developed on top of a **orca.js compatible API** called [sippo.js](#), available for 3rd parties that want to create applications.

5

Manages **interconnection with existing systems** for user management (authentication, privileges, accounting, policies, etc) via a **Service API** and different **Sippo connectors** with well-known solutions like LDAP, MS Exchange, leading HSS, etc.

6

Makes **multi-tenancy** a reality, exposing different applications to corporate or residential customers of service providers. Includes **statistics, easy to adopt management tools and customization functionalities,**

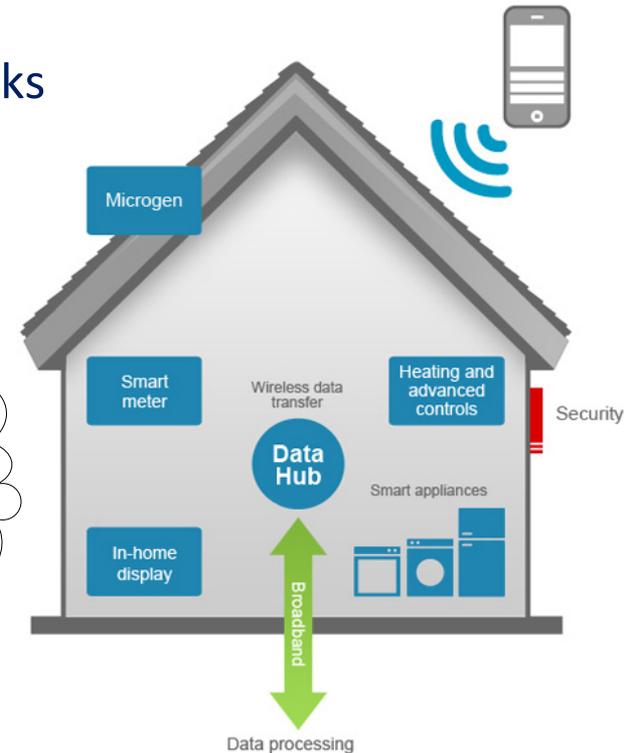
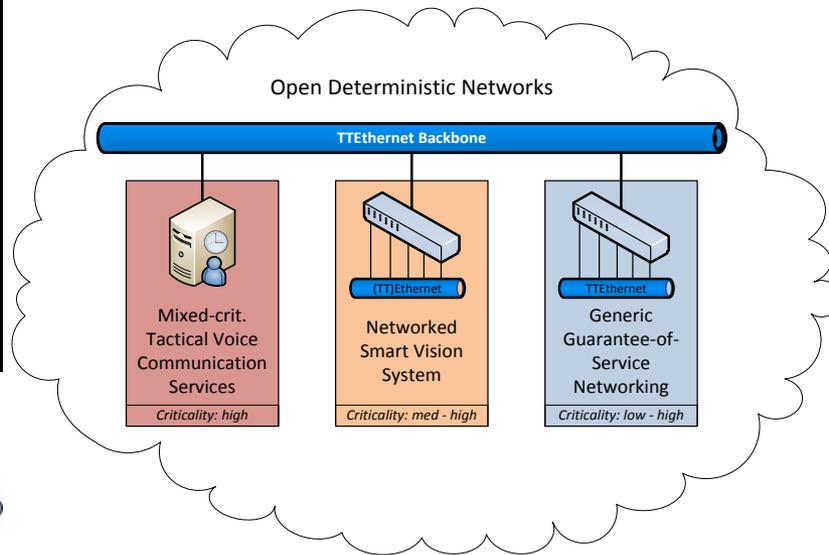


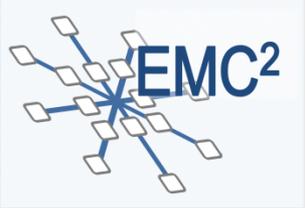
# Internet of Things & IT infrastructure Motivation in EMC2



## Living Lab Internet of Things

- Multimedia communications
- Open deterministic networks
- Autonomic home networking
- Ultralowpower high datarate communication
- Synchronized low-latency deterministic Networks



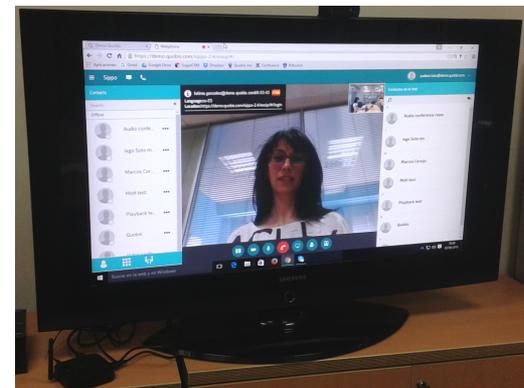


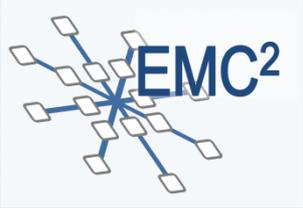
# Internet of Things & IT infrastructure

## Multimedia communication



- Address large-scale application of UC Services web-based on Embedded Systems.
- Main goal is to enable audio or video communication, images, files and data transfer through web-based applications on any type of small embedded systems, to have the possibility to adapt these systems to the new paradigm where the web browser is going to be the player.
- **Multimedia processes** distribution over multicore CPUs





# Internet of Things & IT infrastructure

## Multimedia communication



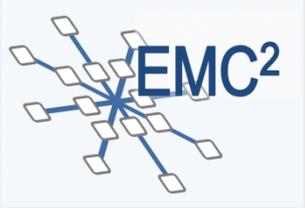
### MINIX NEO X7 Mini

- Released in September 2013.
- This element is part of the family of Android TVs (linked with elements like HDMI dongles, AppleTV or ChromeCasts).
- It runs an Android 4.2.2
- HDMI interface with 1080p HD video.
- Supports mouse, keyboard, camera and microphone.
- Video processing capacities to deal with video contents over WebRTC.

### MINIX NEO X7 Mini features

Processor	Quad-Core Cortex A9 Processor
GPU	Quad-Core Mali 400
Memory	2GB DDR3
Internal Storage	8GB NAND Flash
Wireless Connectivity	802.11n Wi-Fi, Bluetooth 4.0
OS	Android™ Jelly Bean 4.2.2



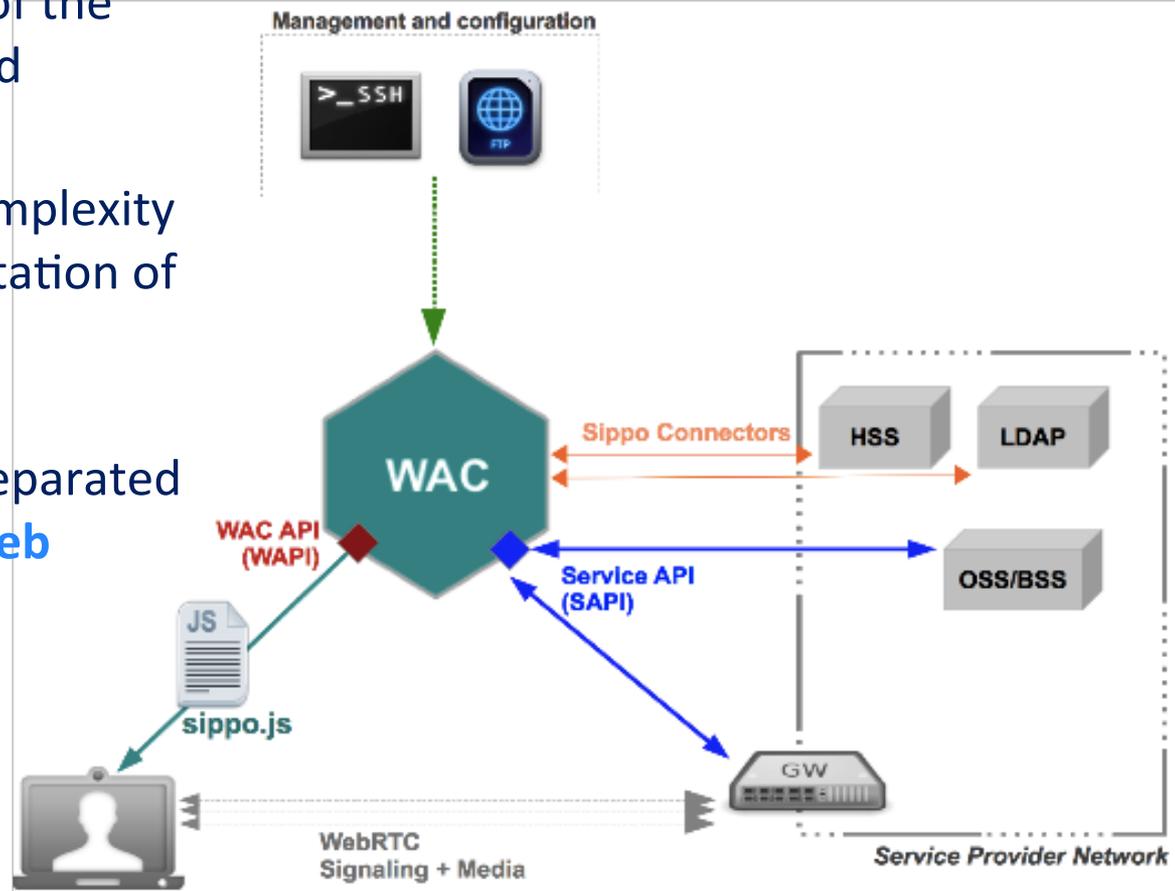


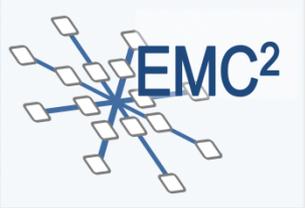
# Internet of Things & IT infrastructure Multimedia communication



## Use case architecture

- The WAC solves part of the complexity of a real field implementation.
- The WAC hides the complexity of the existing fragmentation of devices, browsers and interconnection.
- Media processing is separated in parallel sources -> **Web Workers**





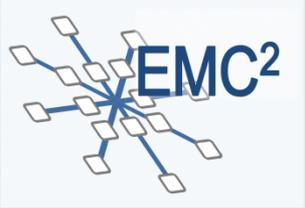
# Internet of Things & IT infrastructure

## Multimedia communication



### Web workers

- Defined by the World Wide Web Consortium (W3C) and the Web Hypertext Application Technology Working Group (WHATWG).
- **Web Workers** are scripts that are not interrupted by user-interface scripts (scripts that respond to user interactions).
- Web workers are able to utilize **multi-core CPUs** more effectively in the multimedia domain.
- Keeping such workers from being interrupted by user activities allow our use case to remain responsive to audio and video from users at the same time as it is running **critically data tasks**.
- The W3C and the WHATWG are currently in the process of developing a definition for an API for web workers.



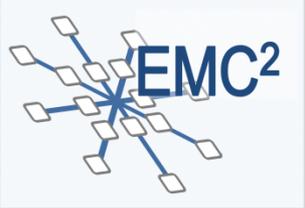
# Internet of Things & IT infrastructure

## Multimedia communication



### A real application: eHEALTH

- Communications between hospitals, emergency vehicles and patient portals at home.
- Interoperable collection of information from devices
- Wireless 3G/4G communication
- Sources: audio-video data, point-of-care device data and patient medical history data.



**Many thanks!**

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