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S2: WebRTC

Office in the Cloud: Web-based Cloud Platform for Telcos Services

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NTT

Outline

- Introduction
  - HTML5 impact on Telcos
  - Related Work: Office on Demand
- Proposed Platform
  - Concept
  - Platform & Architecture
  - Demo Applications
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- Summary

HTML5 impact on Telcos

HTML

WebRTC

- Independent from OS and machines
- Ability to realize similar native-applications
- Enabling browser based RTC

Benefits

1. **Possibility to restructure current OTT driven App/Contents markets**
2. **New business opportunity using its scale merit of "One-source-multi-devices" nature**
3. **Providing novel-UX services combining with RTC and Web**

Related Work: Office on Demand

Office on Demand(OoC) solves Small and Medium Business(SMB) user's desire

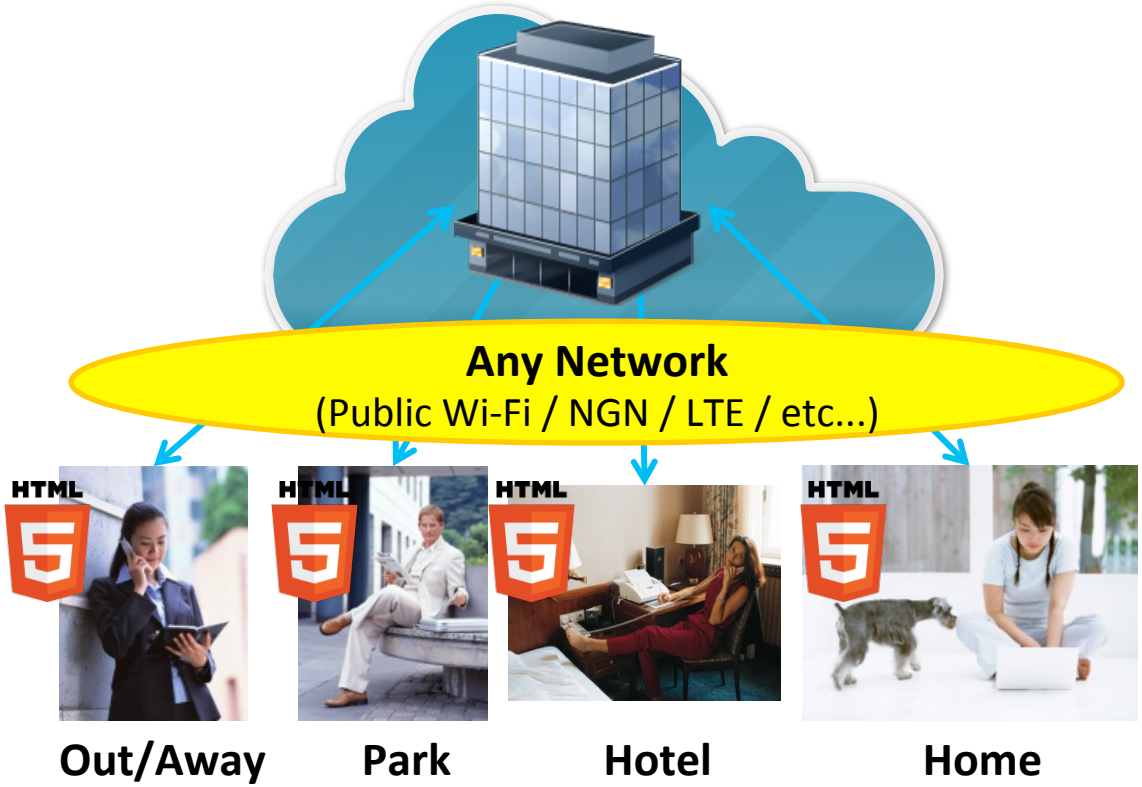
- OoD is a **FTTO-based** conventional FMC cloud service for SMB users.
- OoD provides CaaS(Communication as a Service), SaaS, and CaaS + SaaS.

- **To be able to prepare an ICT infrastructure quickly**
- **To use network services without the need for complex settings like network route settings**
- **Lower costs for communication services**

Office in the Cloud(OiC) Concept

OiC makes services available anywhere and without requiring any specific device

- OiC is a HTML5 based novel service which establishes a virtual office in the cloud
- All office staffs work together virtually using any HTML5 browser equipped devices from remote (i.e., nomadic working).



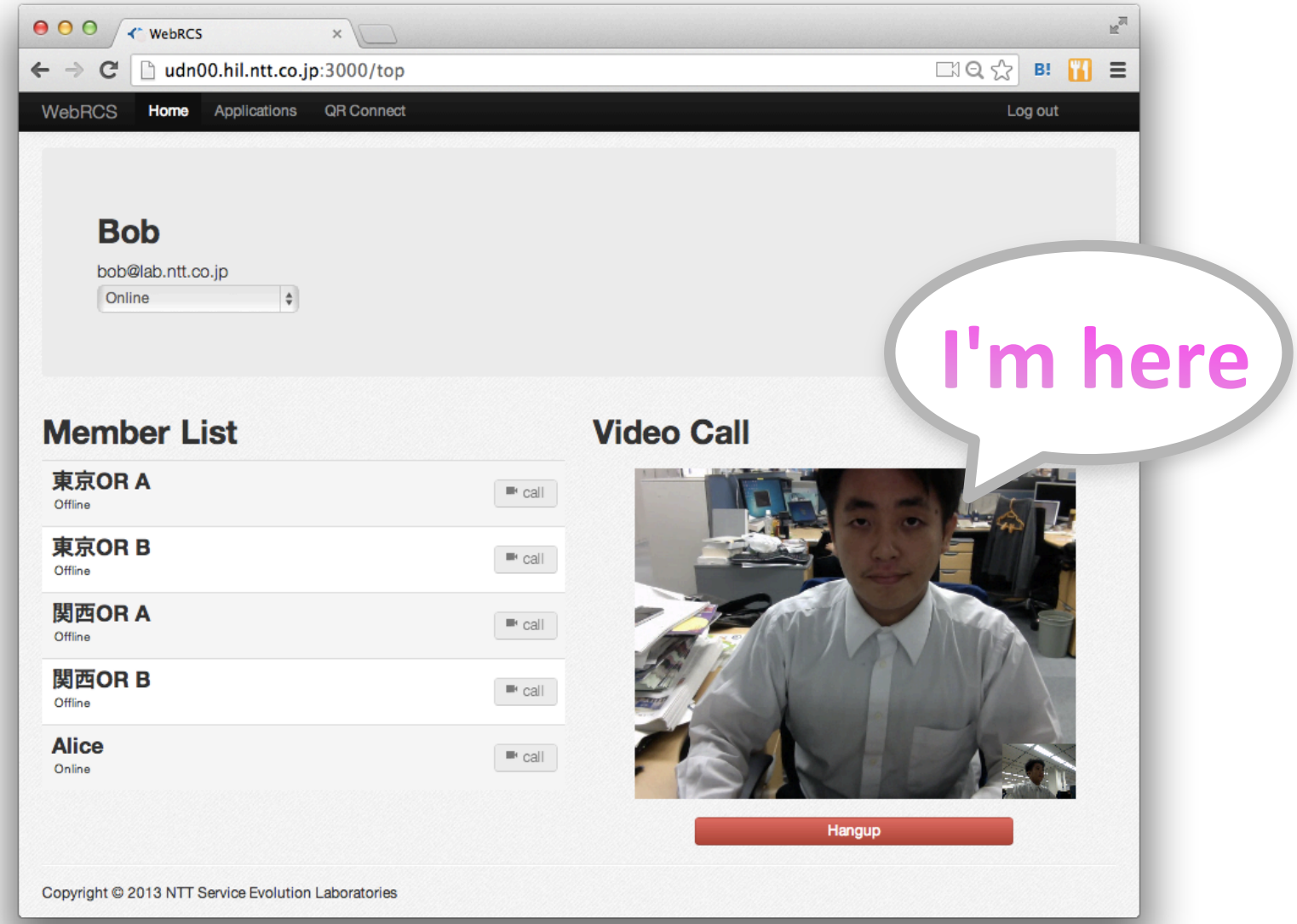
OiC Concept Movie (2min 15sec)

OiC Platform

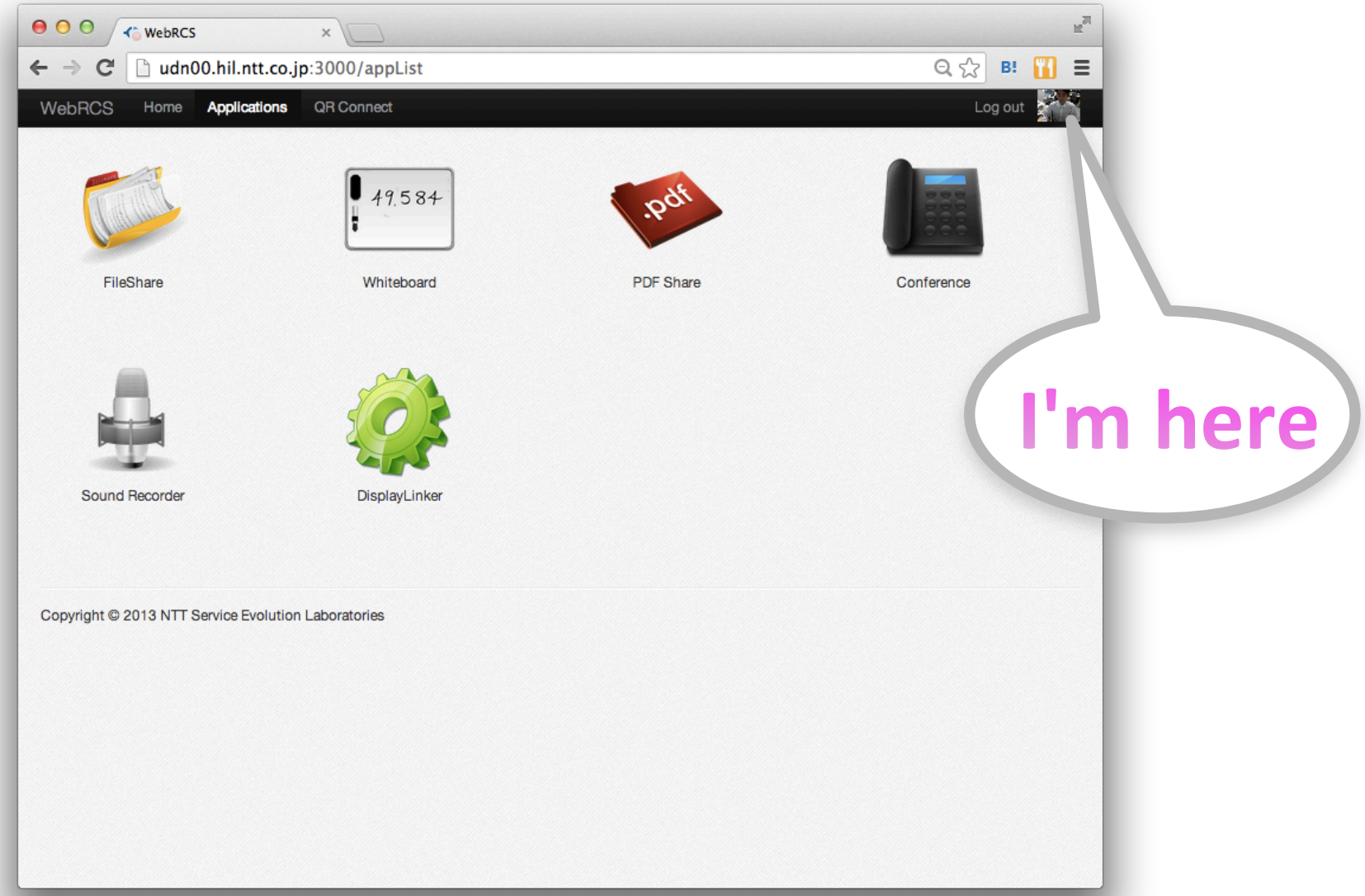
OiC is the web-application platform based on OOD Architecture.

- The most difference of parent OOD Prototype is that applications on OiC platform running on browser only.
- The OiC platform enable developers to deploy "Real-time web applications" they developed to Telco's cloud; it's powered by node.js.
- We use **WebRTC** for realization of the essence of OOD Architecture to combine SaaS with CaaS.

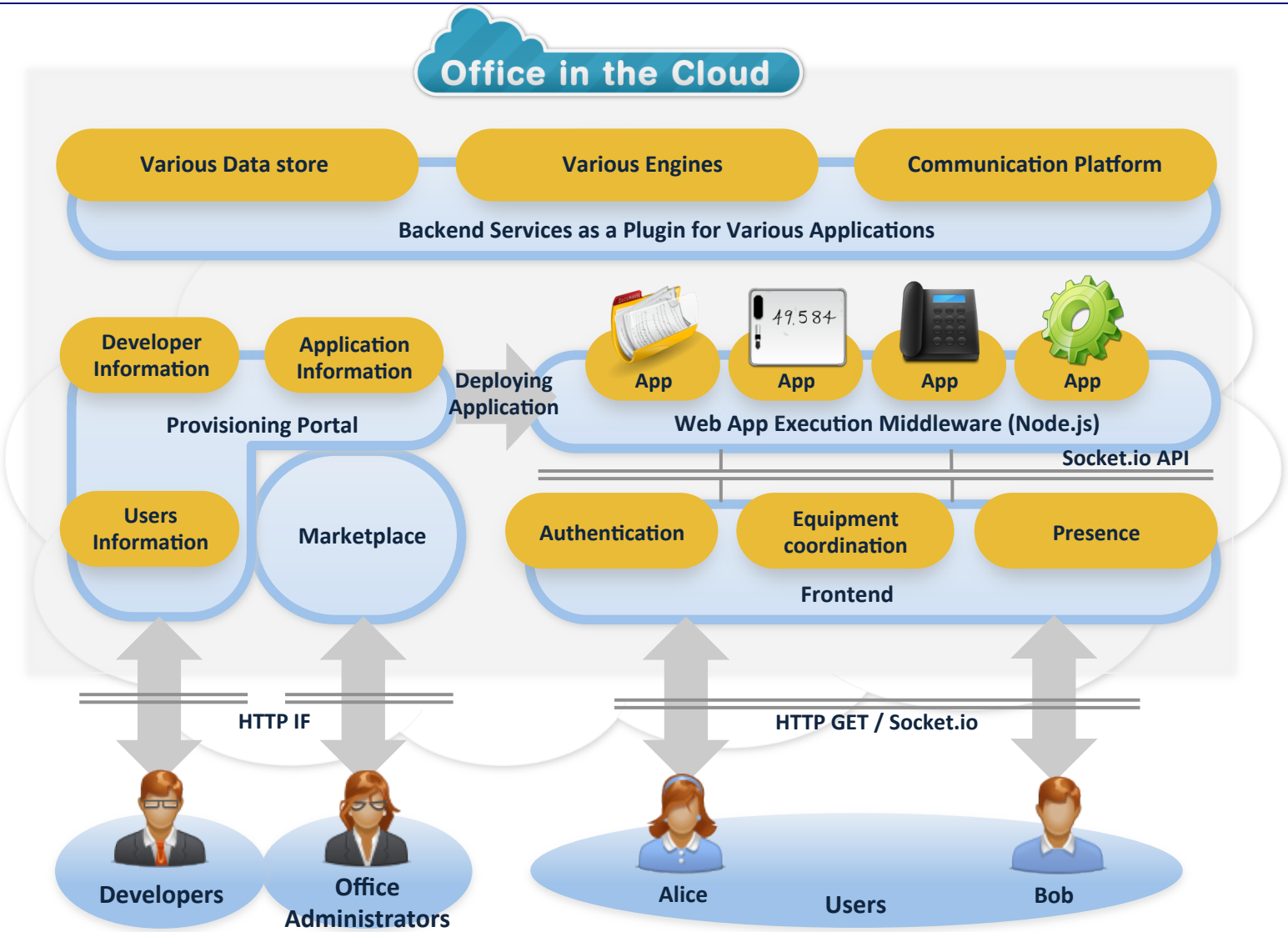
OiC Screen: Dashboard



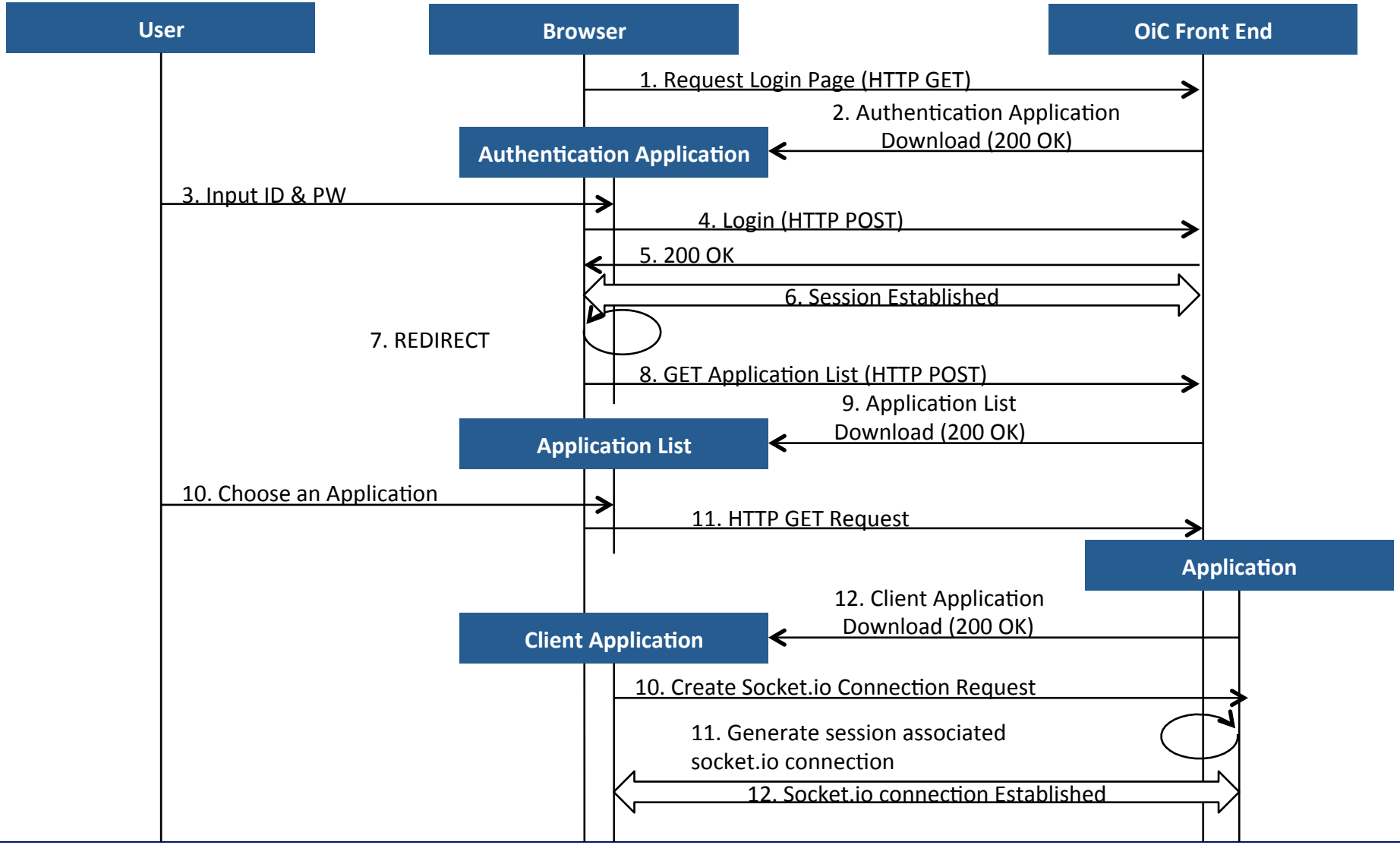
OiC Screen: Application List



Architecture



Application Execution Sequence



Demo Applications Examples

- SaaS Demo
  1. File Share Application w/ WebRTC
  2. Whiteboard Application w/ WebRTC
- CaaS Demo
  1. WebRTC-SIP Interworking Conference Application
  2. Extension Telephone Application

Demo Applications Examples

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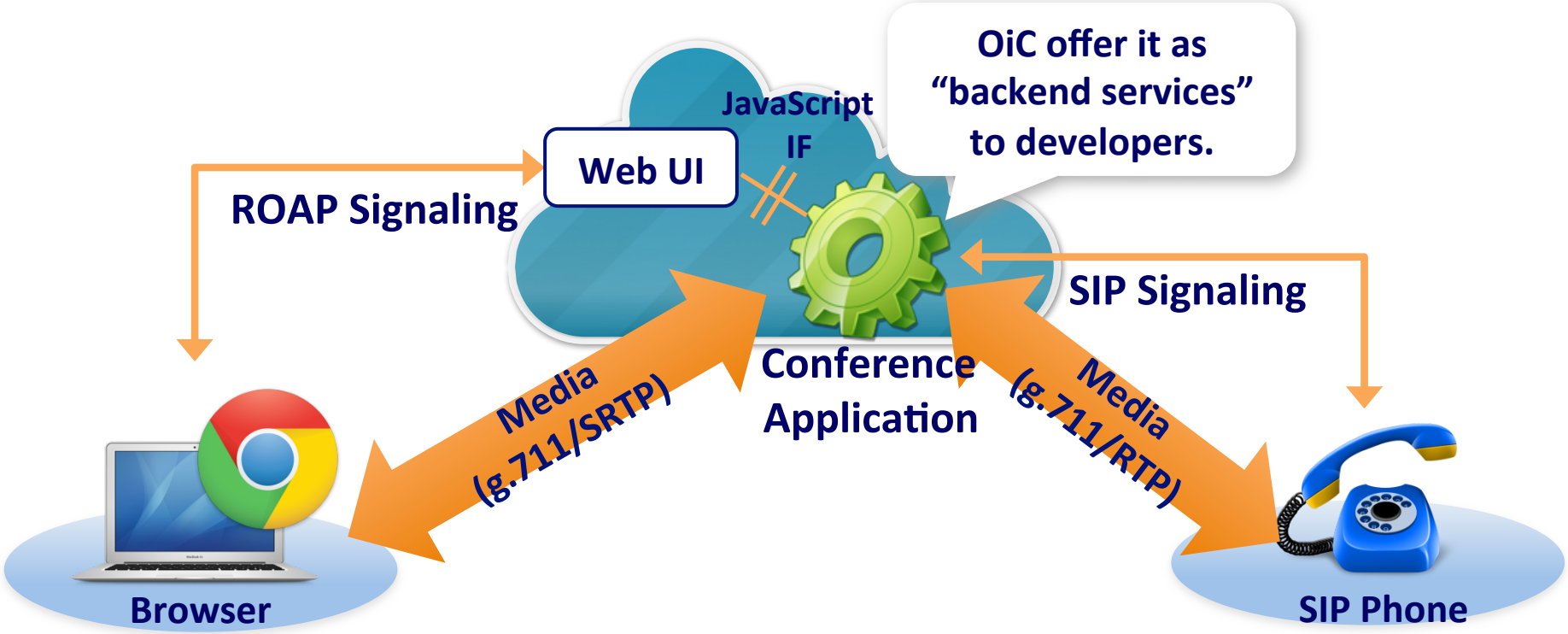
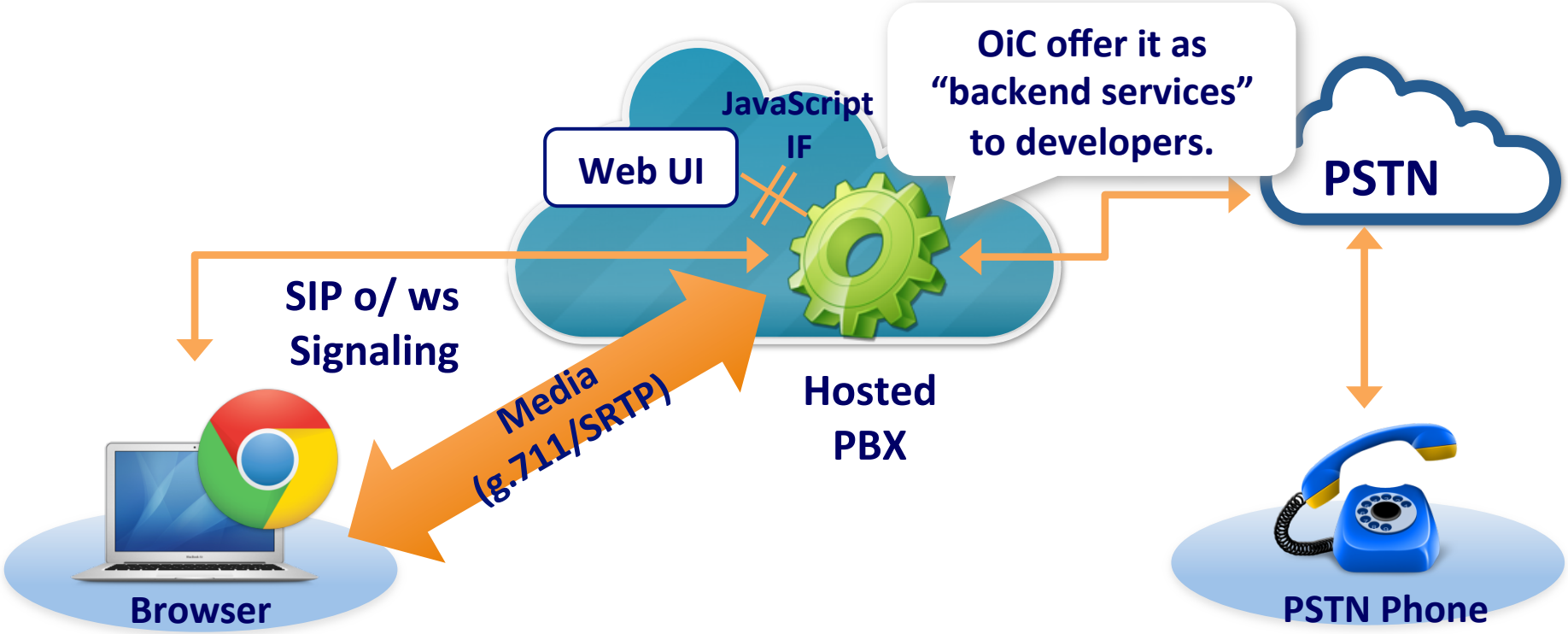
WebRTC-SIP Interworking Conference

- There are the conference application server that have both SIP and WebRTC capability in the cloud.
- When a browser or SIP terminal can connect to this server, there can start conference mutual immediately.



Extension Telephone App

- This application enable browser to be a telephone belonging to the hosted-PBX in the cloud.
- This hosted PBX provides outbound call services.



Quality Evaluation (pre-examination)

The test as a less than complete basic test to make sure there are a possibility of providing WebRTC-based services.

- degree of the latency of the sound
- frequency of occurrence of sound interruption
  - it have been omitted in slides since it did not occur

WebRTC vs. SIP Softphone

- In the case of browser, the result is came out the about half times of softphone; is it cause that WebRTC is the P2P architecture?
- WebRTC have sound fluctuation problem; it seems to depend on current implementation of the browser.

No	Delay Time (ms)	
	Browser (WebRTC P2P)	asterisk and SIP softphone (media server termination)
1	147	238
2	139	238
3	122.5	238
4	126	238
5	128.5	238
6	123	238
7	135.5	238
8	132.5	238
9	141	238
10	147	238
Average	**132.8**	**238**

There are fluctuation.

WebRTC-SIP Interworking Conference Application(15p.) test

- In the case of this application on two calls only, it is similar structure of to call SIP phone.
- The issue for practical is performance improvement because influence of the load appeared on only 40 call load.

No	Delay Time (ms)		
	asterisk and SIP softphone	WebRTC w/ Prototype (2call only)	WebRTC w/ Prototype (2call + 40 call load)
1	238	307.5	331.5
2	238	313.5	317.5
3	238	306	323.5
4	238	299	329.5
5	238	305	315.5
6	238	322	321.5
7	238	319	327.5
8	238	305	333.5
9	238	311.5	319
10	238	326	319
Average	**238**	**311.45**	**323.8**

Summary and Further Works

- OiC is novel web application platform based on OOD architecture.
  - OiC enable web browser to execute SaaS + CaaS for SMB user using WebRTC.
  - Developers become to be able to deploy their web applications to Telcos cloud by OiC.
- The evaluation has proved prototype systems using WebRTC have possibility of to realize real-time communication services.
  - The fact of our prototype system have sufficient possibility has be shown.
  - The implementation of web browser has seemed to affect the performance of WebRTC strongly; it is very **uncontrollable** to Telco.
- Further works
  - Security consideration
  - Carrier grade services

Office in the Cloud

The End

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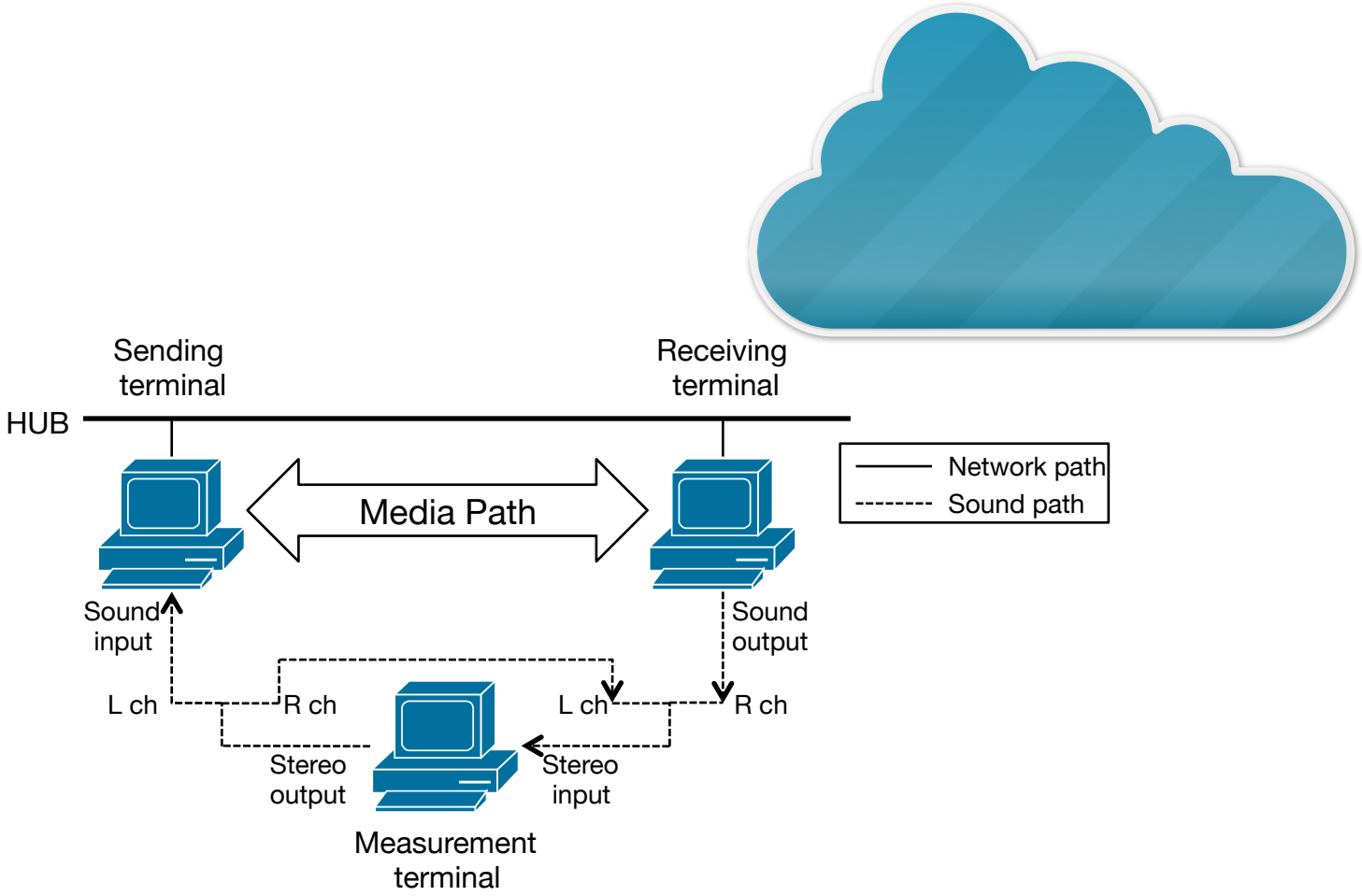
Sending terminal
Receiving terminal
HUB
Media Path
Network path
Sound path
Sound input
Sound output
L ch
R ch
L ch
R ch
Stereo output
Stereo input
Measurement terminal