KDDI's position for Web and Automotive issues

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Shigeyuki Sakazawa
KDDI Corporation

Agenda

- Introduction of KDDI
- Seamless service concept
- Connecting vehicle and smart phone

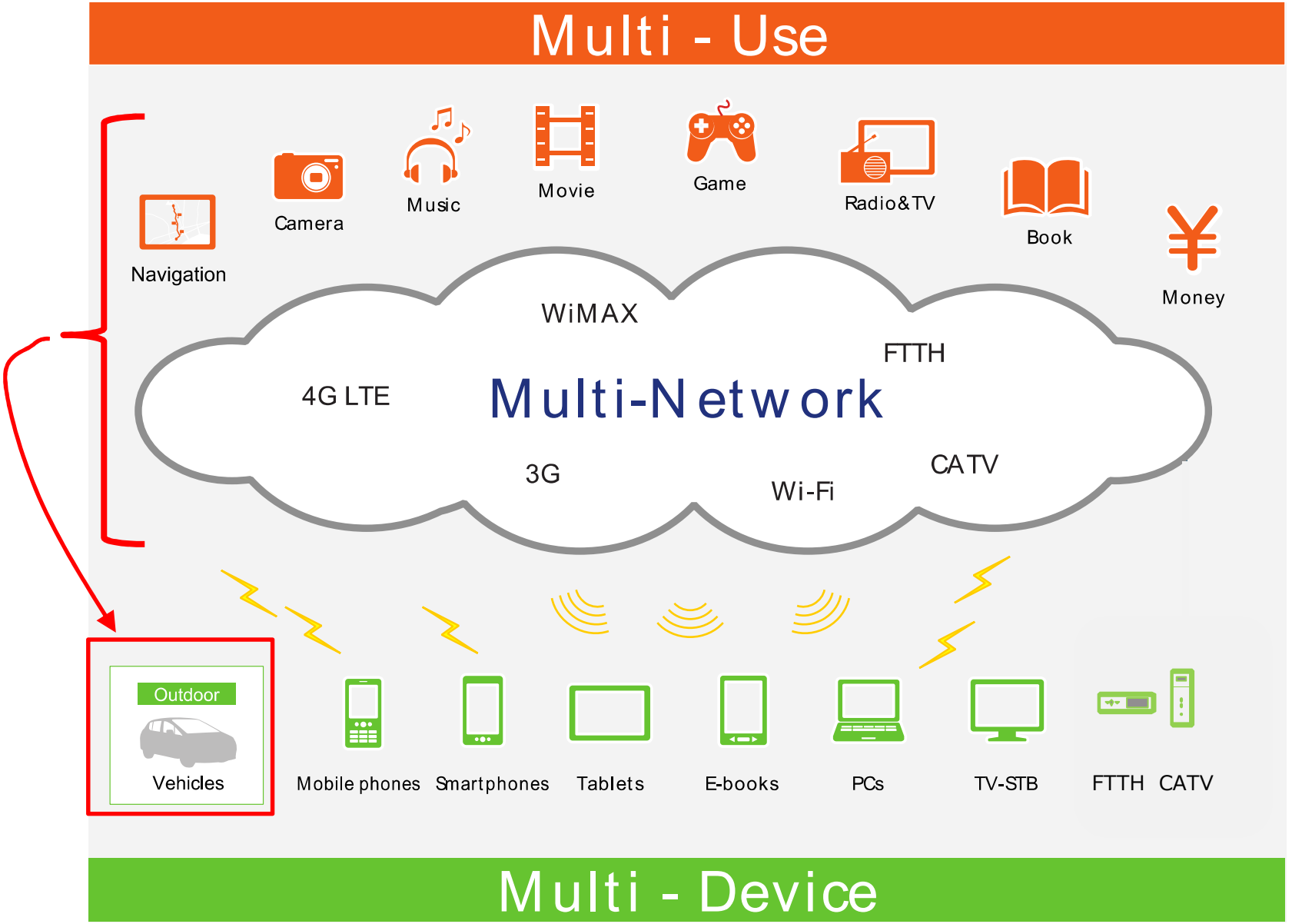
About KDDI

KDDI is a Japanese Telecom Carrier

- Business description
  - Personal Business (mobile, FTTH, CATV)
  - Corporate Business (ICT solution)
  - Global Business (global data center)
  - New Business (contents, banking,…)
- Number of subscribers:
  - mobile: 35 million
  - Fiber to the home: 2 million
  - CATV*: 4.7 million
- Operating revenues: 3,572 billion JPY (Apr. 2011-Mar. 2012)
- Major Shareholders: Kyocera(12.8%), Toyota(11.1%)

(* group companies)

KDDI's Convergence Strategy



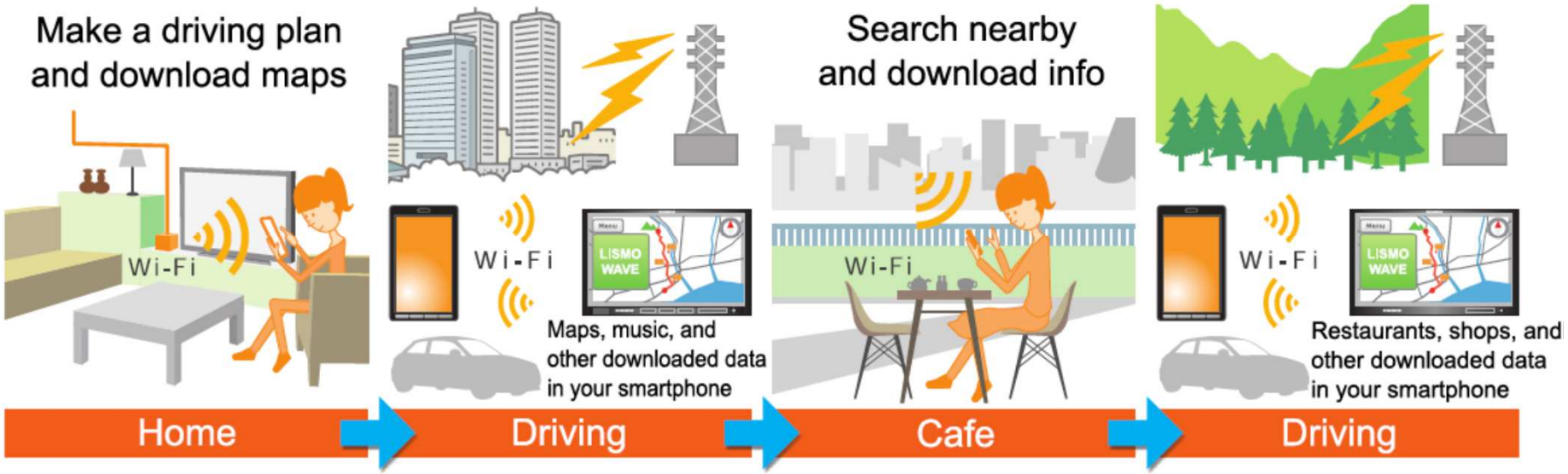
Seamless Service Concept

- Features of seamless service
  - Providing services anytime, anywhere, via any devices
  - Offering services on a personalized basis
  - Providing much pleasure in an event (including before and after the event)

ex.) watching video content, shopping, and driving

⇒ Smart phone is a key device

- In the case of driving event…



Web and Automotive Requirements for seamless service

Contents & Apps Ubiquitous Use

Vehicle Personalization

Seamless Networking

Functions to be realized

- Contents and apps ubiquitous use
  - Speaker out of a music in the smart phone (SP)
  - Show a navigation map stored in the SP
  - Recall an address book from the SP and display it on the head unit to make a phone call
  - Share memory of driving event including photo and video
- Vehicle Personalization
  - Personalize various settings of a rent-a-car
  - Erase all the personal information provided from SP in the shared car
  - Tune UI for the user including menu appearance and improvement of speech recognition
  - Reflect user's preference to navigation

Functions to be realized

- Seamless Networking
  - Continue streaming and sequential update services by multi-network hand-over technology under an intermittent network environment
  - Keep quality of entertainment by an application cache even if network has degraded in its throughput or latency
  - Pre-fetch heavy data at Wi-Fi area beforehand

Characteristics of possible systems using vehicle head unit and smartphone

All-in-one head unit

Pros. Sophisticated service
Cons. Higher cost for unit, service and map update

Smart phone alone

Pros. Low cost, easy to keep service up to date
Cons. Usability, driver distraction

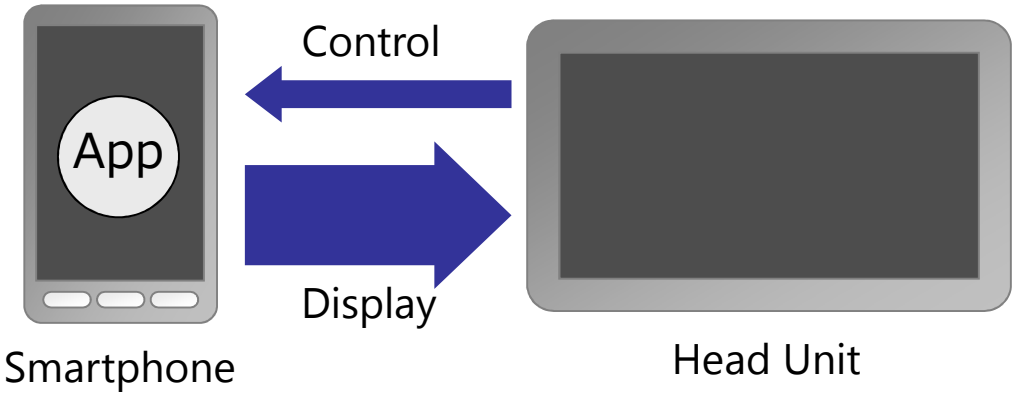
Hybrid of smart phone and head unit

Pros. Low cost, up to date service,
high usability
Cons. Standardization for interoperability

Two approaches for the hybrid of vehicle head unit and smartphone

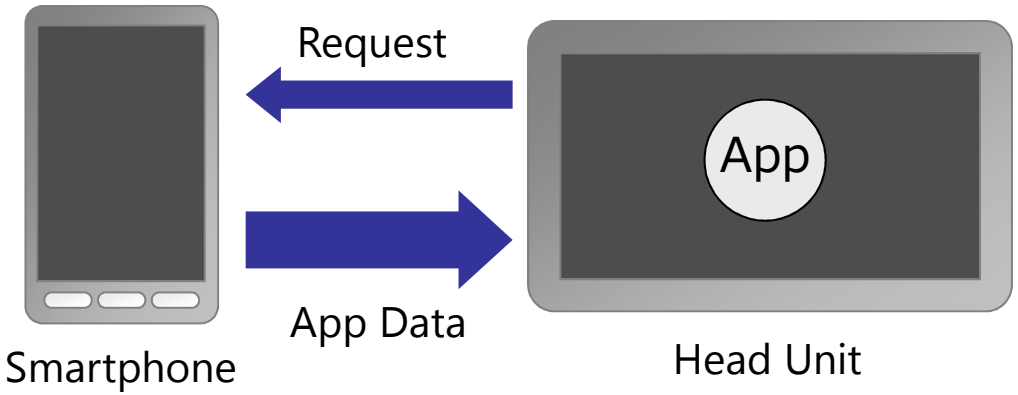
Display Image Transfer

- Apps run on SP
- SP load is high



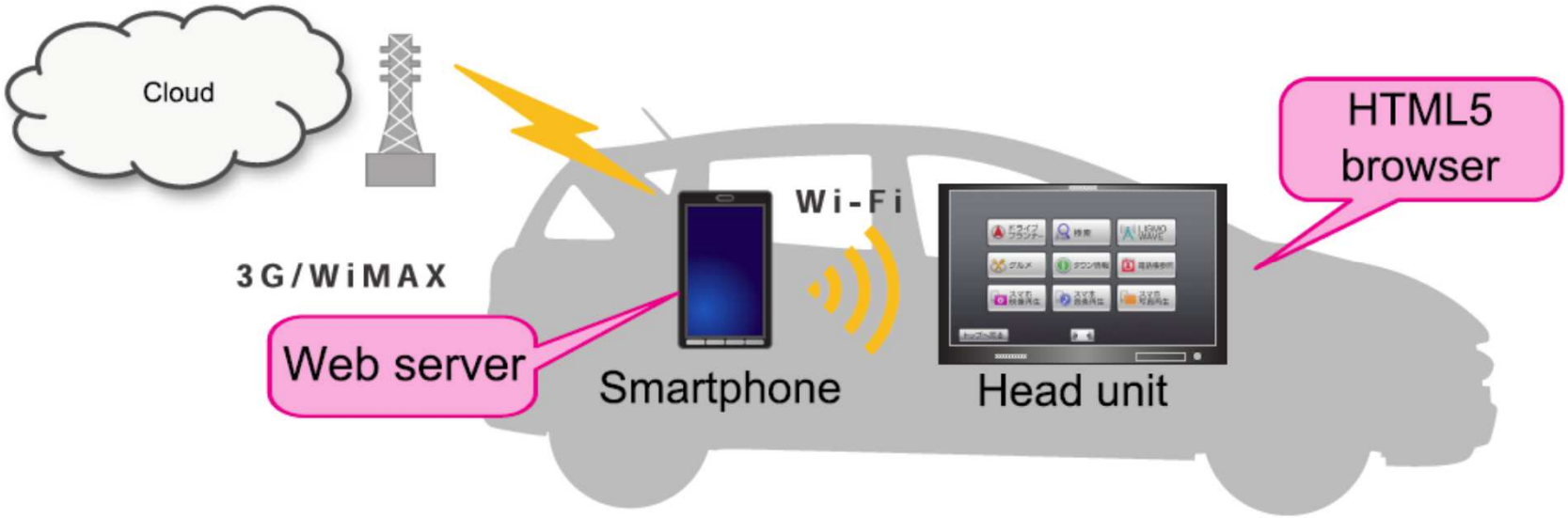
Distributed processing

- Apps run on head unit
- Head unit and SP share work load



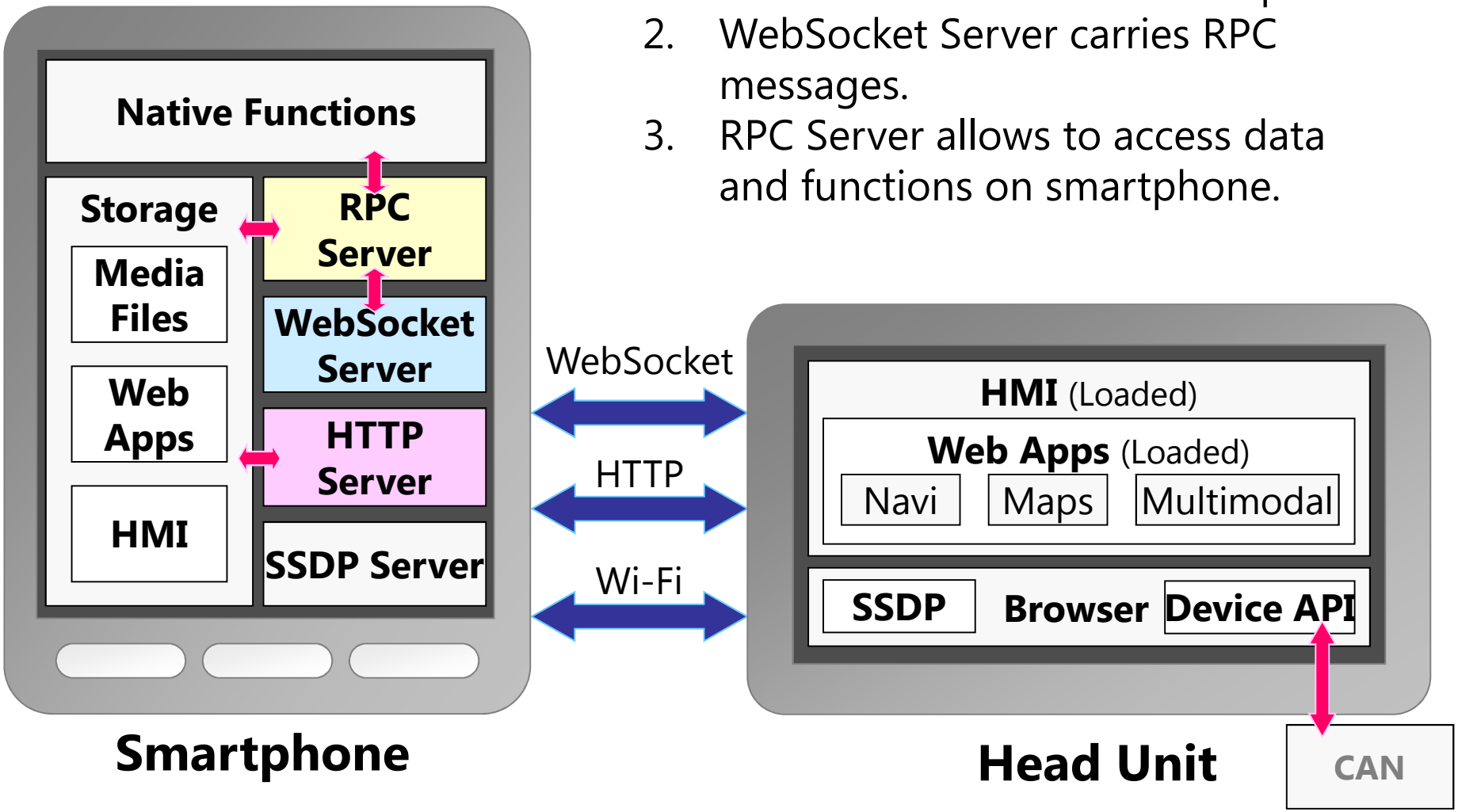
KDDI's Prototype (Web Infotainment)

- SP works as a web server
- Head unit equips HTML5 browser
- Head unit browser loads Web app from SP, and then execute it



Structure of Web Server on Smartphone

1. HTTP Server provides Web Apps and APIs installed on a smartphone.
2. WebSocket Server carries RPC messages.
3. RPC Server allows to access data and functions on smartphone.



Relationship to functional requirements

Contents & Apps Ubiquitous Use

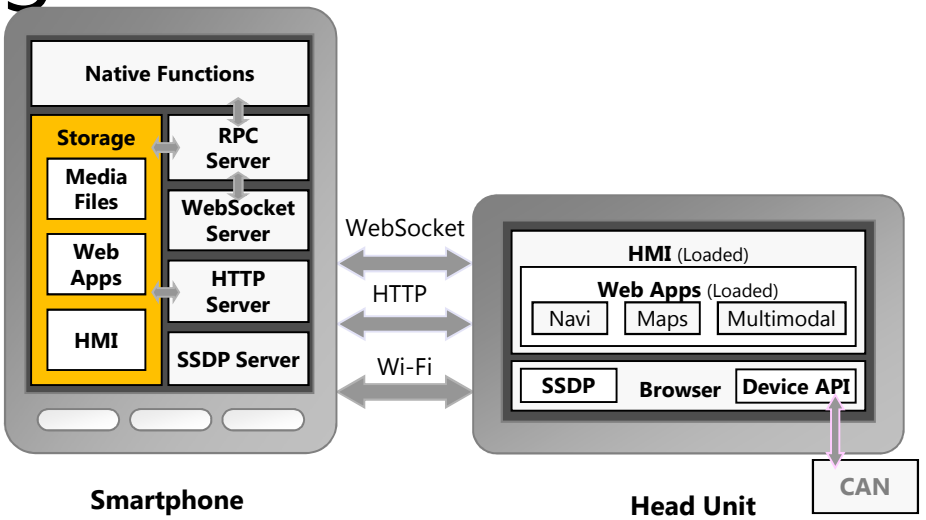
Storage access for contents
Native function access for address book and phone call

Vehicle Personalization

Web apps personalization in Storage

Seamless Networking

Utilizing Storage as app. cache and pre-fetch data management



Demo

- The article of Wireless Japan 2012 is found in the following url. (in Japanese)

  http://www.itmedia.co.jp/mobile/articles/1205/30/news115.html

Future activities

- Standardization
  - Service Discovery incld. Privacy Issues related to DAP WG (Web Intents)
  - Application Authentication & Restrictions related to SysApp WG
- Creation and Provision of New Value

  = Development of Amazing Apps
  - Next generation context aware and personalized navigation based on SVG Map
  - Multimodal Apps + AI like a “Knight Rider”

Thank you.