Strategies for the Creation of New Network Services

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Agenda

- Introduction of NTT and R&D
- Valley of death in Service creation
- How we are creating new services ~ Framework and Tools
  - Service model
  - Work field Portfolio
  - Three type of purpose
  - Service factory and Cross farm(XF)
- Summary
Fixed and Mobile operations have to be separated in regulatory reason.

R&D in holding company develops and proposes cutting-edge technologies to operating companies.

500+ consolidated subsidiaries
NTT R&D has launched SST since Aug. 2011. Its mission is harmonized management of below three R&D activities for service creation.

- Open innovation and Tech. evaluation
- Engine development (core technology R&D)
- Service visualization (prototyping) and service trial
Valley of death

Individual product
Optical parts, Devices, and Material, etc

Commercial production

NW infrastructure
Optical access, core nodes

NTT Operating Company introduction

Services

Open innovation
Core-tech. & engines
assemble
feed-back
Service offering (proto. and trial)

Consideration of operating company matters (e.g., regulation, etc.)

Service commercialization

1st
R&D activity

2nd
Service promotion activity

(rough) req.
- Design a new concept car (new service experience & usability)
- Find and use good parts (new tech. evaluation and deep understanding of existing tech.) and procure them globally (global open innovation)
- Build a stable (core competence) chassis (carrier service-oriented)
- Provide a series of cars on a common chassis (architecture & platform-oriented)
Service model ~ A conceptual hierarchy of Services

Super ordinate concepts (Super-classes)
- RTC
- OTT Services
- P2M
- M2M
- FMC
- Non-RTC
- P2P
- M2M
- MCC

Service Classes
- SIS
- RCS
- PUSH
- DS
- RTC w/MC
- OOD/OiC
- EMS
- ... (other classes)

Services (Instances)
- VBS+ Mashup
- Sight Finder
- SaaS CaaS
- HEMS + RemoCon
- Com. Com.
- AiR Stamper
- Anot. Conf.
- ... (other instances)

Use cases
- Learning Foreign Tongs
- Remote Instructions
- Set-up Appliances
- Power Monitor/Control
- Guide Booking
- Popularity Contests
- 7-5-3
- CC

Domains of use cases
- Personal
- Business
- Family
- Community
- Welfare
- Energy
- Medical/Health Care
- Government
- Agriculture
- Entertainment

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AiR Stamper provides remote assisted communications for on-site workers using an ordinary videophone application.

Automatic tracked “AiR stamp” indicates the point for action.
Sight Finder can assist such as visually impaired, aged, foreign, and special-needs people using sight information.

The architecture consists of cloud-based recognition engines running in parallel.
Docomo’s commercial service, “Shabette(Speech)-Concierge” is a Siri-type speech recognition based Q&A service.

Sight-X adds real-time image recognition capability to the above. User can get additional information of already registered object images.
“Iro-coco” is a service for color-vision deficiency people. It indicates specified color objects by displaying color signs.

Multiple color objects can be simultaneously indicated as well.

Color signs:
- Red
- Orange
- Yellow
- Green
- Sky blue
- Blue
- Purple

The example indicates red objects.
All services (instances) are derived from the service class “Real-Time Communication with Media Conversion (RTC/w MC)”. 

- **RTC w/MC**

  - **AiR Stamper**
  - **Sight Finder**
  - **SightX**
  - **Iro-coco** (Color Indicator)

  - **Interpreting phone**
  - **…and more**

  - **The media stream is modified/processed during real-time communication with users and cloud.**

  - **Interpreting a conversation in different languages simultaneously (A trial by DoCoMo)**

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Architecture for RTC with Media Conversions

Converged media stream

Audio Video

Contributes Additional info./ annotation with Media proc.

RTC w/ MC Services

Services (instances)

Media proc. Enablers

Real-time Communication Platform
The work field portfolio gives an overall view of created/creating services. It also allows combinational considerations for technologies and application domains.
HTML5/WebRTC impact on Carriers

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

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
HTML5/WebRTC applicable domain

- Personal
- Home
- Business
- City
- Smart-TV+WebAPL market would be a potential area.
- WebRTC enables communication capabilities to the Smart-TV.

<table>
<thead>
<tr>
<th></th>
<th>Native APL</th>
<th>Web APL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Smart-phone, Tablet</strong></td>
<td>Android (Google) iPhone (Apple) Au smart pass (KDDI)</td>
<td>D-Game (docomo) Chrome web store Firefox Marketplace</td>
</tr>
<tr>
<td><strong>Smart-TV</strong></td>
<td>Hikari-TV (NTT) Google TV Apple TV, iTV Samsung Apps KDDI Smart TV BOX/ Stick</td>
<td><strong>Next target</strong></td>
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The success scenario is to establish an ecosystem around carrier’s Smart-TV. WebRTC enables Smart-TV originated smooth communications among users.
Smart TV experimental environment

Application examples
• Voice/Text chat over TV
• Family quiz on TV
• Remote picture book reading
• Automatic alert on TV (especially for aged people)
• Calendar based regional event guide on TV
• TV watch logging and related info search (Internet)
• ……..
Service example - Remote picture book reading

- Picture book selection
- TV screen
- Tablet w/ Wifi
- WebRTC communication
- Interactive animation
- Reading text
“Informative city” concept

Everywhere you go, you can get information
• you want based on your preference and situation.
• that can only be found there.
• using your own usual device.
You can also generate information
• for someone in the same area.

We aim to at “Informative city”, where such information services are filled with.
Wifi-LBS can provide wide variety of location-based services to users.

- HTML5 browser and small resident program* enables Wifi-LBS.
Three type of purpose

- This defines service visualization purpose and the work procedure.

**Type-I:** R&D proposal incorporating near-term and maturated R&D technologies

**Type-II:** Service visualization aimed at addressing issues on the business side

**Type-III:** Feedback of R&D core technology development

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**Diagram:**

- **Business side**
  - Type-I
    - Type-II
    - Type-III
  - R&D core tech. development

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Time required for commercialization
Remote Walker provides real-time & flexible view point video streaming like “walking around in the remote site”.

We are trying to apply the HEVC technology to save the bandwidth.
Service factory is a special team for rapid and agile-style service prototyping.
Cross farm(XF) is a cloud-based service trial environment for collaborative work with operating companies. The XF also provides APIs of R&D developed engines.
[FW1] Service model

- Service class gives an unified architecture and enables efficient service implementation.
- Several service(instance)s can be derived from one service class, that enriches service ideas.

[FW2] Work field Portfolio

- This portfolio gives an overall view of created/creating services.
- It allows combinational considerations for technologies and application domains.

[FW3] Three type of purpose

makes it clear the purpose of service visualization and defines the work procedure.

[TL1] Service factory

- key internal organization for service visualization allowing agile prototyping

[TL2] Cross farm(XF)

- Cloud-based environment for service trial where R&D developed engines are ready to use.
Collaborations are welcome 😊

Thank you

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