Brief Summary of Intellectual Property Activities

FUJITSU LIMITED
Nov. 2016
Business and Intellectual Property Strategy
The Era of Digital Transformation

- Utilizing the most advanced ICT to rapidly respond to business changes
- Collaboration and co-creation that transcend business and industry boundaries
Customer Efforts toward Digital Transformation

- Promoting ecosystem building through co-creation with customers
- Carrying out over 300 PoCs※/operational trial

※ PoC: Proof of Concept (testing new technology and ideas)

Top 8 areas of PoC/operational trial

Customer analysis/marketing
   About 60 trials

Transport information/disaster prevention
   About 40 trials

Product traceability
   About 30 trials

Factory visualization
   About 30 trials

Safety (seniors/children)
   About 30 trials

Advanced agriculture/husbandry
   About 30 trials

Facility monitoring/maintenance
   About 20 trials

Retail customer movement analysis
   About 20 trials
Fujitsu’s Next-Generation Cloud-Based Digital Business Platform

- A platform that can achieve customers' digital transformations
- Provides the most advanced ICT, such as the cloud, mobile, big data, IoT, and AI

Existing information systems (SoR)

- Work efficiencies
- Cost reductions

Digital transformation of business (SoE)

- Transformation of existing business processes
- Creation of new products and services
- Ecosystem of multiple companies

Integration of SoR and SoE

Mobile  Big Data  IoT  AI
Cloud (K5)

Digital Business Platform “MetaArc”

AI : Artificial Intelligence
SoE : Systems of Engagement (systems relating to people or things)
SoR : Systems of Record (systems that handle business processes and records)
Intellectual Property Strategy

(1) Standing as a technology company

Establishment of intellectual property rights for ideas generated through business or R&D, etc.

(2) Providing value appropriate to specific business

Creation and development of new intellectual property strategies with a broader vision for companywide utilization in order to contribute further to business

Securing intellectual property

Ensuring competitiveness in core areas

- Cross license
- Patent enforcement
- Relinquishing patents

Collaboration

- Standardization
- Technology alliance
- Open source

Standing as a technology company

Providing value appropriate to specific business

Ensuring competitiveness in core areas

Collaboration

- Standardization
- Technology alliance
- Open source

Securing intellectual property
Standing As a Technology Company
Ranking in Number of Granted Patents (2015)

**Japan**

- TOYOTA MOTOR: 4,122
- Canon: 3,728
- Mitsubishi Electric: 3,344
- Toshiba: 2,626
- Panasonic: 2,570
- Fujitsu: 2,348
- Seiko Epson: 2,211
- Ricoh Company: 2,064
- FUJIFILM: 1,881
- Honda Motor: 1,790
- DENSO: 1,735
- NEC: 1,579
- Dai Nippon Printing: 1,310
- Hitachi: 1,309
- Sharp: 1,193
- KYOCERA: 1,191
- Sony: 1,122
- JFE Steel: 1,111
- Fuji Xerox: 906
- NISSAN MOTOR: 842

**U.S.**

- IBM: 7,355
- Samsung Electronics: 5,072
- Canon: 4,134
- Qualcomm: 2,900
- Google: 2,835
- Toshiba: 2,627
- Sony: 2,455
- LG Electronics: 2,242
- Intel: 2,048
- Microsoft: 1,956
- Apple: 1,938
- Samsung Display: 1,838
- Taiwan Semiconductor Manufacturing: 1,774
- General Electric: 1,757
- Ricoh Company: 1,627
- Seiko Epson: 1,620
- TOYOTA MOTOR: 1,581
- Panasonic: 1,474
- Fujitsu: 1,467
- Ericsson: 1,407

All applicants were counted on the Patent Grants Issuance date.
Source: In-house investigation based on data published by Japan Patents Office.

All applicants were counted on the Patent Grants Issuance date.
Source: Data provided by IFI CLAIMS Patent Services.
Medal with Purple Ribbon* (Shiju Hosho) in the 2016 Spring Conferment

Akira Nakagawa, Fujitsu Laboratories

"Development of Encoding and Transmission Technologies for Digital Video"

These technologies greatly reduce the data volume of High-Definition (HD) video and enable HD video transmission through the public network.

Areas likely to draw attention of the human eye are encoded in high quality and transmitted

Through these technologies, H.264 video transmission equipment was adopted at broadcast stations around the world. It contributes both to the development of HD video industry and to the growth of HD video on a global scale.(Representative patent No. 4454320)

* The most prestigious award in Japanese technology field
## Awards Related to Technology and Patent (2)

### Technology

<table>
<thead>
<tr>
<th>Awarding Institution</th>
<th>Award Title</th>
<th>Title</th>
<th>Winner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabinet Office, the Government of Japan</td>
<td>Medal with Purple Ribbon (Shiju Hosho) in the 2015 Spring Conferment</td>
<td>Development of ferroelectric random access memory</td>
<td>Takashi Eshita (Fujitsu Semiconductor)</td>
</tr>
<tr>
<td>METI, MLIT, MHLW, and MEXT</td>
<td>The Sixth Monodzukuri Nippon Grand Award, the METI Minister’s Prize</td>
<td>Manufacturing system for notebook computers</td>
<td>Masayuki Satou, Tatsumi Fukuma, Motoyuki Yamamoto, Yuma Watano (Shimane Fujitsu)</td>
</tr>
</tbody>
</table>

### Patent

<table>
<thead>
<tr>
<th>Awarding Institution</th>
<th>Award Title</th>
<th>Title</th>
<th>Winner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan Institute of Invention and Innovation (JIII)</td>
<td>National Commendation for Invention; Invention Award</td>
<td>Directional sound receiving method</td>
<td>Naoshi Matsuo (Fujitsu Laboratories)</td>
</tr>
<tr>
<td>Japan Institute of Invention and Innovation (JIII)</td>
<td>The Kanto Local Commendation for Invention Chairman's Award of JIII in Kanagawa Prefecture (Patent No.4821723)</td>
<td>Low delay video transmission equipment</td>
<td>Hidenobu Miyoshi, Akira Nakagawa, Kimihiko Kazui (Fujitsu Laboratories) Hisanari Kimura (Fujitsu Kyushu Network Technologies)</td>
</tr>
</tbody>
</table>
Providing Value to Business
-intellectual property activity examples-
<1> IoT Business

Proposals for IP strategies that fit the business model

- **Dynamic Resource Controller (DRC) of IoT Platform**
  
  Automated optimum distribution and deployment for application processing following infrastructure changes such as a change in the number of devices or volume of data (applicable to large scale systems). Patent applications actively filed for core areas that form Fujitsu’s strengths.

```
Sensor/Device

Edge Server  Network  Cloud

Process A  Process B  Process B
Process B  Process C  Process C

DRC
Wide-area distributed processing

IoT Platform
```
Visualization of production line status

Using big data in factories and other production facilities, visualization solutions that allow engineers onsite to identify points for improvement.

The intellectual property department was involved from the prototype development phase and evaluated for patent filing and protection prior to the disclosure of every new function. The “patent applied” marks on proposal materials showed our technological capabilities. Patent applications have been filed in Japan and overseas through such early and organized activities.
<3> Applications from Datacenter Technology

Analysis and evaluation from the perspective of IP

- **Applications for fiber optic temperature measurement technology**

  Technology that uses optical fiber as a sensor to accurately measure indoor temperature distribution.

  Analysis materials created by the intellectual property department were submitted to roll out fiber optic temperature measurement technology. Business conditions and patent holdings of competitors were analyzed to identify potential risks and issues for rolling out the technology, and patent applications were filed to protect and promote the technology for the purpose of obtaining new businesses.
<4> Turning image analysis technology into a new business

Encouraging innovation

- Game search service for pro baseball video

Technology that enables instant search for desired scenes using a player’s name or batting results such as home runs or strikeouts.

Fujitsu employs its specialties in image analysis technology and investigates a business model with our customer. We filed many patents in Japan and overseas to create patent portfolio(s) that support and protect this service.

Source of photo: Pacific League Marketing Corporation © Pacific League Marketing All Rights Reserved
Fujitsu contributes to the creation of new businesses for local companies by utilizing Fujitsu intellectual properties released for non-exclusive use.

- **KAIODO CO., LTD.**
  - Code embedding technology for printed images

- **MAC Knife, Inc.**
  - Photocatalytic Antibacterial Titanium apatite technology

- **ALCO_EX, LTD.**
  - Patient watching sensor technology

Printed Nanbu Senbei (Nanbu rice crackers)

Antibacterial Knife

Signing ceremony
FUJITSU

shaping tomorrow with you