IP activity supporting Social Innovation Business

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1. Global Trends and New Challenges in IP Activity
2. IP Activity for Product Business
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1.1 Global Trends and New Challenges in IP Activity (1)

Opening up a new world of Social Innovation Business with IP

• Revolution era has arrived in which economic, social, and industrial structures are rapidly changing.

• IP (including data) accelerates revolution (game change) and has great influence on competitiveness.

• IP contributes to expanding Social Innovation Business to achieve SDGs*1 and to realize Society5.0*2.

Building and managing ecosystem through IP for expanding Social Innovation Business

Building ecosystem
- Creating IP through open innovation
- Forming an alliance

Managing ecosystem
- Open IP licensing
- Sustaining ecosystem

1.2 Global Trends and New Challenges in IP Activity (2)
1.3 Contribution through Standardization

Building ecosystem through Standardization

• Election of IEC Technical Committee*1 ’s chairperson, reception of IEC Thomas A. Edison Award*2

• Election of Ecma International*3 ’s first Japanese president and ISO Technical Committee*4 ’s chairperson

List of Winners of Commendation relating to Standardization (FY 2016)

<table>
<thead>
<tr>
<th>Winner</th>
<th>Award</th>
<th>Reasons for Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yoshiaki Ichikawa</td>
<td>Thomas A. Edison Award (IEC)</td>
<td>• Chairperson of IEC Technical Committee (environmental standardization)</td>
</tr>
<tr>
<td></td>
<td>The Prize of Minister of Economy, Trade and Industry at</td>
<td>• Contribution to the introduction of the environmental standardization into US and</td>
</tr>
<tr>
<td></td>
<td>the Industrial Standardization Awards ceremony</td>
<td>EU regulations</td>
</tr>
<tr>
<td>Kei Yamashita</td>
<td>The Prize of Minister of Economy, Trade and Industry at</td>
<td>• President of Ecma International (the first Japanese)</td>
</tr>
<tr>
<td></td>
<td>the Industrial Standardization Awards ceremony</td>
<td>• Chairperson of ISO Technical Committee (digitally recorded media for information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>interchange and storage)</td>
</tr>
</tbody>
</table>

*1 IEC Technical Committee : IEC TC111(Environmental standardization for electrical and electronic products and systems)
*2 Thomas A. Edison Award : The second highest award after Lord Kelvin Award among IEC related awards
*3 Ecma International : An industry association dedicated to the standardization of information and communication system
*4 ISO Technical Committee : ISO/IEC JTC1/SC23(Digitally recorded media for information interchange and storage)
1.4 IP Organization for supporting Social Innovation Business

Reforming IP organization aligned with business structure

- **Business structure**
  - Front
  - Platform
  - Product

- **R&D**
  - Global Center for Social Innovation
  - Center for Technology Innovation
  - Center for Exploratory Research

- **IP**
  - Social Innovation IP Dept.
    - Developing & implementing IP strategy for “Front” and “Platform”
  - IP Business Platform Dept.
    - Licensing, contract negotiation
  - IP Management Div.
    - Developing & implementing IP strategy for “Product”

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1.5 Expanding Global IP Activity

Developing IP overseas offices for supporting Social Innovation Business globally

- IP Overseas Office
- Major business operation base which IP Division supports

- London
- Napoli
- Singapore
- Beijing
- Shanghai
- Bangalore
- Santa Clara
- New York

Holding Global IP Conference for Railway Systems BU

Opening IP office
Initiating IP support in Southeast Asia and India

Santa Clara

Strengthening IP Activity at Insights Lab
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2.1 IP Activity Aligned with Business Strategy - Product Business -

**Strategy for competitiveness**
- Strengthening competitiveness
- Acquisition of IP rights
- Utilizing IP right corresponding to business characteristic

**IP Assets**
- Patent, design patent, trademark, patent license

**Strategy of collaborative creation**
- Promoting partnership with customers & partners
- Building ecosystem
- Securing BGIP*1 of core tech.
- Designing business model & contract
- Utilizing IP to promote partnership

**IP**
- Including business contract, data, trade secret, copyright, in addition to the left

*1 BGIP : Background IP
2.2 Contribution to Product Business through IP (1)

Formulating and implementing IP Master Plan customized for business characteristics

- Business strategy
  - IP benchmark
  - Setting goals
  - IP policy

IP Master Plan

- IP portfolio management
- Enforcement
- IP risk management

Healthcare BU*1

Japan Institute of Invention and Innovation Awarded the Imperial Invention Prize (2017 National Commendation for Invention)

"Real-time image gated particle beam therapy system"
PAT. No. 5896211

Industry-academia collaboration with Hokkaido University*2

To a world where intractable cancer that moves by respiration can be cured by outpatient treatment without any side effects

*1 BU : Business Unit
*2 Funded under “FIRST Program” of Cabinet Office
2.3 Contribution to Product Business through IP (2)

**Railway Systems BU**

1st rank in the number of patent applications on Traffic Management System

![Graph showing the number of patent applications for Hitachi, Company A, Company B, and Company C.](image)


**Building Systems BU**

Strengthening elevator patent portfolio in China

![Graph showing the number of registered patents in China for Hitachi, Company D, Company E, and Company F.](image)

*2 Survey by Hitachi. Number of registered patents in China in 2012 and 2015.

Hitachi Elevator (China) acquired Chinese National Standard Certification related to IP management.
2.4 Contribution to Product Business through IP (3)

**Water BU**

Open licensing of fundamental patent of a ship which equips ballast water purification treatment equipment

Joint invention with Mitsubishi Heavy Industries, Ltd. An **International Treaty** that obliges ships to install the equipment on ships will come into force.

Maintaining the marine ecosystem and contributing to environmental protection of the oceans

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**Hitachi Industrial Equipment Systems**

Protecting marking systems by combination of IP rights

Eliminating counterfeit products

**Strengthening patent applications in China**

Exercising design patents against counterfeit products in China

Eliminating counterfeit products from e-commerce websites

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*1 Ministry of Land, Infrastructure, Transport and Tourism "Overview of International Convention for the Control and Management of Ships' Ballast Water and Sediments"

*2 Survey by Hitachi. Number of patent publications in China from 2006 to 2011 and from 2011 to 2015

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3.1 IP Activity Aligned with Business Strategy - Digital Solution Business -

**Product business**

**IP strategy**
- Strategy for competitiveness

**IP role**
- Strengthening competitiveness

**Principal action**
- Acquisition of IP rights
- Utilizing IP right corresponding to business characteristic

**Scope**
- Patent, design patent, trademark, patent license

**Digital solution business**

**Strategy of collaborative creation**
- Promoting partnership with customers & partners
- Building ecosystem
- Securing BGIP\(^*1\) of core tech.
- Designing business model & contract
- Utilizing IP to promote partnership

**IP Assets**
- including business contract, data, trade secret, copyright, in addition to the left

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\(^*1\) BGIP: Background IP
3.2 Challenge to New IP Activity - Securing BGIP -

Securing IP rights of core technology (BGIP*1) and driving a consortium and standardization activities for building an ecosystem

<table>
<thead>
<tr>
<th>Rank</th>
<th>Applicant</th>
<th>Rank</th>
<th>Applicant</th>
<th>Number of Patent Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hitachi</td>
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<td>Fisher-Rosemount Systems, Inc. (USA)</td>
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<td>Siemens (Germany)</td>
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<td>Yokogawa Electric (Japan)</td>
<td>6</td>
<td>Yokogawa Electric (Japan)</td>
<td>377</td>
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</tbody>
</table>

Participating in standardization organizations and consortiums proactively

Japan-Germany Cooperation on IoT (agreed at Japan-Germany summit)

Hitachi participates in joint working group between Plattform Industrie 4.0*4 and RRI*5 as Japanese representative

*1 BGIP : Background IP
*2 Smart Manufacturing : General term of technology aiming at productivity of factory and creation of new business by adopting IoT technology
*3 Japan Patent Office Patent Application Technical Trend Survey (FY2016) “Smart Manufacturing” number of patent applications in Japan, United States, Europe, China, South Korea and Germany from 2005 to 2014
*4 Plattform Industrie 4.0 : German organization promoting Industrie 4.0
*5 RRI : Robot Revolution Initiative
*6 Japanese representative : Hitachi, other 2 companies and 1 university
Providing value to customers by using IP and contributing to business expansion

3.3 Challenge to New IP Activity - Data Utilization (Contract Supporting) - (1)

Customers (in various fields)

Co-Creation

Issue analysis

Hypothesis formulation

PoC\(^1\)/PoV\(^2\)

Component/ System modernization

O&M

Artificial Intelligence

FGIP\(^4\)

LUMADA

IP on Artificial Intelligence (AI) and Analytics

Data

Data for learning

Machine learning

Trained model

AI creation

Value

Flexible agreement for data utilization

Securing use of right in contracts for business expansion

Securing and utilizing BGIP necessary for Lumada business

Artificial Intelligence

BGIP\(^3\)

PoC : Proof of Concept

PoV: Proof of Value

BGIP : Background IP

FGIP : Foreground IP

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Formulating IP Strategy Book for digital solution business summarizing IP knowledge obtained through collaboration cases and deploying it globally.

Improving efficiency of quality assurance by connecting analysis and manufacturing execution systems.

IP Strategy Book for digital solution business:
- Power • Energy
- Industry • Distribution • Water
- Urban
- Finance • Public • Healthcare
3.5 Challenge to New IP Activity - Responding to new IP risks -

Risk management for OSS\(^*1\) utilization and NPE\(^*2\) along with the progress of digital transformation

Increase in opportunity of OSS utilization

- Patent
- OSS community
- License
- Copy-right

3rd party

IP risk from 3rd party

Increase in NPE patent litigations

<table>
<thead>
<tr>
<th>Year</th>
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<td>1271</td>
<td>3231</td>
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</tr>
</tbody>
</table>

IP activity to mitigate IP risk for protecting/developing OSS community
and to take measures against NPE patent litigations
(Considering to be a defensive patent aggregation member or invalidating patents)

\(^*1\) OSS: Open Source Software
\(^*2\) NPE: Non-Practicing Entity
\(^*3\) Source: JETRO “2015 Annual Report on trends of Non-practicing Entity” NPE patent litigations in US
Government discussing data utilization/protection to realize Society 5.0
Hitachi providing opinions in Councils proactively

Examination bodies in Japan for IoT in which Hitachi participates

**Cabinet Secretariat**
- Future Investment Council, etc.

**Cabinet Office**
- New Information Assets Examination Committee, etc.

**Ministry of Internal Affairs and Communication**
- Artificial Network Society Promoting Council, etc.

**Ministry of Economy, Trade and Industry**
- Industrial Structure Council, New Industrial Structure Committee
- Study meeting on the ideal way of intellectual property system with a view to the fourth industrial revolution etc.

**IoT Acceleration Consortium**

**Robot Revolution Initiative**
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- **New IP Activity**
  - Tackling a new IP activity based on *competition* and *collaboration* strategy to support **Social Innovation Business**.

- **Product Business**
  - Formulating and implementing **IP Master Plan** along with business strategy

- **Digital Solution Business**
  - Expanding IP activity from *patent to broader IP*
  - Securing BGIP of core technology and supporting contract design on the premise of data utilization.
THE FUTURE IS OPEN TO SUGGESTIONS

Hitachi Social Innovation

Delivering new value to society through collaborative creation with our customers and partners
IP activity supporting Social Innovation Business

June 28, 2017

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HITACHI
Inspire the Next