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R&D and IP Strategy Briefing

Intellectual Property Strategy

December 5, 2022

Stephen Manetta

Chief Intellectual Property Officer,
Hitachi, Ltd.

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Key Messages Today

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CIPO office leads to

1. Accelerate advancement in globalizing Hitachi's innovation leadership through a strong, world-class Global IP Function

→ 2〜8 pages

2. Strengthen forward looking IP activities that contribute to digital service business (Lumada) growth and the creation, protection and advancement of innovation

→ 9〜11 pages

3. Harmonize and drive the Global IP Function across the Hitachi Group as a trusted partner to the Group businesses in support and advancement of business objectives

→ 12 page

CIPO: Chief Intellectual Property Officer

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1. Hitachi Business and IP Evolution

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Accelerate innovation and support growth through IP

2009- **Digitalization**

	Mid-term Management Plan 2012, 2015 ('10-'15)	Mid-term Management Plan 2018, 2021 ('16- '21)	Mid-term Management Plan 2024 ('22-)
Business	Steer our business to social innovation	Promote co-creation with customers as **One Hitachi**	Business to become more global. Addition of Hitachi Energy, GlobalLogic, etc.	**Accelerate global growth by Green, Digital and Innovation**
IP	Protect products in competitive strategy	Secure reusable IP resulting from co-creation	IP organization supports M&A and PMI	**Support and advance Green, Digital, and Innovation**

▲ CIPO Office to Lead Group IP Function

Growth ➡ Enterprise value

Accelerate innovation (value creation) and risk mitigation through IP strategy

Branding Patent Data Copyright
Trademark Knowhow **IP** Design Trade secret

Stephen Manetta CIPO

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2. Recent Activities and Achievements

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National Commendation for Invention

2022 National Commendation for Invention "Prime Minister's Award"*1
Insulation resin structure for 800V in-vehicle inverter that enables quick charging

Example: 800V inverter power module for EV

Top 100 Global Innovator Awarded for 11 consecutive years

Evaluated by Clarivate based on patent data
Presented to the world's most innovative companies and institutions

Evaluation item:

- Number
- Global
- Impact

IAM*2: Selected as the Asia IP Elite for 2022

Subsequent to election of IAM Strategy 300, we selected as the Asia IP Elite for 2022 by IAM.

WIPO GREEN*3: Collaboration movie

As a partner of WIPO Green, produced the collaboration movie introducing IP activities in the environmental field with WIPO*4

*1 JP Patent 6200871 *2 Intellectual Asset Management *3 WIPO: World Intellectual Property Organization, WIPO GREEN: Environmental Technology Transfer Platform
*4 https://www.youtube.com/watch?v=sk18jbfqqSk

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3. The IP Function- Balance of Interests

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Business Interests:

- Digitization driven activities
- Create value through creating customer benefit
- Return on R&D Investment/revenue generation (e.g., commercialization)
- Develop and protect Competitive Advantage
- Risk Mitigation/avoidance → certainty
- Market development and protection through
  - Complying with/Influencing Government Policy
  - Beneficial Standardization participation and efforts

gap

Global IP Function to work in partnership with the Group Businesses to "close the gap"

Traditional Perception of IP Function:

- Patent and Technology focused
- Invention driven
- Asset procurement (Patents, Trademarks)
- Legal and Technical Issues

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4. Closing the IP Gap

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Drive transformation of the IP Function
- global, proactive, comprehensive, harmonized, consistent -

Hitachi Global IP Function Mission

Change mindset-digitization

Protect

Leverage

Power

Value driven IP Strategy

the Next

Customer Benefit

Innovation

Solution

Offering

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5. Integrated IP Strategy for Innovation

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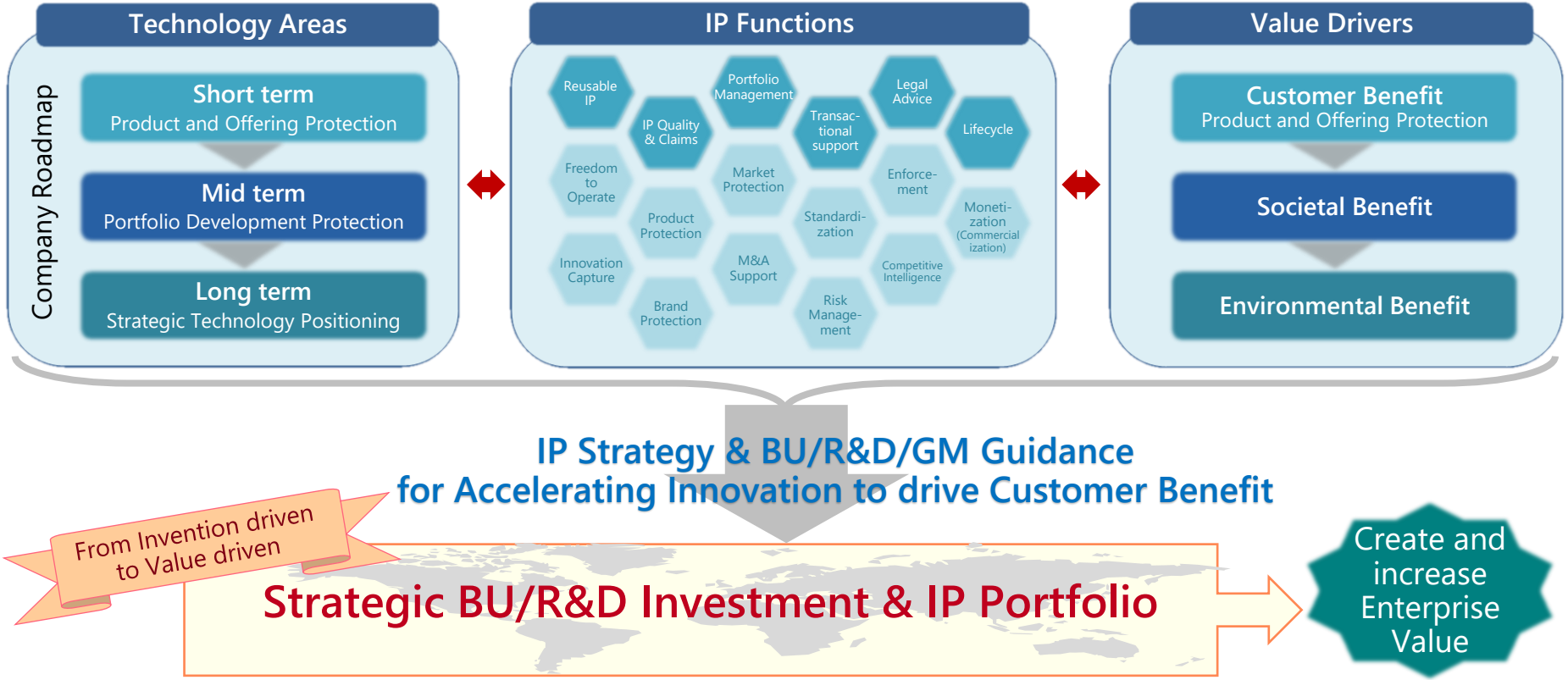
Integrate Value Drivers, Technology and IP Function to build Strategic IP Portfolio



GM: Global Marketing BU: Business Unit

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6. Integrated IP Strategy for Innovation

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Contribute to innovation by analyzing IP information

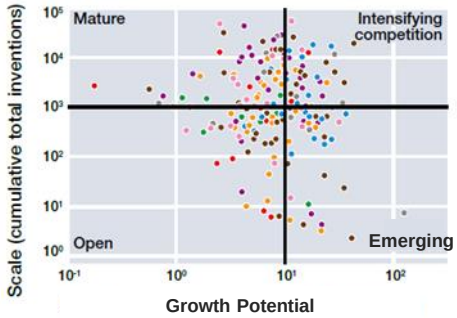
Example in the environmental field : Growth potential analysis, Technology positioning and Strategy matrix

Growth potential analysis

Horizontal: Growth potential estimated from the increasing rate of inventions in last few years

Vertical: Scale estimated from the cumulative number of inventions

Based on the number of inventions of all applicants, plotted by theme to analyze maturity

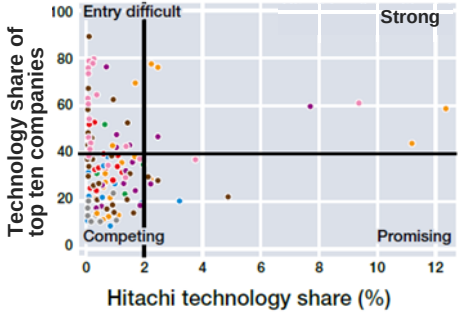


Technology positioning

Horizontal: Hitachi's technology share estimated from the ratio of Hitachi inventions among total inventions

Vertical: Technology share of top ten companies estimated from the ratio of their inventions among total inventions

Analyze Hitachi's positioning from these



Strategy matrix

- ✓ Identify themes in areas of high growth potential and where Hitachi has a high technology share (area highlighted in red)
- ✓ Identify growth areas where we can utilize Hitachi's powerful existing technologies
- ✓ Propose to business divisions and contribute to innovation activities

Growth Potential

Hitachi Positioning	Intensifying competition	Emerging	Open	Mature
Strong	Theme A (e.g., smart grids)	Theme B (e.g., railway power regeneration)	…	…
Promising	Theme C (e.g., combined renewable energy and storage)	Theme D (e.g., IT infrastructure resilience)	…	…
Competing	…	…	…	…
Entry difficult	…	…	…	…

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7. Snapshot of Hitachi Gr. IP Portfolio

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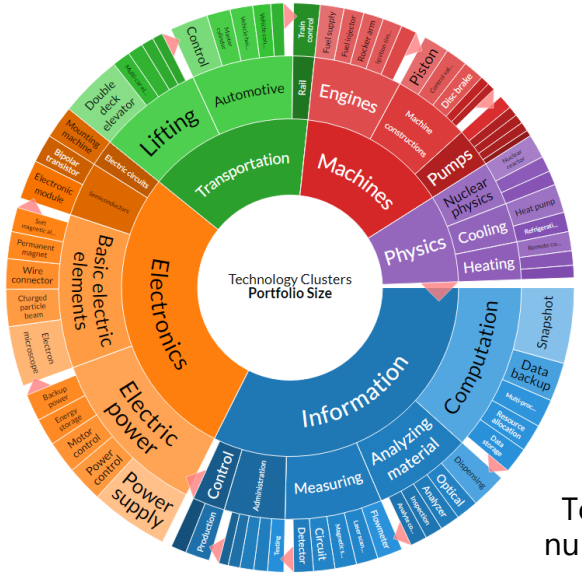
Strengthen IP Portfolio to increase enterprise value

Hitachi Group Portfolio Size*1

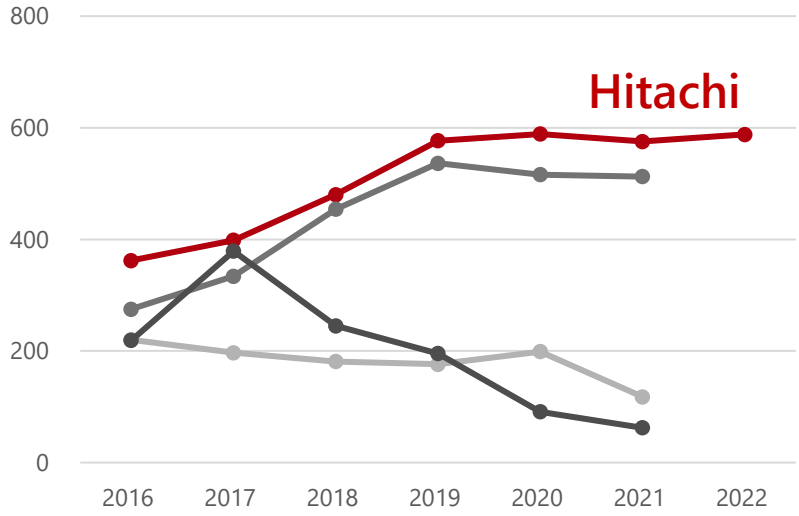
Proportion by technology field
(Information, Electronics, Transportation, etc.)



Total family number 55k +

Solution Inventions*2

Benchmarking among competitors in the Social Innovation Business



*1 data extracted from Lexis/Nexis PatentSight® Business Intelligence Analytics Platform
*2 Internal investigation. Number of patent publications in Japan, US & Europe with IPC: G06Q, G06F17 & G06N etc.

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8. Digital – Lumada Growth Model

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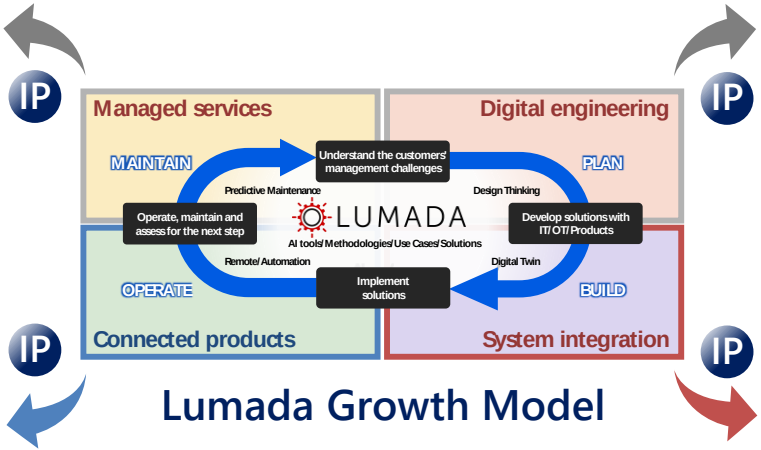
Contribute to the Lumada growth model by defining relevant IP strategy to promote growth opportunities through facilitated leveraging of Group Technology

- ◆Protect reusable technology and solution IP
- ◆Facilitate and accelerate 3rd party collaboration
- ◆Facilitate use of Group IP for Lumada offerings

- ■ Search for partners to realize new solutions based on IP information
- ■ IP Protection for data utilization solutions

- ■ Build a robust mutually advantageous relationship by organizing data handling with customers and partners
- ■ IP Protection for data utilization and analysis methods



Lumada Growth Model

- ■ Clarify and protect Hitachi group IP
- ■ Using IP information analysis to identify business opportunities e.g. in digital optimization

- ■ Utilizing IP information to select collaboration partners
- ■ Attract partners with IP
- ■ IP Protection for systems and solutions

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9. Digital Example – Lumada Inspection Insights

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The data driven cycle of value co-creation with customers by combining world-class IT and OT expertise from Hitachi, Hitachi Energy and Hitachi Vantara

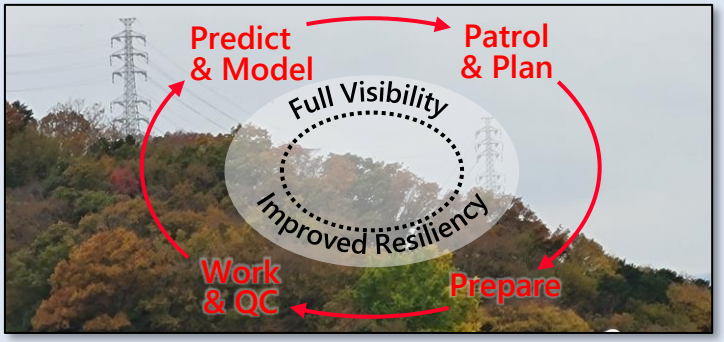
What
- Supporting equipment inspection, monitoring, and optimization of critical assets

To
- Electric power companies and others

How
- Using powerful artificial intelligence (AI) to analyze photographs and video, including LiDAR, thermal and satellite imagery to provide operational intelligence

Four core applications
- Hitachi Image Based Inspections
- Hitachi Intelligent Infrastructure Monitoring
- Hitachi Vegetation Manager
- Hitachi Map

Hitachi Vegetation Manager



- The first of its kind, closed-loop vegetation resource planning solution that leverages AI and advanced analytics to improve the accuracy and effectiveness of an organization's vegetation job activities and planning efforts
- The incorporation of satellite technology allows utilities to cover and survey their entire territory to automatically confirm line clearances and maintain compliance with regulations

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9. Digital Example – Lumada Inspection Insights

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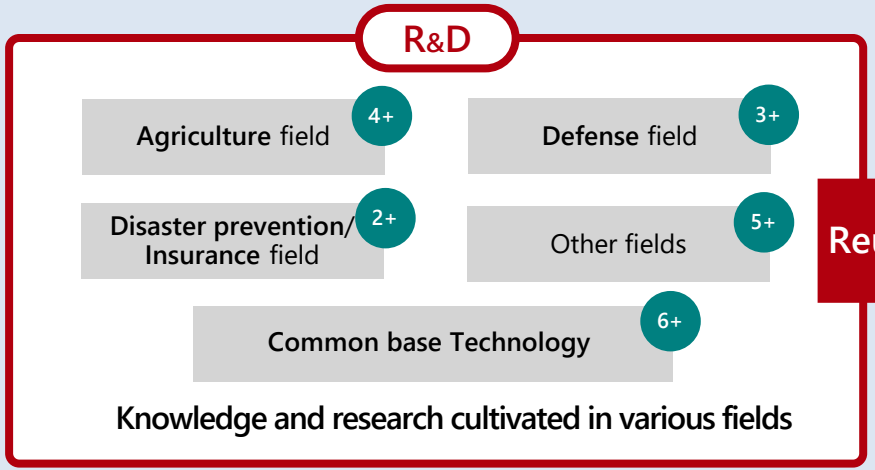
The data driven cycle of value co-creation with customers by combining world-class IT and OT expertise from Hitachi, Hitachi Energy and Hitachi Vantara

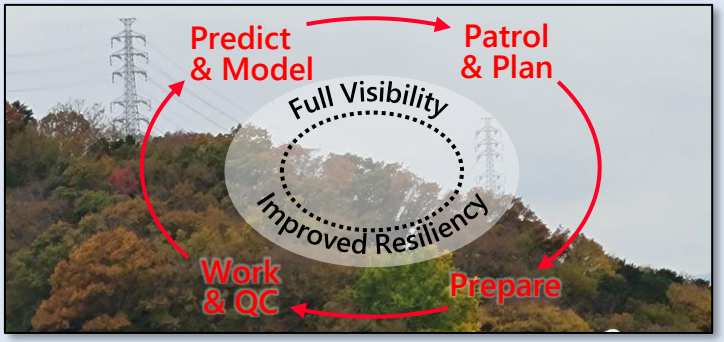
How Developed

■ Reusing Hitachi R&D's knowledge and research in the different fields on satellite image analysis



x Number of Patents or Patent applications

Hitachi Vegetation Manager



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*** Japanese patent application: JP2022-122026**

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10. Global IP Functional Organization

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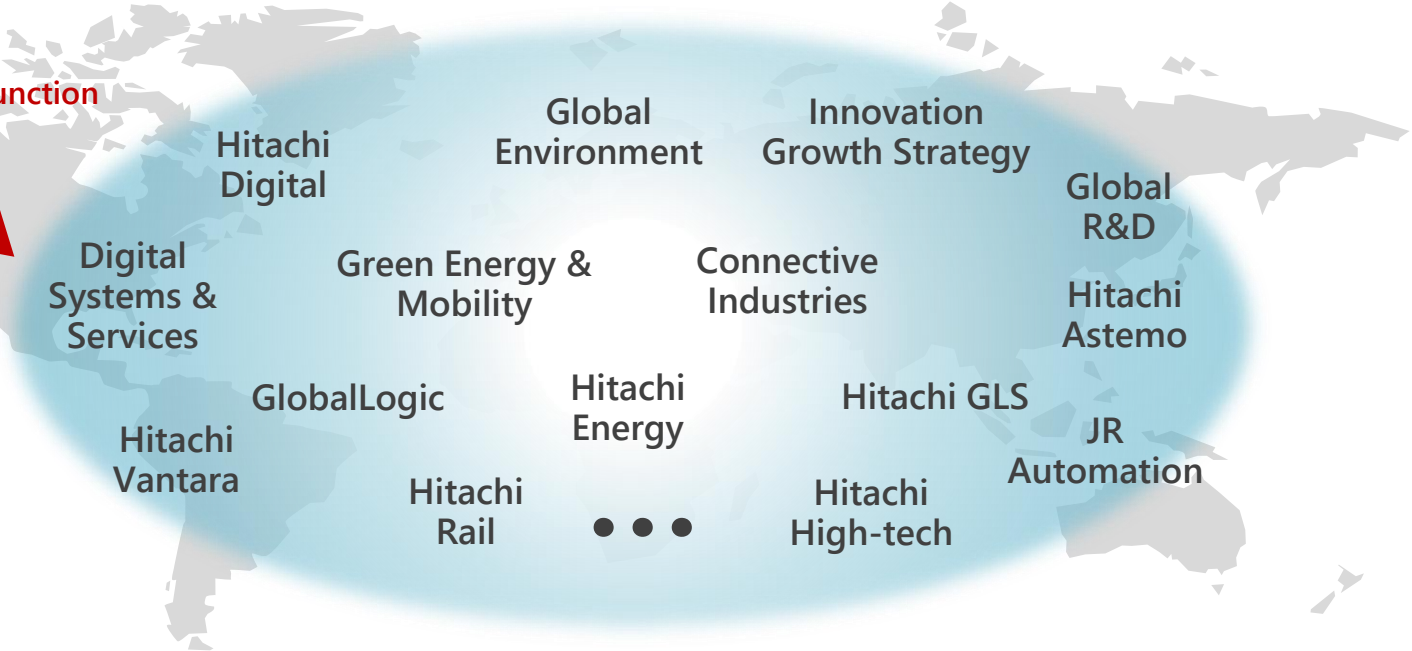
CIPO Office to Lead Global Intellectual Property Function across Hitachi

Evolution and harmonization of the IP function to be a strategic global business partner

Stephen Manetta
CIPO

FY2022

Global IP Function Leadership



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IP Impact

Create, preserve and grow value through IP from Hitachi innovations, solutions and offerings

Evolution of Group IP Strategy

- Enables **company driven investments** in consideration of value
  - Creation of reusable IP (e.g., from internal development and/or external collaboration)
  - **Strategy, product portfolio, and purpose** driven IP protection
  - Ensuring current and future **Freedom To Operate** in the Company's Key Strategic Areas
  - **Enforceable and defendable** Technology Preservation
  - **Intelligent Portfolio Management** enabling highly dynamic analyses for company-based status & gap evaluations

- **From Traditional Perception to Business Asset:**
  - Comprehensive **visibility and usability** of IP portfolio within the Hitachi Group
  - Roadmap focused IP development as **business enablers**
  - Full transparency and **multidimensional linkage** among and between BUs, R&D, and other functions
  - **Portfolio development with eye towards Strategic Leveraging Opportunities** and **Potential Return on Investment through facilitated commercialization of innovation**
  - **Proactive Risk Management and Mitigation**

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Contribute to business growth and society through transformed global IP function

Support people's quality of life with data and technology that fosters a sustainable society

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Hitachi Social Innovation is
POWERING GOOD

Appendix: About CIPO

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Stephen Manetta

Appointed in May 2022, Mr. Manetta is the Chief Intellectual Property Officer for Hitachi, Ltd. where he is responsible for all intellectual property matters group wide. Prior to joining Hitachi, Mr. Manetta was Vice President- Global Director of Intellectual Property & Chief IP Counsel for Schneider Electric from 2011-2022. Stephen was Senior IP counsel leading the IP Department for General Electric's Oil & Gas Business from 2006-2010. From 1994-2006, Stephen was partner at the New York based Intellectual Property law firm Morgan & Finnegan.

Before entering the field of Intellectual Property, Stephen was a Senior Systems and Software Engineer with Sikorsky Aircraft (then part of United Technologies) responsible for advance digital flight control systems design and development.

Stephen has experience in all aspects of IP, including defining IP strategy, portfolio development, licensing and enforcement of all patents, trademarks, trade secrets, copyrights as well as all legal components of the business and academic relationships and has led IP teams in countries throughout the world in protecting a wide range of products and services in a variety of technology fields. Stephen was lead IP counsel on many acquisitions as well as lead internal IP counsel for IP disputes including litigation, interference, opposition, arbitration and mediation.

Admitted to practice law in New York and a registered U.S. Patent Attorney, Stephen was conferred a degree in Electrical Engineering cum laude from Manhattan College in New York and his Juris Doctor from Villanova University School of Law in Philadelphia, P.A.

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Cautionary Statement

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Certain statements found in this document may constitute “forward-looking statements” as defined in the U.S. Private Securities Litigation Reform Act of 1995. Such “forward-looking statements” reflect management’s current views with respect to certain future events and financial performance and include any statement that does not directly relate to any historical or current fact. Words such as “anticipate,” “believe,” “expect,” “estimate,” “forecast,” “intend,” “plan,” “project” and similar expressions which indicate future events and trends may identify “forward-looking statements.” Such statements are based on currently available information and are subject to various risks and uncertainties that could cause actual results to differ materially from those projected or implied in the “forward-looking statements” and from historical trends. Certain “forward-looking statements” are based upon current assumptions of future events which may not prove to be accurate. Undue reliance should not be placed on “forward-looking statements,” as such statements speak only as of the date of this report.

Factors that could cause actual results to differ materially from those projected or implied in any “forward-looking statement” and from historical trends include, but are not limited to:

- economic conditions, including consumer spending and plant and equipment investment in Hitachi’s major markets, as well as levels of demand in the major industrial sectors Hitachi serves;
- exchange rate fluctuations of the yen against other currencies in which Hitachi makes significant sales or in which Hitachi’s assets and liabilities are denominated;
- uncertainty as to Hitachi’s ability to access, or access on favorable terms, liquidity or long-term financing;
- uncertainty as to general market price levels for equity securities, declines in which may require Hitachi to write down equity securities that it holds;
- fluctuations in the price of raw materials including, without limitation, petroleum and other materials, such as copper, steel, aluminum, synthetic resins, rare metals and rare-earth minerals, or shortages of materials, parts and components;
- credit conditions of Hitachi’s customers and suppliers;
- general socioeconomic and political conditions and the regulatory and trade environment of countries where Hitachi conducts business, particularly Japan, Asia, the United States and Europe, including, without limitation, direct or indirect restrictions by other nations on imports and differences in commercial and business customs including, without limitation, contract terms and conditions and labor relations;
- uncertainty as to Hitachi’s ability to response to tightening of regulations to prevent climate change
- uncertainty as to Hitachi’s ability to maintain the integrity of its information systems, as well as Hitachi’s ability to protect its confidential information or that of its customers;
- uncertainty as to Hitachi’s ability to attract and retain skilled personnel;
- uncertainty as to Hitachi’s ability to continue to develop and market products that incorporate new technologies on a timely and cost-effective basis and to achieve market acceptance for such products;
- exacerbation of social and economic impacts of the spread of COVID-19;
- the possibility of disruption of Hitachi’s operations by natural disasters such as earthquakes and tsunamis, the spread of infectious diseases, and geopolitical and social instability such as terrorism and conflict;
- estimates, fluctuations in cost and cancellation of long-term projects for which Hitachi uses the percentage-of-completion method to recognize revenue from sales;
- increased commoditization of and intensifying price competition for products;
- fluctuations in demand of products, etc. and industry capacity;
- uncertainty as to Hitachi’s ability to implement measures to reduce the potential negative impact of fluctuations in demand of products, etc., exchange rates and/or price of raw materials or shortages of materials, parts and components;
- uncertainty as to the success of cost structure overhaul;
- uncertainty as to Hitachi’s ability to achieve the anticipated benefits of its strategy to strengthen its Social Innovation Business;
- uncertainty as to the success of acquisitions of other companies, joint ventures and strategic alliances and the possibility of incurring related expenses;
- uncertainty as to the success of restructuring efforts to improve management efficiency by divesting or otherwise exiting underperforming businesses and to strengthen competitiveness;
- the potential for significant losses on Hitachi’s investments in equity-method associates and joint ventures;
- uncertainty as to the outcome of litigation, regulatory investigations and other legal proceedings of which the Company, its subsidiaries or its equity-method associates and joint ventures have become or may become parties;
- the possibility of incurring expenses resulting from any defects in products or services of Hitachi;
- uncertainty as to Hitachi’s access to, or ability to protect, certain intellectual property; and
- uncertainty as to the accuracy of key assumptions Hitachi uses to evaluate its employee benefit-related costs.

The factors listed above are not all-inclusive and are in addition to other factors contained elsewhere in this report and in other materials published by Hitachi.

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