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Hitachi Digital Services:
Engineering a Transformed Future

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Summary

We recently attended the Hitachi Digital Services Analyst and Advisor Connect in May 2025. Hitachi Digital Services (HDS) is a division of Hitachi's Digital Systems & Services division that was created in 2023 to help clients integrate, innovate, and scale. This summit introduced this new division to analysts and advisors.

HDS serves a global clientele across a diverse range of industries, with a notable heritage in asset-heavy sectors. As a company, Hitachi can use the different divisions' expertise in rail, automotive, manufacturing, energy, and utilities. During the conference, many case studies and client examples provided were in logistics, healthcare (specifically national cancer screening programs), financial services (global banks and regional US banks), telecommunications, pharmaceuticals, mining, retail, and government service providers. The broader Hitachi Group serves 85% of the Fortune Global 100.
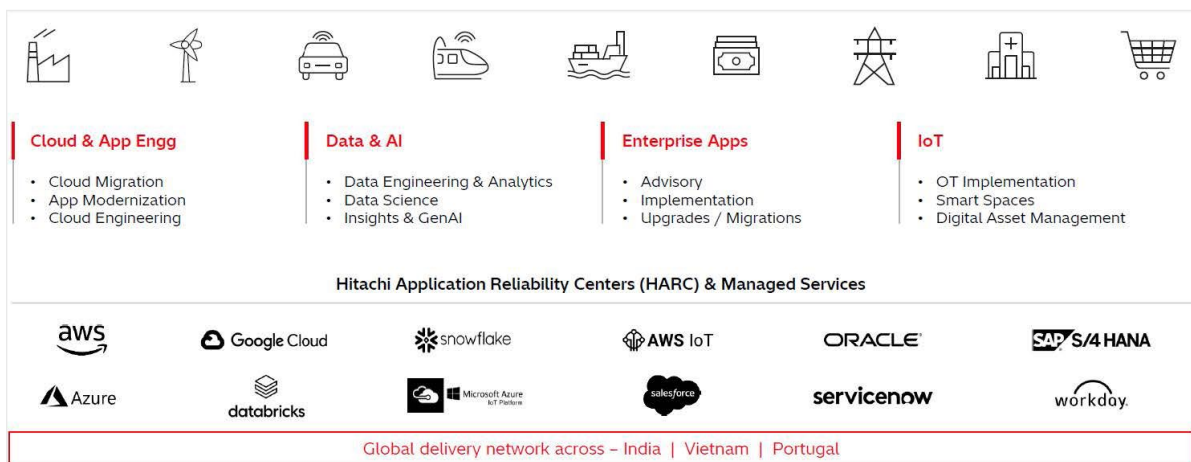
Image source: HDS corporate analyst presentation

Introduction

Traditionally, the Hitachi brand has been known for products as diverse as electronic devices and trains. However, this summit showcased Hitachi's role as a systems integrator and engineering leader, leveraging its expertise to drive global digital transformation, especially outside Japan.

In the engineering and manufacturing sectors, Hitachi's IT–operational technology (OT) integration capabilities, merging the physical and digital worlds to create advanced solutions for industrial and other large transactional sectors, are a strength. HDS provides end-to-end services from advisory and transformation to smart enterprise solutions and managed services, supported by over 2,000 technology and platform partnerships (including AWS, Azure, Google Cloud, SAP, Oracle, Salesforce, Snowflake, and Databricks).

HDS showcased two core ways that it differentiates itself:

▸ **Hitachi Application Reliability Centers (HARC):** Engineering-led managed services designed to drive reliability, reduce total cost of ownership (up to 35% claimed), and accelerate value through automation and 360-degree observability. HARC for AI extends these principles to AI operations.

▸ **R2O2.ai Framework:** A proprietary framework for AI adoption focusing on responsible, reliable, observable, and optimal AI to accelerate scalable and governed AI solutions.
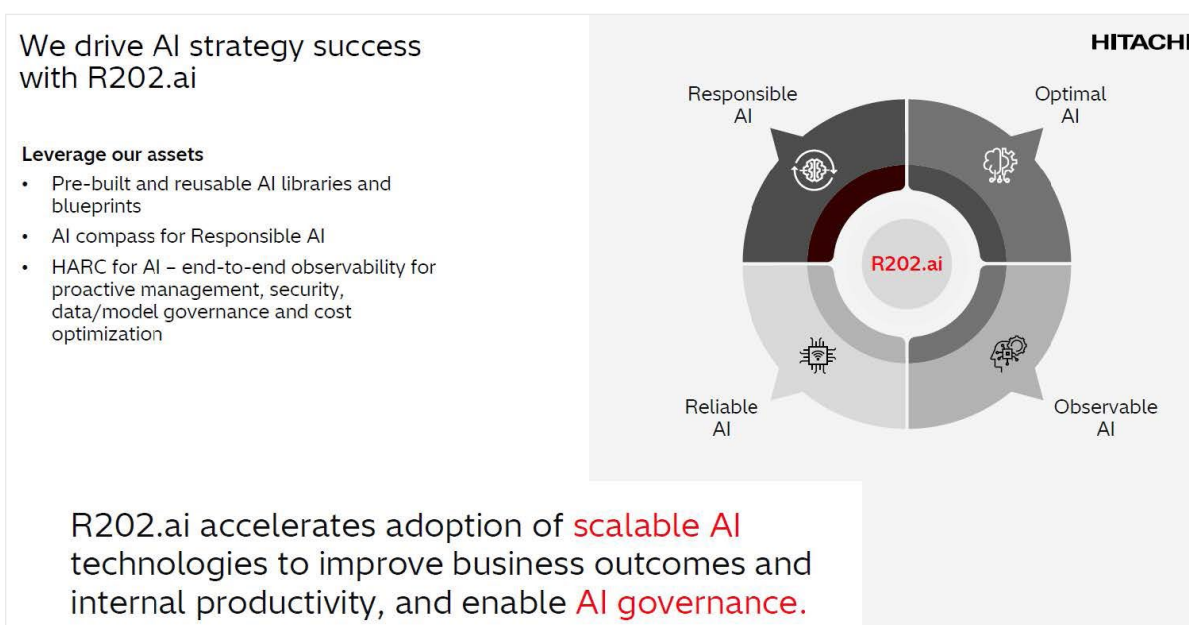

Image source: HDS corporate analyst presentation

Peeking Into the Future: Spotlight on Innovation
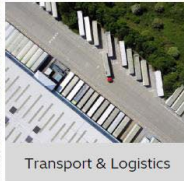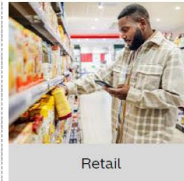
HDS showcased several areas of innovation:

▸ **Quantum Computing Research:** HDS is exploring a "different way" to do quantum computing, working with a top-tier lab in the UK. Its research involves more varied materials than some prominent efforts (like Google's Willow), aiming for large-scale quantum computing that might operate under different conditions (e.g. lower cost, potentially not requiring extremely low temperatures). HDS representatives also mentioned the capability to emulate quantum computing on GPUs for solving large-scale quadratic unconstrained binary optimization (QUBO) problems, a solution that is publicly available and has been applied in traffic, finance, and logistics.

▸ **Agentic AI & Automation (HARC for Agents):** There is a strong emphasis on agentic AI to drive reliable automation across various domains, including industry-specific use cases, operations AI (e.g. for L1/L2/L3 support), software engineering, and OT security. HDS is developing "HARC for Agents" and intends to have combined "human-AI teams."

▸ **Domain-Specific and Multimodal Generative AI:** Hitachi is developing smaller, more efficient domain-specific LLMs (e.g. for reading circuit diagrams, where its model outperformed ChatGPT) and multimodal AI capable of processing diverse data types like text, images, and audio.

▸ **AI on the Edge (IT/OT Convergence):** AI is being implemented directly on edge devices, exemplified by the Hyper Mobility Asset Expert (HMAX) project from Hitachi Rail where Nvidia chips on trains process sensor data (video, wheel sensors, overhead catenary data) in real time for predictive maintenance of both trains and tracks.

▸ **Hitachi Cyber – Securing the Converged World:** Hitachi is extending its deep OT knowledge to the cybersecurity realm, focusing on protecting critical infrastructure and industrial control systems (ICS). HDS' approach emphasizes

the unique challenges of OT environments, integrating AI for advanced threat detection, anomaly identification, and rapid response to safeguard against disruptions in a world where IT and OT are increasingly intertwined.

- ▸ **Organizational Intelligence:** Research is being done on capturing and leveraging collective intelligence within organizations, moving beyond singular AI capabilities to an "intelligence that is a map for the whole organization."

- ▸ **Physical AI/Simulation:** Robots and autonomous systems are being trained in virtual environments (simulation) before deploying them in the physical world for cost and safety reasons. This includes work on autonomous equipment.

Transformations in Action: Real-World Impact (Case Studies)

AI/ML, IoT and advanced analytics let you see further and further ahead, for new, quantifiable value

HITACHI

Telecommunications	Healthcare	Transport & Logistics	Transport & Logistics	Retail	Mining

Protected, scheduled, proactive, smart, visible

Realtime fraud mitigation	Efficient, reliable care (Azure)	AI-guided repair	Asset monitoring	Analytics platform	AI vision
Modernizing fraud detection across 30m+ clients with an AWS Data Lakehouse.	Digital Control Center with digital twins, sensors, automation and predictive analytics transforms management of 400k patients a year.	AI-driven proactive diagnostics predicts and prevents breakdowns, improves uptime, saves $18m pa.	Realtime remote video analytics – Cloud and AI-powered overhead line inspections for 40,000km of rail track drives predictive maintenance, uptime.	Global B2B platform for brand campaigns and personalized offer, increases customer loyalty and renewals by 95%.	Better yield and quality with AI/ML model drives $12m+ increase in high-value coal processing.
30m+ clients	400k patients	Saving $18m pa	40,000km	95% increase	$12m+ increase
MAJOR US TELECOMS PROVIDER	LEADING UK HOSPITAL	LOGISTICS PROVIDER	HITACHI RAIL, UK FLEET	CUSTOMER DATA SCIENCE COMPANY	MINING COMPANY

Image source: HDS corporate analyst presentation

HDS shared that its success has been in partnering with customers to develop solutions for real-world use cases, aiming to be not only a technology provider but a partner that creates outcomes. Often use cases are new and there is no known enterprise software catering to the use case.

- **Global Packaging Leader (Invoice Processing):** Deployed an LLM and visual analytics solution to process 1.2 million supplier invoices (PDF and image), increasing accuracy from 65% to over 90% (targeting 91-92%) and drastically reducing processing costs from 69 cents to 7 cents per invoice. The MVP took about six weeks, with full production rollout in ten weeks. Projected savings are $1.9 million per annum.

- **Logistics (Truck Fleet – "Logistics Giant"):** AI-driven guided repair and predictive diagnostics for a fleet of over 100,000 trucks (managing 440,000 vehicles globally, 2.8 million repairs annually). This resulted in $18 million annual savings (including over $15 million from predictive maintenance) and over 90,000 breakdowns prevented.

Image source: HDS corporate analyst presentation

- **Healthcare (National Cancer Screening – UK):** Modernized a national clinical system supporting cancer screening for over 2 million participants annually, improving processes for 4,000+ care staff and enabling evaluation of emerging technologies like AI-assisted reading.

- **Rail Operations (HMAX & Hitachi Rail, UK Fleet):** Real-time analysis of data from 40,000+ train sensors using edge AI for predictive maintenance of trains and 40,000km of tracks, improving safety and operational efficiency.

- **Global Bank:** Provided 24/7/365 CloudOps for mission-critical applications processing over 1 billion transactions daily, ensuring over 99% availability and 30% less management effort.

- **Drone-Based Factory Inspection:** Demonstrated a real working prototype enabling natural language communication with drones for inspection tasks (e.g., inspecting gas pressure gauges) within a factory environment, combining LLMs with custom visual and object recognition models.

- **Automotive Manufacturer (Freight Payments):** Automated $2 billion in annual freight payments with a real-time invoicing management solution for logistics teams and partners.

- **Telecommunications (Fraud Mitigation):** Modernized fraud detection across over 30 million clients using an AWS data lake.

- **Mining Company (Yield Optimization):** AI/ML model drove an over $12 million increase in high-value coal processing.

Strategic Advice for Tech Leadership

Throughout the Hitachi Digital Services Analyst and Advisor Connect conference, the HDS leadership communicated a consistent strategy focused on collaboration in both research and development projects and those with demonstrable business impacts. The conference provided valuable advice for companies.

1. **Integrate AI Strategically – Don't Silo It:** Focus on embedding AI into the core business strategy and existing enterprise applications rather than pursuing a separate, isolated AI strategy. Hitachi's position is that the future is about AI integrated into the company, not a separate AI strategy.

2. **Prioritize Production-Ready and Governed AI:** HDS advises that moving AI from a proof of concept to a robust, scalable production requires a focus on reliability, responsibility, observability, and cost optimization (the R2O2.ai principles). Governance is key as agentic AI becomes more prevalent.

3. **Embrace IT/OT Convergence for Real-World Impact:** In Hitachi's view, the fusion of physical and digital capabilities, particularly with AI at the edge, offers significant opportunities for innovation, efficiency, and new data-driven revenue streams in industrial settings.

4. **Don't Wait for Perfect Data; Iterate:** In HDS' view, data will never be perfect. Initiate AI and data programs concurrently, focusing on specific use cases, rather than waiting for a theoretically perfect data foundation, which can stall transformation efforts.

5. **Use Domain Expertise for AI Success:** From the perspective of HDS, besides having skilled AI engineers, having extensive knowledge in specific fields like physics or mathematics is crucial. This expertise helps to identify and implement important AI applications that address industry challenges and achieve business goals.

6. **The Future Is Agentic and Cocreative:** HDS expects AI agents to become integral to workflows ("me and my agent/bot"), potentially shifting service models and requiring new thinking on licensing. Partnering and cocreation with service providers who bring deep engineering, R&D capabilities, and a willingness to build with customers will be crucial for navigating this evolution.

7. **Focus on Modernization Through AI, Not Just Migration:** Agentic AI may allow companies to "skip" some of the struggles of traditional cloud modernization by enabling greenfield reinvention of processes and applications, according to the HDS leadership.

The Road Ahead for Hitachi Digital Services

HDS is making a compelling case for its relevance in an era increasingly defined by the convergence of IT and OT supercharged by AI. HDS' deep engineering roots and extensive OT domain knowledge provide a credible foundation, particularly in asset-intensive industries where trust and reliability are paramount. The R2O2.ai framework offers a pragmatic approach to AI adoption, addressing critical enterprise concerns around governance and operationalization.

Key challenges and opportunities lie ahead:

▸ **Scaling Cocreation:** While the emphasis on cocreation is strong, scaling this model effectively across a global client base while maintaining quality and innovation will be crucial.

▸ **Brand Perception & Market Awareness:** HDS needs to continue building its distinct brand identity in a crowded digital transformation market, moving beyond the broader Hitachi conglomerate perception to be recognized as a specialized digital services leader.

▸ **Talent & Skill Evolution:** The rapid evolution of AI and digital technologies necessitates a continuous focus on upskilling and acquiring talent that can bridge the IT/OT divide and deliver on the promise of agentic AI and advanced data solutions.

▸ **Demonstrating Differentiated Value From AI:** Moving beyond productivity gains to consistently highlight new revenue generation and transformative business model innovation through AI will be key to solidifying HDS' leadership.

HDS' commitment to long-term R&D, exemplified by its quantum computing and organizational intelligence initiatives, signals an ambition beyond current market demands. If HDS can effectively translate its engineering prowess and innovative concepts into consistently delivered, high-impact solutions for its clients, it is well-positioned to be a significant force in shaping the future of digitally transformed

industries. Success will hinge on the ability of HDS to execute globally, cultivate deep client partnerships, and stay at the forefront of both technological and domain-specific innovation.

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