Information & Telecommunication Systems

Hitachi provides IT services that address customers’ diverse needs by combining Hitachi’s extensive expertise in a diverse range of business fields, including financial services, with advanced information technology. Our services cover the entire life cycle of systems, ranging from consulting to system integration, operation, maintenance, and other support.

Segment Performance

Revenues increased 1% to ¥2,008.9 billion, as compared with the year ended March 31, 2017, due mainly to higher revenues from system integration business in Japan and the impact of foreign currency translation.

Adjusted operating income increased ¥36.2 billion to ¥189.2 billion, as compared with the year ended March 31, 2017, due mainly to profitability improvement in system integration business in Japan and the effect of structural reform for the IT platform & products business.

EBIT increased ¥62.8 billion to ¥139.2 billion, as compared with the year ended March 31, 2017, due mainly to a decrease in business structural reform expenses as well as the increase in adjusted operating income.

Human Flow Visualization Utilizing CCTV

In a collaborative creation project with Tokyu Corporation, Hitachi has utilized Lumada technology to develop the “Eki-Shi Vision”* monitoring service for gauging passenger congestion inside stations in real time based on CCTV (Closed-Circuit Television) footage.

As of the end of July 2018, the service covers 74 Tokyu Line stations, with plans to expand it to all stations on the Tokyu rail network (excluding the Kodomonokuni Line and the Setagaya Line) by the end of March 2019.

Analysis of images taken from CCTV using Hitachi’s people flow analysis technology automatically detects whether people are moving or stopped.

Each human image is replaced with a human-shaped icon and the analysis results are sent at one-minute intervals to the Tokyu Line smartphone app and cable TV feed. By providing information on station congestion level to help Tokyu rail network users choose whether to wait to take a train or take an alternative route if there is significant disruption, the service aims to relieve stress for users and enhance Tokyu rail network safety.

* Eki-Shi Vision is a registered trademark of Tokyu Corporation.
Social Infrastructure & Industrial Systems

Hitachi has a long and proven track record of high reliability in supporting people’s daily lives through such products and services as rolling stock and train management systems, power generation systems and transmission & distribution systems, elevators and escalators, and water solutions. It also offers industrial solutions and equipment to enhance the sophistication of manufacturing workplaces. Hitachi utilizes digital technologies to provide optimum solutions in addressing the issues and diversifying needs of customers worldwide.

Revenues increased 2% to ¥2,375.0 billion, as compared with the year ended March 31, 2017, despite lower revenues from the power & energy business and shrink of less profitable business in industry & distribution field. This mainly reflected increased revenues from the railway systems business for the U.K. and that in the industrial products business due to the acquisition of Sullair brand air compressor business.

Adjusted operating income increased ¥38.5 billion to ¥115.5 billion, as compared with the year ended March 31, 2017, due mainly to an improvement in profitability of business for the industry & distribution field, power & energy business and industrial products business, despite a decrease in average sales price and an increase in procurement cost in elevators and escalators business in China.

EBIT was ¥101.2 billion, an improvement of ¥121.2 billion from the year ended March 31, 2017, because of the absence of impairment loss recognized in the preceding fiscal year in relation to the uranium enrichment business at an equity-method associate in the U.S.

Smart Manufacturing Solutions

In recent years, amid rapidly changing business conditions, manufacturers need to develop greater competitiveness to respond to trends such as increasingly fierce global competition, more diverse user requirements, and digitalization. Hitachi is providing smart manufacturing solutions based on Lumada to help customers in the manufacturing sector address these major challenges. One example is the development of the high-efficiency production model established at Omika Works into Lumada solutions. Hitachi offers innovative solutions that contribute to higher manufacturing productivity through IoT-enabled visualization of manufacturing workplace and related workflow, or the adoption of simulator to optimize production planning.

Hitachi is also developing solutions in collaborative creation with customers, such as initiatives to reinforce quality by building systems for detecting abnormal operator actions or facility operations at production sites using image-analysis technology. For customers focusing on skills transfer within the workforce, Hitachi is also building systems that use cameras and sensors to capture the expertise of veteran technicians in digital form as part of efforts to develop personnel and improve quality assurance.
Electronic Systems & Equipment

Drawing on the Hitachi Group’s advanced technologies, Hitachi provides systems supporting the information society, including semiconductor manufacturing equipment, measurement and analysis equipment, broadcasting and video systems, wireless communications and information systems, and healthcare solutions that support healthy lifestyles.

Segment Performance

Revenues decreased 7% to ¥1,086.5 billion, as compared with the year ended March 31, 2017, due mainly to the impact of deconsolidation of Hitachi Koki Co., Ltd. (now Koki Holdings Co., Ltd.) in the preceding fiscal year, despite higher sales of semiconductor manufacturing equipment at Hitachi Kokusai Electric Inc. and Hitachi High-Technologies Corporation.

Adjusted operating income increased ¥5.3 billion to ¥86.9 billion, as compared with the year ended March 31, 2017, due mainly to an increase in profit of Hitachi Kokusai Electric Inc. as a result of higher sales of semiconductor manufacturing equipment.

EBIT increased ¥22.0 billion to ¥88.8 billion, as compared with the year ended March 31, 2017, due mainly to the increased adjusted operating income as well as a decrease in business structural reform expenses of Hitachi Kokusai Electric Inc.

Predictive Maintenance Service for Superconducting MRI Systems

Superconducting MRI systems use powerful superconducting magnets to image the brain or other internal organs. Costs can quickly mount up if these machines unexpectedly break down, due to the need to reschedule scans and undertake emergency repairs. Hitachi has developed AI technology to predict potential breakdowns months in advance by analyzing vast amounts of sensor data acquired from superconducting MRI systems. This predictive maintenance service can help to reduce machine downtime, improving the efficiency of diagnostic procedures within the hospital and ensuring that patients can receive MRI scans with peace of mind. Going forward, Hitachi plans to expand predictive maintenance services to further improve the degree of machine utilization and hospital management by promoting greater utilization of digital data.

* The Company transferred all shares of Hitachi Kokusai Electric Inc. stock owned by the Company on May 31, 2018, and then, the Company partially re-acquired shares of Hitachi Kokusai Electric Inc. stock on June 4, 2018. As a result, Hitachi Kokusai Electric Inc. turned into an equity-method associate of the Company.
Construction Machinery

Leveraging decades of technological expertise and know-how, Hitachi offers solutions that address the needs of a broad range of industries, including civil engineering and construction, building and structural demolition, and mining and excavation. Hitachi also handles the sale, servicing, and maintenance of hydraulic excavators and other construction machinery to provide integrated solutions globally.

### Segment Performance

Revenues increased 27% to ¥959.1 billion, as compared with the year ended March 31, 2017, due mainly to increased sales in China and other overseas countries, the effect of corporate acquisitions in Australia and the U.S. conducted by Hitachi Construction Machinery Co., Ltd. in the preceding fiscal year, and the impact of foreign currency translation.

Adjusted operating income increased ¥66.2 billion to ¥92.5 billion, as compared with the year ended March 31, 2017, due mainly to the increased revenues because of higher sales and the effect of the corporate acquisitions.

EBIT increased ¥74.3 billion to ¥97.0 billion, as compared with the year ended March 31, 2017, due mainly to the increased adjusted operating income as well as an increase in profit of an equity-method associate.

#### Introduction of Integrated Energy/Facilities Data Management Service EMilia

In the Construction Machinery segment, Hitachi has deployed EMilia, an integrated management service for energy/facilities data management, at five production plants in Japan making hydraulic excavators and wheel loaders. EMilia is a Lumada solution that can realize benefits such as energy savings, improved operational efficiency and enhanced business continuity planning (BCP) through the centralized management of energy and facilities data from multiple sites. The EMilia system collects and visualizes power-related data from monitoring points on around 14,000 breakers installed on the roughly 1,000 pieces of capital equipment located in Hitachi Construction Machinery’s domestic production plants. The analysis and management of power data at this level enables finer control, cutting peak power and realizing other savings through reductions in standby power consumption. In the future, Hitachi aims to develop EMilia to realize even smarter factories, based on the collection and analysis of production management data relating to areas such as product manufacturing history and facilities maintenance. This promises not only to realize energy savings, but also to enable shorter production lead-times and predictive maintenance of onsite facilities, based on real-time understanding of the energy requirements of each machine, process and production line; the cost of production; and the incidence of emergency repairs.

#### Main Products and Services
- Hydraulic excavators, wheel loaders, mining machinery

#### Examples of Digital Solutions

Hitachi Construction Machinery’s ultra-large hydraulic excavator and mining dump truck

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**Share of Revenues**
- 9%

**Overseas Revenue Ratio**
- 80%

**Capital Expenditure by Business Segment**
- 18.5 billion yen

**Depreciation by Business Segment**
- 32.2 billion yen

**R&D Expenditure by Business Segment**
- 24.0 billion yen

**Revenues and Profit**

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenues (Billions of yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>738.3</td>
</tr>
<tr>
<td>16</td>
<td>753.9</td>
</tr>
<tr>
<td>17</td>
<td>955.1</td>
</tr>
</tbody>
</table>

**Adjusted operating income ratio**
- 10.1%

**EBIT ratio**
- 9.6%

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High Functional Materials & Components

Hitachi draws on its wealth of technological expertise and know-how to provide a variety of materials and components—such as semiconductor- and display-related materials, synthetic resin products, specialty steels, magnetic materials, casting components, and wires and cables—that enable advanced functions in products for such sectors as autos, IT and consumer electronics, and industrial and social infrastructure. Business operations are focused in Asia, North America, and Europe.

Data-Visualization Solution to Prevent Inventory Shortfalls in Businesses with Short Delivery Lead-Times and Seasonal Demand Patterns

To help prevent product lines running out of stock within a rapidly changing business environment, characterized by short delivery lead-times and seasonal demand volatility, Hitachi Chemical developed its own data-visualization solution. This case was registered as a Lumada customer case in October 2017. Collecting real-time data on orders, inventories, and shipments from every site, the solution integrates information across sites by using business intelligence tools to show changes in volumes for every product in dashboard format. To ensure full transparency, the dashboard information is also continually displayed on monitors inside offices to promote early measures to mitigate the risk of product lines running out of stock. By supporting more appropriate production planning and inventory management, the solution is helping to eliminate such occurrences.
Automotive Systems

To contribute to the realization of an affluent society by creating new value-added systems, products, and services through the harmonization of people, vehicles, and society, Hitachi is accelerating its technological development in the fields of environment and safety. We will further develop our Advanced Vehicle Control System, integrating our safety and information technologies with the Hitachi Group’s social infrastructure services to meet society’s needs for environmental conservation, accident elimination, and traffic congestion reduction.

Segment Performance

Revenues increased 1% to ¥1,001.0 billion, as compared with the year ended March 31, 2017, due mainly to increased sales in China, despite of sales decrease of car information systems business and demand decrease in North America.

Adjusted operating income decreased ¥6.7 billion to ¥49.5 billion, due mainly to profitability deterioration of car information systems business and sales decrease in North America of Clarion Co., Ltd.

EBIT decreased ¥23.4 billion to ¥42.4 billion, as compared with the year ended March 31, 2017, due mainly to the decrease in adjusted operating income as well as absence of gain on sales and disposals of fixed assets in the preceding fiscal year.

Wireless Update Solution for Automotive Software

Software penetration in automobiles has increased in recent years with the greater use of electronics. Timely post-manufacture updates to ECU*1 automotive control software are increasingly needed, too, either for security purposes or adding new functionality to vehicles connected to infrastructure enhancements. The Hitachi Group offers a wireless solution for OTA*2 software updates.

The updated software is received by an onboard wireless receiver and transmitted to the ECU via a gateway board fitted with chips that have OTA software update control and security functions. In addition to this OTA software update solution, the Hitachi Group is actively developing other equipment and solutions to support wider commercialization of connected cars and other types of autonomous vehicles.

*1 ECU: Electronic Control Unit
*2 OTA: Over-the-Air
Smart Life & Ecofriendly Systems

Hitachi provides solutions and services aimed at resolving lifestyle issues through its home appliances, lighting and housing equipment, refrigeration and air-conditioning products. Hitachi also contributes to the resolution of societal issues by helping reduce environmental impact and making an ongoing effort to improve products’ energy efficiency.

Exiida Remote Monitoring Service Provides IoT Solution for Air-Conditioning

Since April 2018, Hitachi has been developing Exiida as a service business for creating new value and broadening the possibilities for air-conditioning, based on the utilization of various data and know-how relating to air-conditioning, heating, and cooling systems. This remote monitoring service for commercial refrigeration and scroll & screw chillers (including equipment for creating the chilled water used in office or factory air-conditioning systems) can enable predictive maintenance of such equipment by detecting reliable indicators of pending malfunctions, based on the application of machine learning over a certain period to normal operating data collected from similar equipment. The aim of the service is to curtail opportunity losses for customers due to unexpected breakdowns in air-conditioning or other heating and cooling systems. Building on the equipment maintenance expertise amassed by Hitachi to date, Exiida data analysis is based on patented Hitachi technology that utilizes the LSC classification approach.

*1 The name “Exida” incorporates the elements of Expansion (as a prefix), Internet, Individuality and Data to express the concept of addressing the challenge of creating new value through the connection of Hitachi air-conditioning or other heating and cooling systems to the Internet.

*2 LSC: Local Subspace Classifier (a type of classification protocol)