

Achieving Sustainable Development Goals (SDGs) through ICT Services

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In 2015, two major international frameworks were adopted regarding environmental and social sustainability. One was the 2030 Agenda for Sustainable Development, and especially the Sustainable Development Goals (SDGs), ratified during the UN General Assembly held in September. The other was the Paris Agreement, which was approved in December 2015 through the 21st session of the Conference of the Parties (COP21) to the UN Framework Convention on Climate Change (UNFCCC), and when into force in November 2016. The Fujitsu Group aims to play its part in achieving these global targets. One of our goals is to “contribute to the sustainable development of society through the provision of information and communications technology (ICT) services,” set out in the Fujitsu Group Environmental Action Plan (Stage VIII) that started in FY2016. This paper explains how the SDGs relate to corporate activities, and presents the Group’s thinking, assessment methods regarding its contributions to achieving the SDGs through the provision of ICT services, and specific examples.

1. Introduction

In 2015, two important international frameworks regarding the sustainability of the global environment and society were adopted. One was the 2030 Agenda for Sustainable Development, an action plan for people, the planet, and prosperity that was adopted by the UN General Assembly in September. It centers on Sustainable Development Goals (SDGs)¹⁾ and sets various goals to be achieved by 2030. The other one was the Paris Agreement²⁾ on global warming adopted at the 21st Conference of the Parties (COP21) to the UN Framework Convention on Climate Change (UNFCCC) in December.

Concrete efforts to encourage the participation of all companies in these international frameworks have begun at the global level. For example, with regard to SDS, international initiatives have made available the SDG Compass,³⁾ which suggests action guidelines for companies. Participation in such initiatives includes global entities such as companies, the UN Global Compact (UNGC), the World Business Council for Sustainable Development (WBCSD), and the Global Reporting Initiative (GRI).

As a global information and communications

technology (ICT) vendor, the Fujitsu Group proposes digital transformations⁴⁾ for the realization of a sustainable society. As the use of ICT spreads to various fields of society, it is expected to contribute to solving various global environmental problems.⁵⁾ Against this backdrop, the Fujitsu Group Environmental Action Plan (Stage VIII) for the FY2016-FY2018 period,⁶⁾ which began in April 2016, set the goal of contributing to the sustainable development of society through the provision of ICT services. This goal encompasses “Greenhouse Gas (GHG) Emission Reduction through the Provision of ICT” and “Deploying Sustainability Solutions”, which are goals already specified in the Fujitsu Group Environmental Action Plan (Stage VII).

This paper introduces the relationship between SDGs and corporate activities, and presents the Group’s thinking, assessment methods, and specific examples of its contributions to achieving the SDGs through the provision of ICT services as promoted in the Group’s Environmental Action Plan (Stage VIII).

2. Approach to the SDGs

The 2030 Agenda for Sustainable Development establishes SDGs consisting of 17 goals and 169

targets¹⁾ to be achieved (**Table 1**). These are shared goals of the international community for the period from 2016 to 2030. According to the Ministry of the Environment, of the 17 goals, at least 12 are related to water, energy, climate change, the oceans, and terrestrial ecosystems, among other things, and thus concern the environment.⁷⁾ SDGs are goals not only for developing countries but also for developed countries. In Japan, the government has established the SDGs Promotion Headquarters, whose members include all the ministers of state of the nation, for the promotion of policies related to the SDGs.⁸⁾

Further, the 2030 Agenda for Sustainable Development states that the achievement of the SDGs requires not only action by governments but also by all stakeholders, including, of course, companies. Concrete initiatives for participation by companies are already underway, and guidelines and other forms of support are also being provided. For example, the SDG Compass provided by UNGC, WBCSD, and GRI describes the benefits to enterprises of incorporating the SDGs into their management and the steps to do so, and states that

getting involved with the SDGs will help enterprise identify future business opportunities. A number of companies already grasp the relevance between SDGs and their businesses and incorporate environmentally conscious activities in their management.

3. Contribution to SDGs through ICT services

The stages of evolution of digital technologies is shown in **Figure 1**. Following the Internet, which was the first wave, the mobile Internet, the second wave, spread explosively, making it possible to obtain information in real time at any time and anywhere. Through the use of ICT, dramatic efficiency improvements have been realized in areas such as energy consumption and the production and consumption of goods. It is said that in the coming third wave, a fusion of the real and the digital will occur. This is called the Internet of Things (IoT), where everything is connected via networks through all kinds of sensors. Next, in the fourth wave, it is thought that “collaboration with humans” through artificial intelligence (AI) and robots will

Table 1
The 17 goals of the SDGs.

Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure availability and sustainable management of water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts*
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

* Acknowledging that the UNFCCC is the primary international, intergovernmental forum for negotiating the global response to climate change.
Source: Transforming our World: the 2030 Agenda for Sustainable Development⁷⁾

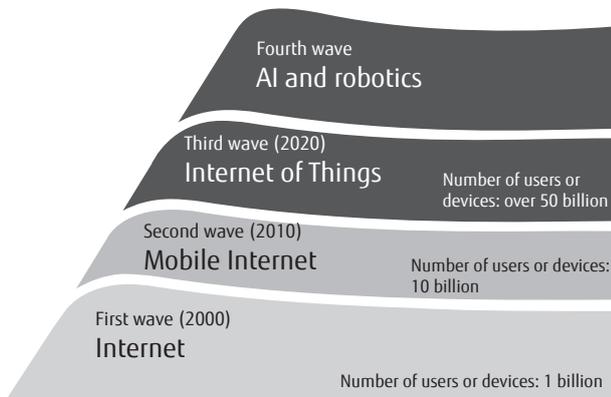


Figure 1
The digital technology waves.

emerge. In this way, groundbreaking services using innovative digital technology will appear one after another, with the potential to bring dramatic changes to social life. Furthermore, these technologies are expected to make great contributions to the achievement of the SDGs.

For example, Global e-Sustainability Initiative (GeSI) is an initiative driven by members who, besides Fujitsu, include global ICT companies such as Accenture Strategy, Ericsson, Microsoft, and Samsung Electronics, and various international organizations such as the International Telecommunication Union (ITU), the UN Environment Programme (UNEP), and WBCSD. GeSI compiles reports⁹⁾ (Table 2) on how various ICT services can make major contributions to the achievement of

Table 2
Examples of contributions toward achievement of SDGs through ICT services.

SDG	Most powerful digital solution(s)	Digital's positive impact with illustrative data point
Goal 6	SMART WATER MANAGEMENT for example, smart pipes, smart levees, smart meters, soil sensors, remote irrigation management systems, rain water harvesting systems, consumption control apps, e-billing	Improves water use efficiency and helps increasing access to water Up to 15% water consumption reduction
Goal 7	SMART ENERGY for example, smart grid, smart appliances, energy storage, predictive analytics, sensors, demand response technology	Improves energy efficiency and access to more affordable energy and supports to increase share of renewable energies in energy mix >1.3 billion MWh savings in 2030
Goal 11	SMART CITY MOBILITY for example, mobile ride sharing, e-mobility, driverless transportation, intermodality, connected infrastructure/IoT SMART BUILDING for example, alarm management and automation, big data analytics and energy management, smart metering, IoT/sensors, monitoring, detection and diagnosis technologies	Reduces resource consumption, improves energy efficiency and reduces air pollution Around a 5% CO₂e emissions savings in 2030 from smart building and smart city mobility alone
Goal 12	SMART AGRICULTURE for example, optimized farm management and automated irrigation systems; precision agriculture, including M2M/IoT, soil sensors and satellites and integrated real-time weather information, traceability and tracking system	Improves production and consumption patterns, enabling the transformation of the economy into a circular economy 20% food waste savings in 2030 from smart agriculture
Goal 13	ALL DIGITAL SOLUTIONS with sustainability benefits, including smart agriculture, smart building, smart energy, smart manufacturing, smart mobility	Enables GHG gas emissions reduction and drives market transformation for renewables Around 20% of global CO₂e emissions can be saved in 2030
Goal 14	SMART CONSERVATION for example, advanced mapping and data analytics, sub-marine, coastal and inland smart sensors, drones, real-time satellite imaging, smart monitoring, real-time weather forecasting	Improves protection of oceans and water quality 32% of the world's coastal areas could already benefit from smart conservation solutions

CO₂e: CO₂ equivalent
M2M: Machine to machine
Prepared with reference to EXHIBIT 12 in reference 9)

the SDGs.

Until now, the Fujitsu Group has provided ICT services that contribute to solving various customer problems, and ultimately it is thought that these will contribute to the 17 goals of the SDGs. For example, “smartphone-based disaster information sharing systems” and the “creation of hazard maps by tsunami simulation” are considered to contribute to Goal 11 in terms of disaster prevention; the “provision of low power consumption systems” and “energy management solutions” are considered to serve Goal 7 and Goal 13, and “food and agriculture cloud services” are considered to contribute to Goal 12. What is important here is the relevance of the functions of solutions to the SDGs. The method to assess this relevance is explained in the next section.

4. Relevance assessment method

According to the aforementioned SDG Compass, in order to grasp the impact of each company on the SDGs, it is important to recognize business activities in terms of economic, environmental, and social impacts, and the SDG Compass introduces what it calls a “Logic model” as the method for doing so. In this method, the impact on SDGs can be grasped by following a five-step process that traces a path from “inputs” to activities, “outputs”, “outcomes”, and “impacts”. Setting appropriate indicators for each process allows quantitative effect measurement. However, it is often difficult to accurately collect data at the outcome and impact steps of the Logic model, and thus there is also the method of using input, activity, and output indicators as alternative indicators. This method is described in detail in “Measuring socio-economic impact: A guide for business,”⁽¹⁰⁾ prepared by the WBCSD.

In assessing the impact of the introduction of ICT services on SDGs, each process can be understood as

follows (Figure 2).

- Inputs: Introduction of ICT services
- Activities: Activities of introduction sites using ICT services
- Outputs: Direct effects and results of activities
- Outcomes: Changes in society and life caused by activities
- Impacts: Ultimate changes in society and life (SDGs)

Fujitsu is planning to assess the relevance of its ICT services to SDGs in the future by making use of such a Logic model and other ideas.

5. Examples of contribution to the SDGs

Fujitsu contributes to the SDGs through the provision of ICT services to its customers. This section introduces customers’ initiatives and examples of Fujitsu’s ICT services that support them.

5.1 WWF Japan

1) Customer’s initiative

WWF Japan created an environmental learning aid titled “Let’s live within the Earth’s capacity.” Environmental issues are one of the important elements of the SDGs, and making such a learning aid easily understandable to children in a way they can enjoy requires a lot of ingenuity. This learning aid allows children to get acquainted with numerical values called “ecological footprints” that show the impact of humans on the global environment in a game-like manner.

Early on in its development, this learning aid received high accolades from schools as a pedagogical tool with game elements. However, inventory ran low, preventing its distribution to many schools. Moreover, devising even better ways to deepen the learning

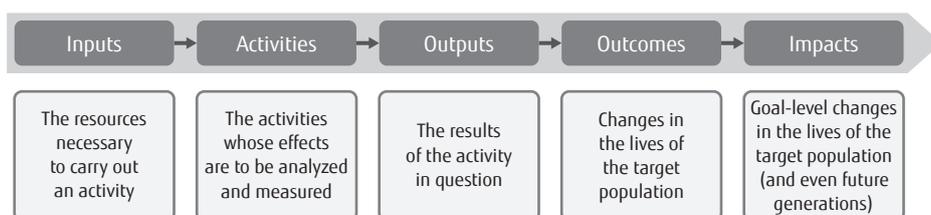


Figure 2
The Logic model.

experience was deemed necessary.

2) ICT services provided by Fujitsu

Fujitsu Education Solution K-12 Collaborative Learning Support Tool Manavication is a solution that effectively supports next-generation classes for the realization of “basic learning and knowledge acquisition,” the “development of thinking ability, judgment ability and expression ability,” and “collaborative education” that allows students to learn from one another. Utilizing Manavication, the aforementioned teaching aid was converted into an electronic teaching aid and added as one of the on-site environmental classes offered by the Fujitsu Group.

Students come up with ideas for nature conservation and enter them on tablets, which then display the answers from the entire class on their screens (Figure 3). Children love the experience of being able to share their ideas with all their classmates, and this new approach promotes environmental learning with fresh appeal. Through these environmental classes, each year more than 3,000 children learn about the importance of preserving the global environment.

5.2 National Museum of Nature and Science

1) Customer’s initiative

The National Museum of Nature and Science collected information on the various specimens held by natural history museums and other such institutions throughout Japan, and created Science Museum Net (S-Net), a database site for sharing information about these specimens. The database, which has been in operation for nearly ten years now, has collected over 4.1 million data items from more than eighty organizations nationwide.

S-Net serves as an information base for ecosystem preservation and is used by numerous researchers not only in Japan but all over the world. Through its utilization by many institutions and researchers, S-Net contributes to SDGs related to the environment and biodiversity.

2) ICT services provided by Fujitsu

Fujitsu Education Solution Musetheque is a solution that manages information on various collected items and documents owned by museums, archives, libraries, university, and companies.

S-Net includes Musetheque along with FUJITSU Software Interstage Shunsaku Data Manager, an XML-based database search engine developed by Fujitsu. This search facility is suitable for high-speed searches of information on collected items and so on that require high flexibility. Besides streamlining search operations, it offers a variety of search options along with extremely fast response, which help greatly boost user satisfaction. The screen is designed for ease of use and superior viewability based on universal design and usability considerations.

6. Conclusion

This paper described the relationship between SDGs and corporate activities, and presented the Fujitsu Group’s thinking, assessment methods, and specific examples of its contributions to achieving the SDGs through the provision of ICT services.

ICT is already contributing to improving energy use efficiency as well as making the production and consumption of goods more efficient. By connecting diverse products and services digitally beyond the traditional boundaries of industries, further contributions to optimizing the use of energy and resources in all



Figure 3 Manavication display examples.

social systems and solving new social problems that arise due to natural disasters and urbanization will become possible.

Fujitsu's vision is to realize through the power of technology a "Human Centric Intelligent Society" that achieves greater safety, prosperity, and sustainability. As a global ICT company, we aim to solve global problems, creating new value (co-creation) and contributing to the creation of a sustainable society through new links with customers and partners across the boundaries of organizations, industries, and nations. It is our belief that promoting such efforts will contribute greatly to the SDGs as well.

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