Economy

New Opportunities for Polish-Japanese Cooperation: Diagnosis and Prospects

edited by Jolanta Młodawska-Bronowska

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Shaping a more prosperous, sustainable future

Yoshikuni Takashige
Vice President, Portfolio Strategy,
Marketing Unit Fujitsu Limited

1. Introduction of Fujitsu

Fujitsu is a Japan-based global IT product and service provider, generating $46 billion revenue in 2013. In the IT service domain, we are the largest in Japan and ranked No. 4 in the world. Our 162,000 employees work with customers in over 100 countries in the world (Fig. 1). We deliver services from more than 100 world-wide data centers (Fig. 2).
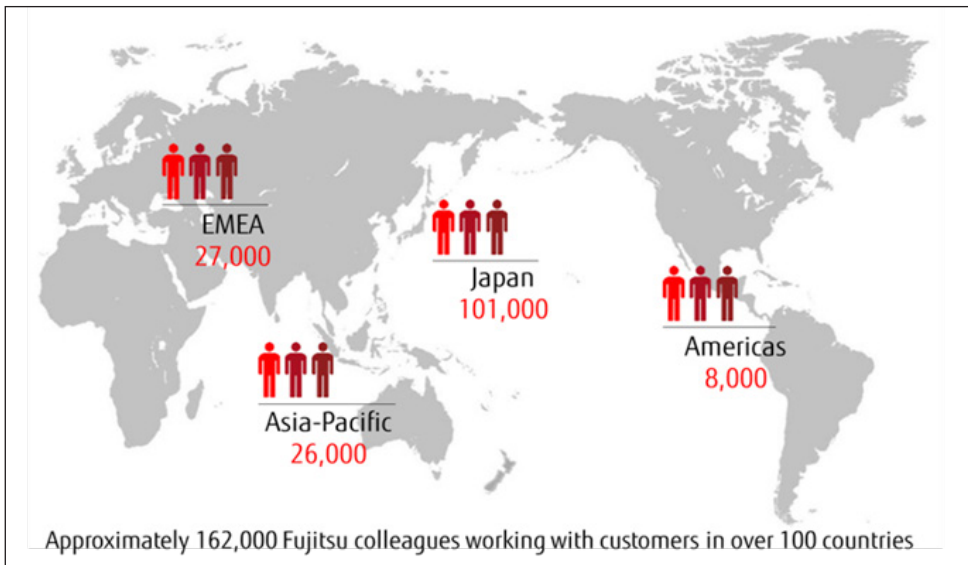
Fig. 1. Employees of Fujitsu
Source: Fujitsu Technology and Service Vision 2014

Fig. 2. Fujitsu data centers
Source: Fujitsu Technology and Service Vision 2014

We support our world-wide customers through service desks 24 hours a day, 365 days a year in more than 30 different languages (Fig. 3). Fujitsu set up a Global Delivery Center in the city of Lodz in 2009. We are very proud of how we have rapidly increased the capacity of our operations here, widening the services offered, including service desk, remote infrastructure management, research and development. as well as functional shared services.

Fig. 3. Fujitsu service desks
Source: Fujitsu Technology and Service Vision 2014

2. How will the future be different?

Technology advances at a tremendous speed, providing opportunities as well as risks for the everyday life of people and businesses. How can we shape a better future? Innovation is essential to making a better future a reality. But how can we realize innovation?

A new world is emerging. It is a world of connectivity. People and the things around us are increasingly connected to networks, sharing information. The World Economic Forum calls it a Hyperconnected World and it is expected to have a huge impact on business and the everyday life of people (Fig. 4). A hyperconnected world is driven by the next generation of the Internet, i.e. the Internet of Things (IoT). Many things around us will be connected, for example, our eye-glasses, shoes or shirts. In 2013, around 10 billion devices were connected to the internet. This number will likely reach 50 billion or more in 2020.

Fig. 4. World of connectivity
Source: Fujitsu Technology and Service Vision 2014

Massive amounts of information are generated by these things. For example, it is said that a self-driving car generates 3.6 terabites per hour, and a jet engine of an aircraft creates 20 terabites per hour. New services such as predictive maintenance are being created by using such big data, and we can expect that the combination of IoT and Big Data will bring about significant economic growth. But we will also face serious challenges in terms of information security and protection of privacy. It is the responsibility of IT companies like Fujitsu to help protect vital data and the privacy of people against risks.

Combined with IoT, digitalization is accelerating hyperconnectivity. More and more physical things and services around us are digitalized and controlled by intelligent software. Smartphone, home appliances, cars, manufacturing operations, and social infrastructure such as Smart Grid are just examples. It is said software is eating the world. Indeed, the borders between physical and digital, hardware and software are fading away and becoming ever less meaningful.

Hyperconnectivity is also changing how people innovate. The graph below (Fig. 5) represents a view of an influential venture capitalist in the US. He observed that cost of starting a new business has gone down

significantly – almost by a thousand times in the last ten years. Why? Now we can access technology in much more easy and inexpensive ways – using open source software, cloud computing and so on. This means that if you have a few good ideas, you can start a business much more easily and agilely.
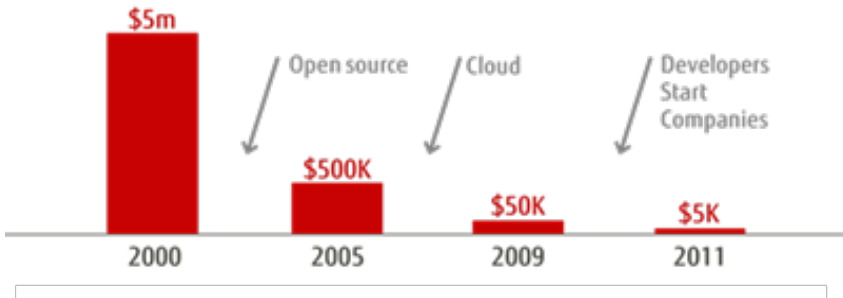
Fig. 5. The state of the venture capital markets
Source: Key note speech, VCJ Venture Alpha Conference, Mark Suster (Partner, GRP)

Though technologies are giving new opportunities for growth, at the same time we are facing serious social challenges everywhere in the world (Fig. 6). The world population has surpassed 7 billion and continues to grow. People are aging and moving into cities, creating new challenges for social infrastructure. This brings about new challenges for healthcare, disaster mitigation or protecting the environment. Fujitsu strongly believes that ICT can take a leading role in addressing these global challenges. Aligning our business activities to this goal of achieving the common good is not our aim – it is our obligation.

Fig. 6. Serious social challenges
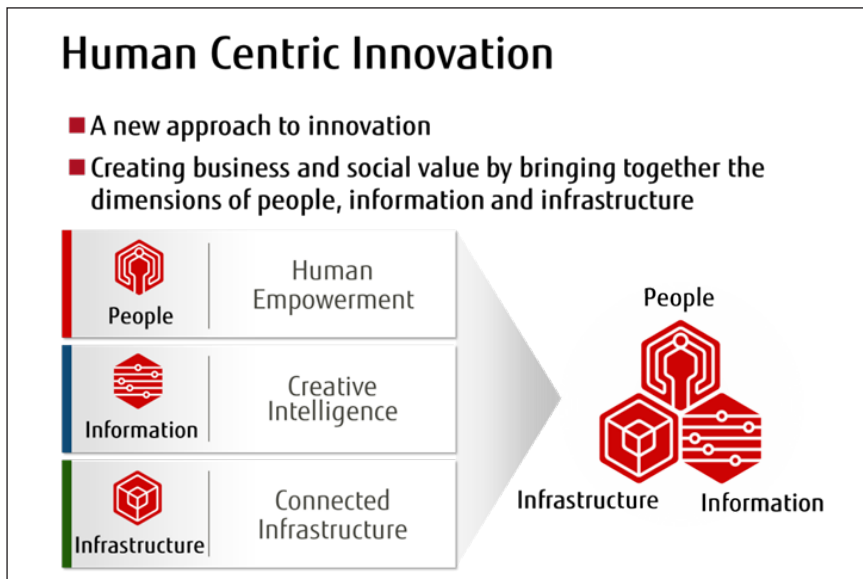**Source:** Fujitsu Technology and Service Vision 2014

3. A new approach to innovation

Thus the question is how we can innovate, create value and solve challenges. What is the "true" key?

Our answer is simple. We think it is "people". Previously, holding onto technologies or assets in a closed way provided a competitive advantage. However, today technologies and assets are much more easily accessible through networks – cloud, mobile, open source. In this new connected world, it will be critically important how organizations can leverage the creativity of connected people.

Human Centric Innovation is a new approach to creating innovation in a hyperconnected world (Fig. 7). It is essential to enable three dimensions.

The first dimension is people. How do organizations connect and empower people and maximize their experience? We call this Human Empowerment. The second dimension is information. How do organizations collect big data and gain insights and knowledge and how do they use such knowledge across boundaries. We call this Creative Intelligence. The third dimension is Infrastructure. Now sensors are embedded elsewhere in business and social infrastructure. The way in which organizations connect and optimize the entire infrastructure is critical. We call this Connected Infrastructure.

Fig. 7. Three dimensions of innovation
Source: Fujitsu Technology and Service Vision 2014

These three dimensions do not stand alone, but are closely inter-related. Now many people own a smartphone and are connected all the time. Things are connected and sending data. Converging data flows among people, people and things, and things and things, all of which leads to finding new insights and new value.

In short, Human Centric Innovation is a new approach to realizing business and social value by bringing together these three dimensions of people, information and infrastructure.

A great example of Human Centric Innovation is Metawater (Fig. 8). This company is a provider of water infrastructure management services in Japan, holding about 25% of the market share. The company faced two challenges. First, how could Metawater efficiently maintains an aging water infrastructure? Second, how could they keep the knowhow of skilled engineers in the situation when those skilled veteran field service engineers were retiring?

Fig. 8. Water infrastructure management services
Source: Fujitsu Technology and Service Vision 2014

In response to these challenges, Metawater took an IoT initiative. This company is one of Fujitsu's first cloud users, and itembedded sensors in water infrastructure and started monitoring the level and quality of water and the conditions of facilities.

In 2013, Metawater introduced new inspection routines using Fujitsu's Augmented Reality technologies. Each field service engineer carries a smart tablet only. He just holds it over a marker on the equipment, and automatically the necessary information and working guidance are displayed. If he detects anything of concern, he can take a picture, and speak and record his observation on the spot.

This method extremely streamlined the inspection work. Furthermore, it enabled sharing of skilled engineers' tacit knowledge throughout the organization. Hence Metawater successfully combined the three dimensions: knowledge of field engineers, intelligence gained from various types of information, and IoT-enabled connected infrastructure. As a result, the company achieved greater human empowerment and operational excellence.

4. What we can do for you

At a time such vast changes, we believe Fujitsu can be a trusted innovation partner for our customers and various stakeholders. We would like to contribute to creating business and social innovation through blending our technology know-how with business, public service or the academic expertise and knowledge of our customers and partners.

In a hyperconnected world, the way of doing business will change fundamentally. Traditionally, businesses created value using closed value chains. But we expect more and more businesses will work as an ecosystem. Value will be co-created for each end consumer through a digital ecosystem, traversing the boundaries of existing industries. As you can see from the diagram below (Fig. 9), this is exactly a human centric ecosystem. This will bring about a radical change in the way businesses work. A smartphone business model with a wide variety of apps, handsets & services provided by different players is a typical example of this type of ecosystem.

In order to shape a digital ecosystem, cloud underpins a business platform (Fig. 10). Cloud is not only the way to reduce ICT infrastructure cost. Cloud connects everything – people, information and infrastructure across a digital ecosystem. Fujitsu would like to co-create business platforms & digital ecosystems together with our customers and various partners. Below we present some early-stage examples of cross-industrial ecosystems.
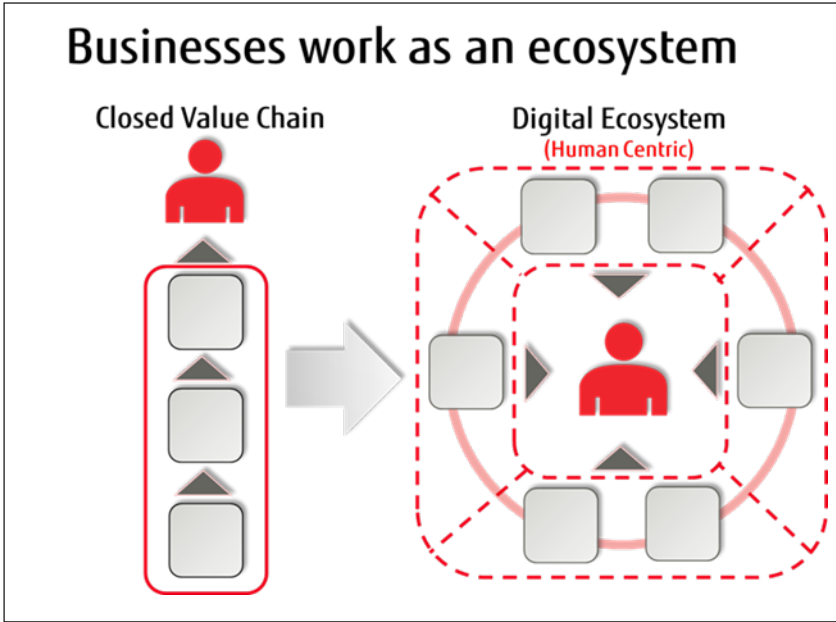
Fig. 9. Human centric ecosystem
Source: Fujitsu Technology and Service Vision 2014
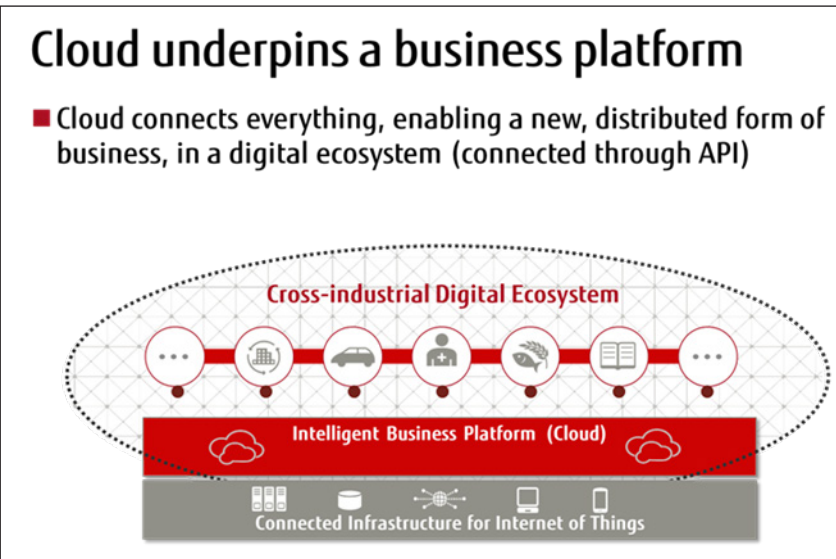
Fig. 10. Cloud computing
Source: Fujitsu Technology and Service Vision 2014

First, we would like to introduce an ecosystem for urban mobility (Fig. 11). Now, cars are being digitalized and connected to the cloud. For example, 4,000 taxis running in Tokyo are equipped with sensors and sending ever-changing location data to Fujitsu's cloud data center. Using the data, we can visualize the real-time traffic status of the metropolitan area. We can use this kind of cloud to shape a business platform, connecting people and different types of information and infrastructure – commerce, public services, insurance, energy stations, and transport management. New services are already being created – battery management of electric vehicles, networking of brand-new fuel-cell car's service stations, collaboration with insurance companies, and more. We are expanding the application of this kind of innovative services internationally. For example, in October 2014 three parties, comprising Fujitsu, A*Star, and the Agency for Science, Technology and Research of Singapore and Singapore Management University signed a contract to jointly set up a Center of Excellence. One of the main projects is Dynamic Mobility Management to reduce congestion. Fujitsu will contribute our people, high-performance computing and accumulated know-how backed up by our experience.

Fig. 11. Cars connected to the cloud
Source: Fujitsu Technology and Service Vision 2014

Secondly, new ecosystems are being formed in the space of health-care and life science (Fig. 12). Technology is an essential element. Many hospitals are now equipped with electronic medical record systems. Research institutions are strengthening their capability for analysis of genomes or discovery of new drugs with the power of super computers. But if we can connect such systems together with other systems – the systems of pharmaceutical companies or care for the aged, we may be able to realize a totally new value proposition for the wellbeing of people instead of just the treatment of patients. For example, Tokyo University Research Center for Advanced Science and Technology (RCAST) is using Fujitsu's Technical Computing Cloud for IT drug discovery with a vision to collaborate with potential industry partners. Indeed, in August 2014, Tokyo University RCAST, Fujitsu and Kowa (a pharmaceutical company) succeeded in jointly generating a new active compound targeting cancer. Fujitsu's world-leading supercomputers are used for various applications in many other places in the world, such as Australia, Taiwan, Saudi Arabia, and the UK to help resolve social & business challenges.

Fig. 12. Healthcare in the cloud
Source: Fujitsu Technology and Service Vision 2014

Third, another example is an ecosystem for food supply (Fig. 13). In this space, Fujitsu is a challenger for cross-border business. Unlike an ordinary IT company, Fujitsu enters the agriculture business. We are growing very high-quality vegetables at our own facility, using sensors and analytics. Fujitsu's agriculture cloud, called Akisai, is already helping more than 200 businesses in Japan, enabling Japanese farmers to modernize agricultural production with the power of ICT. Cloud is expected to play an important role in connecting many different businesses. For example, Aeon, operating the leading and largest supermarket chains in Japan, has been expanding its agriculture business based on our cloud to deliver safer food to end consumers in a timely and economical way. More recently, a Japanese Sake brewery has become a new Akisai user. Asahi Shuzo makes world-renowned "Dassai", a very fruity and aromatic drink of the highest quality. Dassai is very well accepted in western countries, including Michelan three-star restaurants, and exported to more than 20 countries. The challenge is the stable procurement of the special rice, called Yamada Nishiki, to meet the growing demand of Dassai. Indeed, this variety of rice is very difficult to grow. Asahi Shuzo aims to establish best-practice technology, and share the know-how with new producers to increase the total production.


Fig. 13. Agriculture business in the cloud
Source: Fujitsu Technology and Service Vision 2014

Fourthly and finally, an ecosystem for open innovation is very important. Many different stakeholders, enterprises, individual entrepreneurs, academic institutions, governments and financing providers gather in a cluster location and shape an ecosystem. We are proactively promoting such open innovation activities.

In order to help our customers innovate in a hyperconnected world, we provide a portfolio of technologies and services aligned with the three dimensions of people, information and infrastructure – including integration, mobility, big data, security, cloud, integrated computing and software-defined connected infrastructure (Fig. 15). Our uniqueness is that Fujitsu is one of the very few ICT companies that can aggregate and deliver such a wide spectrum of essential technologies in one stop. Of course, we also rely on our partners' technologies to complement our own core intellectual properties.
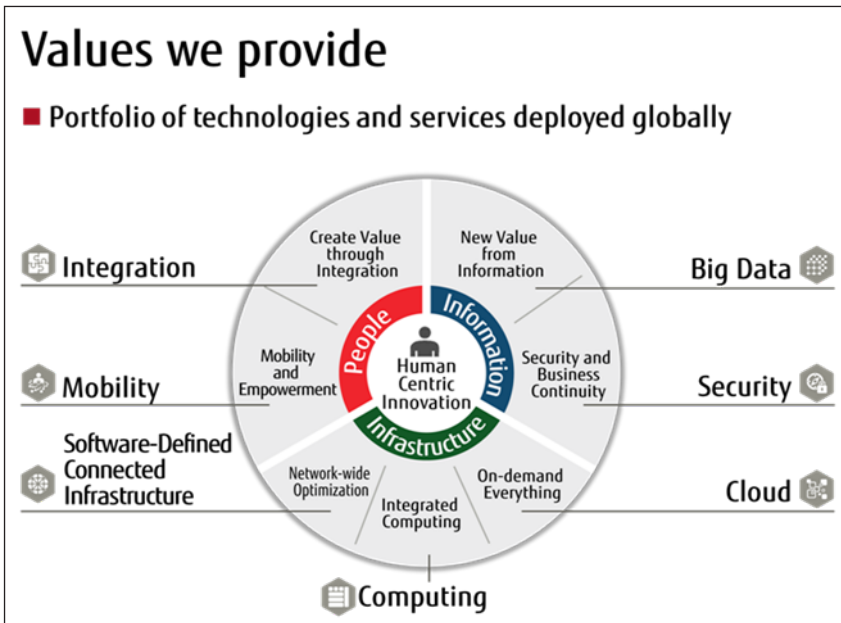
Fig. 14. Wide spectrum of essential technologies
Source: Fujitsu Technology and Service Vision 2014

Our aspiration is to blend the values we provide with values our customers and partners provide, forming ecosystems to deliver greater values for people. Our journey may not be an easy one, and it may take time. But we have already started it by responding to the immediate challenges

of our customers and society with a mindset for the future. Fujitsu wants to use the power of ICT to drive a safer, more prosperous and sustainable society. This is our vision of a Human Centric Intelligent Society, and the destination of our journey.

5. Closing remarks

In this document, we have delivered three key messages. The first message is a Hyperconnected World. This new world of connectivity is affecting all businesses and the lives of all people. The second message is Human Centric Innovation. In a hyperconnected world, the key is how people use ICT to innovate. Innovation can be realized by bringing together the three dimensions of people, information and infrastructure. The third message is our vision of a Human Centric Intelligent Society – a safer, more prosperous and sustainable society. We can get there by co-creating value through digital ecosystems. More extensive information about Fujitsu's vision, related customer references, and a portfolio of enabling technologies can be found in our booklet, called Fujitsu Technology and Service Vision (2014 version) and on our corporate website.

We believe that aligning the vision of communities and that of enterprises is very important and crucial for sustainable growth. We hope our proposition of Human Centric Innovation inspires many people to create new value. We hope businesses, academics and the communities of Poland and Japan will continue to have good relationships, find co-creation opportunities and shape a different future together.

Streszczenie

Firma Fujitsu, prowadząc w Łodzi Global Delivery Center świadczące usługi dla globalnych klientów, bazuje na wzajemnym zaufaniu i dobrych relacjach z administracją rządową, lokalną społecznością i ze środowiskiem akademickim.

Artykuł podsumowuje wizję Fujitsu mającą prowadzić ku dostatniej i stabilnej przyszłości. Pojęciem Human Centre Intelligent Society, Fujitsu określa społeczeństwo, w którym wspierani przez technologię informacyjną ludzie tworzą innowacyjne wartości służące wszystkim. Fujitsu

koncentruje swoje wszystkie zasoby na realizacji tej wizji we współpracy ze swoimi klientami i partnerami.

Artykuł rozpoczyna się od krótkiej prezentacji firmy i dalej omawia wizję Fujitsu, wyjaśniając: (1) czym przyszłość będzie różnić się od teraźniejszości; (2) na czym będzie polegać dążenie do innowacyjności; (3) co Fujitsu zamierza robić dla swoich klientów i społeczeństwa. Bardzo ważnym czynnikiem budowy pomyślnej przyszłości jest kształtowanie ekosystemu, tworzącego nowe wartości dla ludzi. W skład ekosystemu wchodzić będą różni udziałowcy – firmy biznesowe, instytucje akademickie i badawcze, administracja rządowa, społeczności i indywidualne osoby. Mamy nadzieję, że współpraca tego typu uczestników ekosystemu z Polski i Japonii będzie się rozwijać, co przyczyni się do wspólnego budowania lepszej przyszłości.

References

Fujitsu Technology and Service Vision 2014

This monograph covers the output of the conference titled "2014 – New Opportunities for Japan and V-4 Cooperation" and contains Japanese and Polish contributions. It offers reflections on the *statu nascendi* of economic and cultural relations between the two nations. Viewpoints and research results mirror the various interests and arguments of the scholars (mainly economists, sociologists, and japanlogists), businessmen, and representatives of administrative bodies (central and local governments) who participated in the conference, all of whom are searching for common solutions.

The presented papers are very much diversified with respect to their content and writing styles. The book itself reflects an eclectic approach. The multifaceted approach to the discussed issues facilitates the comparison of expectations against real life activities. The most important goal of the book is to identify the potential for collaboration and crucial fields in which there exist challenges and a need for changes, all in the interest of leading to a new stage of reciprocally profitable relations between Poland and Japan in today's globalised world.