



# Fujitsu Technology and Service Vision 2018

Executive Summary

shaping tomorrow with you





# Co-creation for Success

## Journey toward Digital Transformation

As a technology partner to thousands of organizations around the world, Fujitsu has first-hand experience of Digital Co-creation with our customers. Today, new technology like AI is opening up new possibilities for what businesses can do. It can help businesses to acquire insights and use them to deliver positive outcomes. To realize these opportunities requires a coming together of different sources of knowledge, skill and expertise.

Digital Co-creation is a way for you to leverage digital technology and deliver innovative value jointly with your partners and customers. We believe Digital Co-creation is now the fastest, most effective route to innovation and growth.

But digital is not easy. Organizations face many different challenges. How can organizations overcome them and achieve the success they need? How can they win this tough race?

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**The Fujitsu Technology and Service Vision** sets out our vision and provides insights to leaders of business and the public sector into how they can use ICT to create innovation and build a different future.

The central idea of our vision is **Human Centric Innovation**. This is a unique approach to creating business and social innovation by empowering people with advanced technology.

<http://www.fujitsu.com/global/vision/>

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# Digital Muscles

## Six factors to build and strengthen for successful digital transformation

We commissioned a global survey of business leaders to tell us about their challenges and motivations for Digital Transformation\*. The results revealed that Digital Transformation is a journey, and it affects every part of the enterprise. Its people, its culture, its process as well as its interaction with partners.

We found the digital maturity of an organization, how far it is along its journey, is strongly correlated with capability scores in six areas. When we looked at organizations who

### Value from Data

#### **Being able to use data to deliver benefits, while keeping it secure**

Digital technology is a set of tools that we use to transform data into value. Organizations can use technologies like Cloud, IoT and AI to derive valuable insights and turn them into business outcomes. It is also critical to ensure information is secure.

### Ecosystem

#### **Establishing an ecosystem of partners and embracing open innovation**

Organizations need to think about accessing data and leveraging competencies not just from outside your business but outside your industry too. It is important to understand the areas where you want to collaborate and explore the potential of open innovation.

### Business Integration

#### **Practicing the integration of digital into the business, alignment with existing IT and connecting physical assets**

Digitalization of business process is one of the most complicated areas of transformation. Organizations need to align new digital initiatives and the current processes and IT systems.



## Leadership

### Digital transformation is a priority of the CEO

Digital transformation requires strong leadership and clear-cut strategy. A vision and a purpose are key for ensuring you deliver value from digital.

## People

### Ensuring people having the right skills for digital transformation

It is crucial to bring together the right people necessary to make transformation a success. For instance, how do you bring together business people, technology people and people with design skills?

had delivered outcomes through digital transformation, they scored highly across these six factors.

If an athlete wants to achieve success, he understands he needs to commit to build and develop his muscles. He knows this does not happen overnight, it comes through training. He can look at successful athletes and see the areas they have worked on, and use this to inspire his own efforts.

It is the same for organizations. If an enterprise wants to achieve success through digital transformation, it must commit to develop its own 'digital muscles'. The stronger your digital muscles, the greater the chance of delivering success. These are factors that all organizations need to build and strengthen to achieve success from digital.

## Agility

### An innovation supporting culture and an appetite for design thinking approach

Organizations need to be agile, working quickly. Design thinking is a powerful way to rethink your business and approach to transformation. You also need to develop an approach to managing risk that doesn't hold you back.

# Delivering Successful Outcomes

What kind of outcomes have enterprises delivered through digital transformation?

Our survey indicated that businesses were looking for or had already delivered five major outcomes:



Improving customer experience



Increasing competitiveness



Increasing efficiency



Increasing agility



Transforming business model

This aligns exactly with what our customers have been telling us. We have been co-creating with customers across the world, delivering the business outcomes that are helping them to be successful.

In many cases, we used agile approaches, including our design thinking methodology, for working out business objectives and developing digital solutions to meet these, with our customers in a short period of time. Naturally, we also brought innovative technology.

## Belfius



The third-largest retail bank in Belgium looked for e-signature functionality for mobile banking, and selected the Fujitsu Sign'IT solution, a highly-secure biometric signature that is entered directly on the customer's smartphone.

### Outcomes



- Sign-up can be completed in five minutes
- Gained an average of 1,000 new mobile banking customers a day
- Reduced the need for paper contracts

## Toyota Technical Service Division



Toyota's Technical Service Division wanted to design the direction of future workstyles of service technicians, and introduced Fujitsu's design thinking concept to create a vision map of the 'preferred future'.

### Outcomes



- Employees focus on what they want to do and what they want to be in the future, increasing the motivation to work
- An atmosphere of accepting diversity and being willing to actively cultivate new ideas is now emerging

## Slingeland Hospital



Slingeland Hospital, a medium sized hospital in the Netherlands, collaborated with Fujitsu and deployed sensor technology to capture patient performance, realizing a new 'Sensing Clinic'.

### Outcomes



- Reduced the need for bedside visits, while continuously monitoring patients' vital signs
- Enabled better informed decisions on treatment by medical staff
- Enabled early detection of any deterioration in patients' conditions

## Lotte Card



Lotte Card adopted the Fujitsu palm vein authentication solution, which enabled users to make payments at stores simply by holding their hand over an authentication device.

### Outcomes



- Made cashless, cardless purchases a reality, eliminating the need to carry purses, wallets or mobile devices, etc.
- Revolutionized shopping experience as well as transformed the business model of payment services.

## Siemens Gamesa



Siemens Gamesa produces over 5,000 wind turbine blades every year. Siemens Gamesa and Fujitsu co-created an Artificial Intelligence platform for the quality assurance process using an agile approach.

### Outcomes



- Completed the introduction of AI technology within 3 months
- Reduced scanning inspection time by 80 percent, which translated into cost savings, and reduced production lead times

## Kawasaki Geological Engineering



Kawasaki Geological Engineering introduced Fujitsu Zinrai Deep Learning to identify cavities and potential sink holes by analyzing the vast amount of image data from sub-surface scans of roads.

### Outcomes



- Introduced the deep learning technology in less than one month with close to 100% accuracy in anomalies detection
- Reduced the time to detect anomalies by 90%, and halved the total time for cavity identification

More information on all these customer stories can be found in the Fujitsu Technology ad Service Vision pages 44-69.



# Digital Business Platform MetaArc

A platform to deliver success, building strength at the heart of digital business

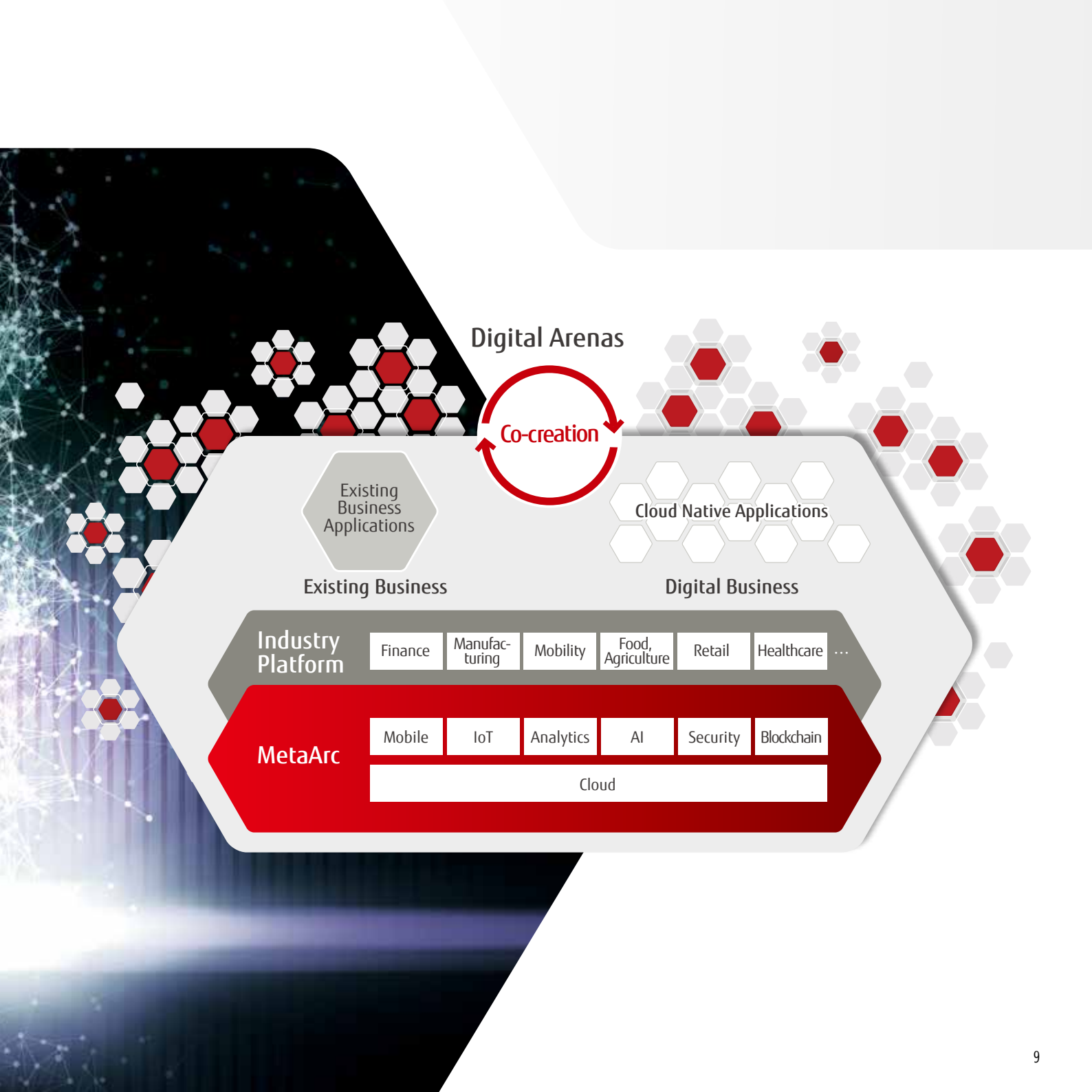
What can organizations do in practice to strengthen their digital muscles?

A digital business platform is the foundation of how an enterprise can develop the digital muscles it needs to transform and succeed. Fujitsu's MetaArc is our cloud-based digital business platform. It is designed to help our customers to successfully drive their unique digital transformation journeys.

Digital Muscles	Value of Digital Business Platform MetaArc
<b>Leadership</b>	Help management to make better and faster decisions.
<b>People</b>	Support transformation of ways of working to increase skills and productivity.
<b>Agility</b>	Provide digital technology such as IoT, AI and mobile as a service. Enable agile cloud-native development of digital business applications through connecting these services.
<b>Business Integration</b>	Enable the integration between existing IT and digital technology. Accelerate digital transformation of business with various industry platforms.
<b>Ecosystem</b>	Enable organizations to connect services of ecosystem partners through APIs*. Provide a rich ecosystem of global IT vendors and startups.
<b>Value from Data</b>	Enable organizations to use an IoT platform to collect data and use Human Centric AI Zinrai to learn from it and identify insights to deliver business value.

\*Application Programming Interfaces





# Breakthrough Technology

Advancing technology frontiers and pushing the boundaries of innovation

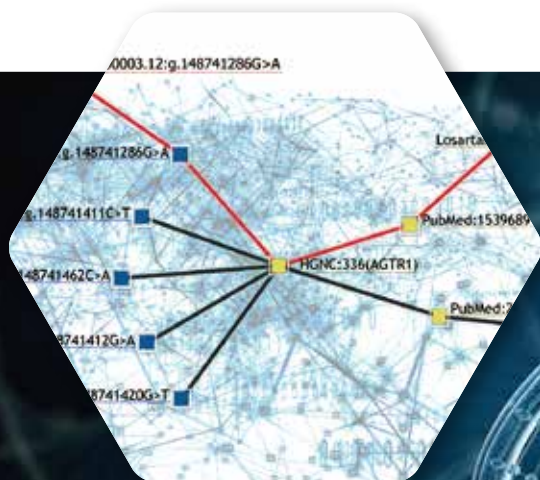
The technologies that will shape the future begin today. As a technology company, we understand the importance of pushing the boundaries of innovation. Exploring the edges of technology takes us to exciting new destinations, maybe even places we did not anticipate.

Fujitsu has been engaged in many co-creation projects with our customers and partners. Our unique capabilities in cutting-edge technologies such as AI

and IoT, combined with cross-industry insights, are helping to deliver genuine innovation and business value for our customers.

## Explainable AI

Our latest achievement is 'Explainable AI'. AI technology is good at finding patterns but often cannot say how it discovered it. Our unique Deep Tensor technology identifies factors that had a significant impact on the inference results, and our Knowledge



Knowledge Graph

## Explainable AI, opening new possibilities for genome medical research

In a joint project with Kyoto University, Deep Tensor has learned from 180,000 pieces of disease-related genetic mutation data. Our Knowledge Graph embedded more than 10 billion pieces of knowledge from 17 million medical articles. From this basis Deep Tensor has been able to identify some of the factors that cause cancers, and Knowledge Graph is able to explain the reasoning behind the factors.

**Digital Annealer can solve complex combinatorial optimization problems in the real world**



## Chemical and Pharma

- New materials
- Drug design



## Financial

- Portfolio optimization
- Arbitrage



## Supply Chain

- Delivery plan
- Job scheduling

Graph explains the logical connection between inputs and inference results.

In other words, our technology can find the reasons why the AI has found a particular pattern or insight. For many industries, like healthcare, finance or the public sector, being able to understand and audit how decisions are made is essential. This technology therefore broadens the scope of fields where AI can be applied.

### **Digital Annealer**

What lies beyond the edge of technology? Quantum Computing is generating a lot of attention but is still at its infancy.

Fujitsu Digital Annealer on the other hand is a real technology inspired by the principles of Quantum Computing. It can compute the answers to complex problems that are beyond conventional computing technology, where there may be many possible combinations. For instance, working out the most efficient route for a supply chain, the best combination of investments to hold in a financial portfolio, or the discovery of new drug.

The year 2018 marks the beginning of business use of quantum computing inspired technology. As the first and foremost application, Fujitsu Digital Annealer stands ready to open up the future, realizing what was previously unthinkable.

# Human Centric Intelligent Society

An autonomous and distributed networked society, delivering value for people

Our world is facing serious sustainability challenges. The population is now surpassing 7.5 billion, and is expected to reach nearly 10 billion in 2050. This brings difficult challenges for the consumption of food and resources, managing rapidly growing and aging populations, and other critical issues.

How can we produce food in sustainable ways? How can we realize more efficient use of energy? How can we assure the wellbeing of people free from harmful diseases? And how can we build safer resilient cities?

We believe a prosperous and sustainable future can arise through the coming together of digital ecosystems that co-create value oriented around people. We call these Digital Arenas. For instance, 'intelligent mobility' or 'intelligent wellbeing'.

As they mature, these ecosystems have the potential to interconnect. We believe they can evolve into an autonomous and distributed networked society. We call this a Human Centric Intelligent Society. This is our vision and goal.












# Achieving Shared Goals

But this doesn't happen on its own. We all have to make the right choices for this better future. We have to have the right intentions and a sense of purpose to realize such a society.

The United Nations set out Sustainable Development Goals (SDGs) in 2015. These are shared goals to be achieved by 2030. We believe our vision of a Human Centric Intelligent Society and SDGs are closely aligned.

	Impact	Our initiatives (examples)
SDG2	 <b>Sustainable Food and Agriculture</b> Increase food productivity and resilience	<ul style="list-style-type: none"> <li>• Over 400 businesses in Japan use Fujitsu's agriculture cloud service Akisai to increase productivity. It is also available in other countries like Vietnam.</li> <li>• We are operating our own precision agriculture facility and collaborating in smart agriculture with diverse industry partners.</li> </ul>
SDG3	 <b>Wellbeing of People</b> Realize a high quality of life for everyone in an aging society, and eradicate difficult diseases by medical innovation	<ul style="list-style-type: none"> <li>• Fujitsu connected 7,000 hospitals, clinics, care facilities and pharmacies to help realize wellbeing for everyone.</li> <li>• We co-created sensor-based monitoring services for patients and elderly people in Netherland and Singapore.</li> <li>• We are also collaborating with various research institutions in genome-based medicine and drug discovery, using our HPC and AI technologies.</li> </ul>
SDG8	 <b>Decent Work and Sustainable Economic Growth</b> Accelerate innovation and realize a human-centric way to work	<ul style="list-style-type: none"> <li>• Fujitsu helps organizations transform their ways of working, enabling their people to work more creatively with the support of Human Centric AI.</li> <li>• We provide a voice recognition and AI-based 19-language translation tool to support communications between diverse people including the hearing-impaired.</li> <li>• We are actively accelerating open innovation with start-ups.</li> </ul>
SDG9	 <b>Sustainable Industrialization</b> Realize intelligent industrialization through innovation	<ul style="list-style-type: none"> <li>• Fujitsu provides an industry platform to help manufacturing companies digitalize their businesses and accelerate intelligent industrialization through co-creation.</li> <li>• We are supporting smart manufacturing in China and Singapore and digital innovation in France.</li> <li>• We are also supporting the development of digital talent, for instance, through our Digital Business College.</li> </ul>
SDG11	 <b>Sustainable City</b> Enable intelligent mobility, and increase safety and resilience to disasters	<ul style="list-style-type: none"> <li>• Fujitsu co-created innovative services with many organizations, using our location information cloud service SPATIOWL as a platform for mobility.</li> <li>• We are jointly developing innovative solutions for urban challenges in Singapore.</li> <li>• We globally provide HPC-based disaster prediction solutions as well as solutions to prevent and mitigate the damages by earthquakes, tsunamis and floods.</li> <li>• UN Development Programme, Tohoku University and Fujitsu jointly developed a global database of disasters.</li> </ul>



Fujitsu is supporting the SDGs with our technology and services. In particular, we are also proactively engaged in co-creation initiatives oriented around specific SDGs as listed here. We are committed to contributing to the SDGs through working toward our vision.

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