Aiming for Digital Business Innovation by Expanding Services for Co-creation

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While digital technology is exerting a considerable influence on society and the industrial structure, the environment surrounding customers is undergoing significant changes on a daily basis. In 2015, Fujitsu proposed FUJITSU Knowledge Integration, a new integration concept for creating new businesses and services for customers. In 2016, we announced a service framework for co-creation as FUJITSU Knowledge Integration in Action to embody this concept. At the same time, we opened FUJITSU Knowledge Integration Base PLY, a facility that serves as a place for co-creation where Fujitsu's systems engineers and customers can hold workshops. It was launched in Fujitsu Solution Square (Ota City, Tokyo, Japan) with the purpose of leading to open innovation. We have made the most of our experience based on many past cases of practical co-creation and achievements, and together with customers, are heading toward the goal of digital business innovation, which we call the "digital journey." We have also expanded our service framework for co-creation. This paper first describes all the co-creation activities of Fujitsu and the Observe, Orient, Decide, and Act (OODA) loop, a concept that forms the basis of such activities, and presents the services that have been expanded.

1. Introduction

Recent years have seen the emergence of the term "VUCA world," which refers to the current, unpredictable state of the world. VUCA,[1] an acronym that stands for Volatility, Uncertainty, Complexity, and Ambiguity, refers to the present socio-economic environment, which significantly lacks predictability. An example of this lack of predictability is the rapid succession of events such as the sudden appearance of start-up companies and completely unanticipated digital technologies that radically change the existing structure of the business world. It is no exaggeration to say that hardly any industries and companies are unaffected by the waves of this destructive transformation, and sustained growth cannot be expected unless efforts to promote digital business are accelerated to create new business pillars.

Taking the above factors into account, Fujitsu proposed in 2015 "FUJITSU Knowledge Integration" as an integration concept for driving the digital business era that aims at the reform of business models and the creation of new value through the use of ICT.[2] Then, in 2016, to make the concept a reality, we released a service framework as FUJITSU Knowledge Integration in Action that supports customers' creation of new businesses and services through advanced ICT utilization such as smart devices, IoT, and big data. At the same time, we opened FUJITSU Knowledge Integration Base PLY, a facility that serves as a place for co-creation where Fujitsu's systems engineers and customers can hold hackathons, ideathons, workshops, and the like, in Fujitsu Solution Square (Ota City, Tokyo).[3] Further, we are making the most of our experience based on many past cases of practical co-creation and achievements, and together with customers, are heading toward the goal of digital business innovation, which we call the "digital journey."[4] We have also expanded our service framework for co-creation. The digital journey is a process that makes full use of digital technology, always forging ahead through trial and error, and sometimes tracking back to look for a different way forward toward the aimed for goal.

This paper introduces the service framework for co-creation, FUJITSU Knowledge Integration in Action, that Fujitsu has developed to walk the digital journey

with all our customers/co-creation partners, and the concept of the "OODA loop," which is the basis of that framework.[5)]

2. Three phases of co-creation implementation based on OODA loop

FUJITSU Knowledge Integration is positioned as a proposition whose goal is to realize business innovation by bringing together wisdom and knowledge both within and outside our customers. The service framework for co-creation announced in April 2016 is positioned as an approach for Fujitsu to jointly conduct business innovation and business creation as a partner to our customers. The OODA loop,[6)] which is the basis of this framework (**Figure 1**), is a decision-making theory advocated by United States Air Force Colonel John Boyd. Based on his actual experience of air warfare during the Korean War, it is a theorization of the decision-making process for taking the best possible action amid rapidly changing conditions. OODA refers to the recurring cycle of Observe, Orient, Decide, and Act. The focus is on carrying out these four steps in parallel as quickly as possible. Compared with the PDCA (Plan-Do-Check-Act) cycle, the OODA loop greatly differs in that it places the highest priority on Observe. Clearly Observe is important for dealing with situations proactively amidst a rapidly changing business environment.

The service framework for co-creation as FUJITSU Knowledge Integration in Action developed based on this OODA loop consists of three co-creation phases, as shown in **Figure 2**. Like the OODA loop, these three phases need not necessarily be carried out in order. Instead, they are promptly and flexibly carried out in parallel or in various orders, on occasion skipping phases as demanded by the situation.

1) Information collection and issue identification

To decide on the theme of the digital journey, information on digital technology trends and advanced cases is collected as widely and deeply as possible. Specifically, through the implementation of overseas visits and surveys, we support the collection of advanced cases and digital technology trends.

2) Idea creation

From the theme selected based on the collected information, specific business creation ideas that specify what actions to take are formulated. This corresponds to Orient and Decide in the OODA loop.

3) Service implementation

Last is the process of developing the required applications and actually testing them. This corresponds to Act in the OODA loop, and consists in verifying feasibility through proof of concept (PoC) and proof of business (PoB).

The above constitutes the rough flow of the co-creation phase. One year has passed since we announced the service framework for co-creation. To make the service framework more concrete and practical, we reinforced the customer-oriented programs we offer. The following sections describe these programs.

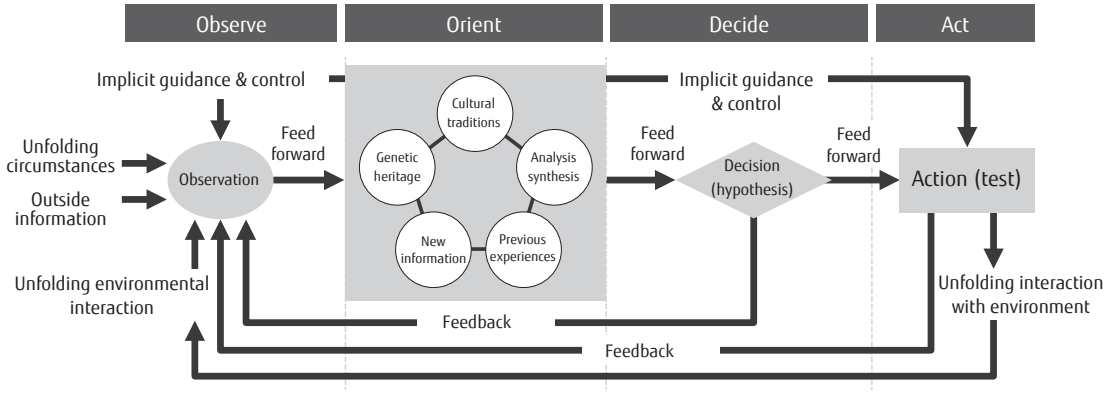

Figure created based on the sketch published in "The OODA 'Loop' Sketch"[7)] in "The Essence of Winning and Losing"

Figure 1
OODA loop.

3. Research program

This is a program for collecting information to support a global grasp of the latest cases of digital business and technology trends. This program consists of three parts: Local observation, research assistance, and digital business training (**Table 1**).

1) Local observation

This part, which consists in visiting overseas locations with many advanced initiatives, investigating technologies and services that are implemented in the field, and experiencing their actual mechanisms and utilization procedures, is positioned as the most important of the three. The following describes as an example a 3-day local observation in Silicon Valley in the US.

On the first day, after attending a lecture on the latest trends from local analysts and Fujitsu experts, the participants visit technology utilization sites. These could be, for example, a site where a 2-meter large egg-shaped robot manufactured and sold by Knightscope, Inc. patrols parking lots instead of security guards, or a robot butler that attends to guests at a hotel. Following the observation, the participants take part as guests in meetups attended by local businesspeople and engineers, and have exchanges with them.

On the second day, they visit the incubation facility Plug and Play Tech Center, and then visit startup companies. Two startup companies that were visited

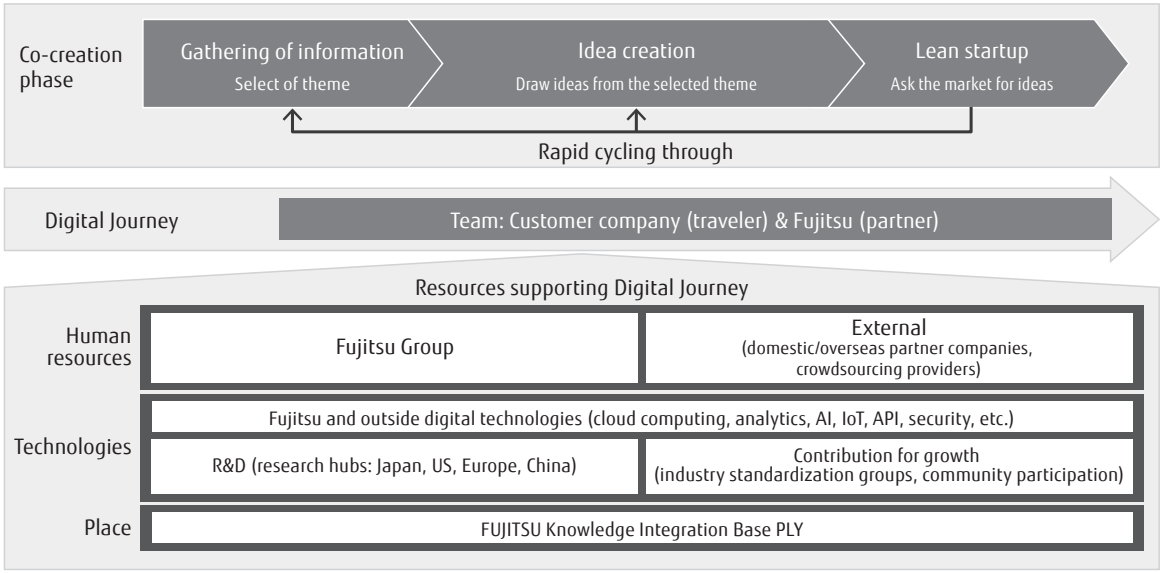

Figure 2
Overall image of co-creation activities.

Table 1
Outline of research program.

Research Program	Outline
Local observation	• Advanced approaches and technologies • Incubation facility • Meet up with local engineers
Research assistance	• Latest technology trends and promising technology trends • Examining initiatives and business models for leading companies
Digital business training	• Systematic knowledge and skills learning • Establishment of 4 themes: Digital strategy, Design thinking, AI/Analytics, and Security

in 2016 are introduced below. Arx Pax Labs, Inc., a company that specializes in magnetic field technology, works on temporarily floating an entire building from the ground using magnetic force, a novel approach that may well revolutionize seismic technology. The other company is Modbot Inc., which manufactures robots by combining Lego block-like components and aims to provide robots with functions tailored to users' needs at a low price. Participants thus get the chance to gain first-hand experience of such leading-edge technologies and their development methods, and to gain an appreciation of the speed at which this is done.

On the third day, the participants visit local financial institutions to find out about fintech trends. Then, they visit actual stores to learn about settlement methods. Next, they also visit d.school in Stanford University's, which has an international reputation for its design thinking, and other institutions.

A wide range of industries and countries can be selected from as targets for such activities. Some examples are Germany and China for manufacturing and Israel for high tech. A range of visiting locations, such as venture companies, large companies, and administrative agencies, also can be selected from according to the purpose. This range and flexibility of choice allows participants to achieve a multi-faceted grasp of local situations.

2) Research assistance

Research assistance is a service complementing local observation by customers. It consists in investigators from Fujitsu visiting and observing given sites instead of customers and reporting back the findings. This is effective when customers do not have time to perform such observation themselves, or may not deem certain sites to be worth their own time and effort.

3) Digital business training

Training takes place at the Fujitsu Digital Business College, a training service launched by Fujitsu in July 2017 aimed at the leaders of information systems divisions. Four themes, digital strategy, design thinking, AI/analytics, and security, are offered. The training aims to form digital business specialists through lectures by leading experts in each field and workshops given by Fujitsu engineers.

4. PLY-Dash for quick prototyping and testing

This section describes PLY-Dash, a program that supports the realization of ideas leading to commercialization.

4.1 Challenge

The essence of a lean startup is to realize and test ideas quickly to identify problems and issues with as little effort as possible, and verify the effectiveness of solutions. However, the path from idea creation to service implementation in the co-creation phase is strewn with various challenges such as the following, and the progression to business verification is far from easy.

- Being unable to create and share a concrete vision of the proposed service
- Prototype design taking time
- Not being able to secure enough time from decision makers and planning members

4.2 Solution

To solve these problems, in the second half of FY2016 we ran a trial to accelerate new business development by streamlining the path from idea to service implementation (verification), as a project of PLY, which is a space for practicing co-creation. To this end, we formed a cross-functional team of elite consultants, designers, and engineers, and included aspects such as business development, rapid prototyping, and user experience, and we packaged the whole thing as PLY-Dash. The aim was to immediately give new ideas actual shape and refine them, thereby enabling quick idea evaluation and improvement in a period as short as two weeks (**Figure 3**). By conducting three levels of idea verification during the two-week implementation period, PLY-Dash clarifies the Minimum Viable Product (MVP) and quickly moves things along to the next stage, business viability verification. At the stage of giving shape to an idea, it is important to increase the accuracy of the hypotheses as quickly as possible.

4.3 Prototyping verification

PLY-Dash allows sharing of the image of the function (service) being developed as it is gradually concretized while the three verification phases, dirty prototyping, paper prototyping, and rapid prototyping, are being carried out. Further, consultants, designers,

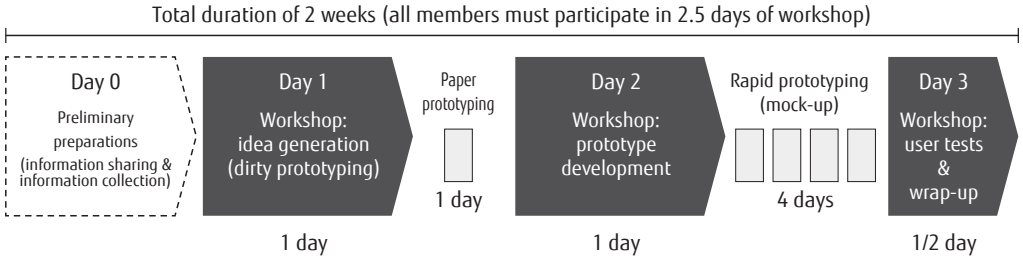

Figure 3
PLY-Dash for quick prototyping and testing.

and engineers come together to constantly share information and thus reduce the need for rework due to lack of communication. Through this process, the function (service) is gradually refined to allow meaningful and efficient verification.

An important key for successful rapid prototyping is also the prototype execution platform. By defining and pre-verifying the optimal execution platform for rapid prototyping based on the knowledge gained from numerous hackathons and PoC, it is possible to rapidly cycle from idea creation to prototype creation, and finally evaluation and verification.

4.4 Main points for success

The main point for successful PLY-Dash implementation is not the phases from Day 1 shown in Figure 3, but the preliminary preparations leading up to Day 0. In other words, one may safely say that the success of the program is decided even before it begins. The key for preliminary preparation is to get all the participants to agree on the goals to be achieved, and to obtain the participation of the decision-makers to advance to the next stage, business viability verification. During the user test wrap-up on Day 3, verification involving the participation of the decision makers is essential for idea brush-up. Moreover, the executing members are required to write up the verification results so that the decision makers can make an evaluation. We at Fujitsu consider that rapid cycling through these implementation and evaluation steps will promote continuous business creation activities. PLY-Dash marks the first step on the digital journey.

5. Conclusion

Through the practice of co-creation in 2017, various projects, such as improvement of call center operations using AI and securing the safety of workers performing work in high places through IoT, have turned into reality. Further, PLY, which is a place for practicing co-creation, is used not only by Fujitsu's SEs but by some 18,000 people including companies and ventures outside the Fujitsu Group. With about 170 programs running concurrently, PLY is a powerful enabler of activities for open innovation. Business creation by a single company, as in the past, is becoming harder, and the shift toward the creation of new value by pulling together the knowledge of diverse human resources from various backgrounds will continue to accelerate.

The service framework for co-creation introduced in this paper will continue to evolve and grow while implementing the OODA loop to guide the digital journey to successful outcomes. We will achieve the integration required by the digital business age, and through its implementation redefine the allocation of roles with customers and other co-creation partners, as well as the nature of contracts (including performance-based compensation). In conclusion, we invite you to visit PLY, the ideal space for practicing co-creation, so that you may experience firsthand this new environment for open innovation bringing together a rich diversity of human resources.

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