CMIC
Pharmaceutical Value Creator

The Future of Healthcare Pioneered by Elegant Ideas

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Till now, healthcare systems have been built with a view of providing patients with medical care and medicinal treatment. However, the recent spread of the novel coronavirus has changed how we see prevention, treatment, and other aspects of healthcare. There is a demand for healthcare systems to move closer to those who in need of care and to adjust to fit into their daily life. What is needed to construct the framework for new healthcare systems that adopt the perspective of those who receive care? CEO Nakamura spoke to Naoto Ishida, who has worked behind the scenes to help Japanese video games game succeed in the world and gained his view on the kind of reforms that is needed to revolute current healthcare system.

Managing the entire process related to audio on the Super Nintendo

Nakamura This time, I am visited by Mr. Ishida, who has worked in development since the dawn of the video game console age, and who has supported the advancement of Japanese consoles abroad.

At the time, people of my generation perceived video games as mere toys, but these games defied expectations, advancing internationally and achieving huge success. In addition, Sony's Walkman succeeded globally at almost the same time. Music was something that you listened to at home, but the Walkman created a culture where you could easily take music outside and enjoy it anytime, anywhere. When talking about Japan's strengths, people tend to focus on manufacturing and other "hard" areas. However, Japan also has great power in "soft" areas to encourage changes in people's actions.

Mr. Ishida, what was the video game industry like when you began working?

Ishida I began working at Nintendo in 1988, which was the end of the period of the Family Computer (nicknamed "Famicom"). At that time, Nintendo was thinking of shifting to the next machine soon. I had studied acoustic physics at Kyushu University, so immediately after joining the company, I was assigned to manage sound design for the Super Nintendo. As it was going to be a 16-bit machine, its expressive power was like a Cambrian explosion.

Nintendo was then still a small company, so it was normal for one person to play many roles. Thus, I managed the entire process related to audio: I worked on designing specifications for the game console's inbuilt synthesizer; I composed music; I built the chip; and I even arranged the circuits. There was no precedent for me to reference, so I did research on my own and asked many people a lot of questions. I knew I wanted to use my abilities to make the best thing possible. As I had just joined my first company, I didn't know about other companies, so I thought this was a natural thing to do.

Nakamura Were you thinking about advancing in overseas markets from the start?

Ishida At that time, all Japanese video games were called "Nintendo" overseas, regardless of the actual manufacturer, so of course we were thinking about expanding overseas market from the start.

I think it was good that we didn't change the original design for overseas rollout. As people at Nintendo believe that if most of the end users liked it, it is a good product. They never wavered in this conviction, always starting by making whatever the employees themselves found to be the most interesting.

Interesting things are born "under the desk"

Nakamura Today, I am also visited by Mr. Fukushi, who conceived of the electronic medicine notebook "harmo" during his time at Sony, and who now is Head of CMIC Tech Lab. What was the story behind the development of harmo[*1] at Sony?

Fukushi Regarding harmo's development, I myself became ill and was prescribed many medicines. I did not know about the difference of medicines, and I made mistakes in taking them. I wondered whether there might be an easy way to manage prescription drug and instruction data, and this became my motivation for the development. In a flash of inspiration, I realized I could apply the FeliCa technology Sony had developed to achieve a completely new method of managing prescription drug and instruction data. However, this was not a task that the company assigned to me.

Nakamura Did the company approve of you doing research and development outside of work?

Fukushi It was not approved officially, but the culture was such that it was natural to do research outside of work using one's free time, and this was called "under the desk."

Ishida Nintendo also did not say "do this" or "do that"; it was a company that did not do anything like creating a release plan for a video game and then reflect that into the financial plan. Motivated people work voluntarily from the start, and when a task has vaguely taken shape, they show it to the division manager and ask for his or her decision. If they receive a go sign, then they finally start to engage in it as work. Ultimately, the company president decides on commercialization. In this world, we can drive maybe 1 out of 100 video games to commercialization, so we all rack our brains because we need to think of something that can get approved.

Nakamura Now, with remote working taking root due to the COVID-19 pandemic, new things are being born through exchanges across companies, but at the same time, I am afraid that we will lose the feeling and opportunities to gather everyone together and do something. I think that places where everyone can gather and rack our brains while we work are also extremely important.

Three principles: "Do not hesitate; do not worry; enjoy"

Nakamura When we could not decide about the next move for harmo, I consulted with Mr. Ishida. What was your impression when you saw harmo?

Ishida I felt it was slightly formal. It is related to healthcare, so of course it should not be too playful, but I had the sense it is not something I would see every day. To say it another way, making it into something that I would see every day might eliminate omissions in managing medicine at crucial moments. For the next stage, I thought it would be interesting to position it as an app that you would inadvertently check even at times completely unrelated to medicine.

Nakamura CMIC is a company that has 7,000 professionals involved in pharmaceutical industry and healthcare. Here, a culture of doing things based on the conventional flow is deeply rooted, and it is natural to think about work while complying with the many various regulations. However, I did think that something might be different when considering manufacturing from the viewpoint of patients. At that time, I received the following advice from Mr. Ishida: "Why not change it so that users will not easily move away from harmo?" With these words, I felt the fog inside my head clear.

Ishida Video games have a set of three principles: "do not allow the player to hesitate"; "do not make the player worry"; and "make it so enjoyable that the player cannot stop." Video games are things that you do in your free time, so people will run away if games do not comply with these three principles. I also think that it is a good idea to put all of these elements into the app.

Fukushi There are many free video games recently, so there is a greater hurdle in this regard. If the user does not understand a minor thing, the app will be deleted immediately. So as you said, Mr. Ishida, it is necessary to have a flow that does not allow for hesitation, and to make it simple and attractive so that users cannot stop once they start.

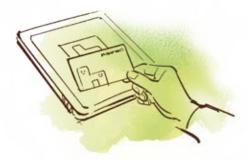**Nakamura** Harmo goes beyond a simple medicine notebook; it is a tool with which we can expect many new developments using a Personal Health Record.[*2] However, when viewed from the user's perspective, I think it is necessary to make it a tool for people to enjoy content that they like, or for making daily life more interesting. What do you think about this?

Fukushi I think that it is important to create fans starting from a familiar place. Harmo uses a contactless IC card. For example, a sound is made when you touch the Suica IC card to a payment reader, and I have seen situations where children find the sound interesting and touch the Suica card to the reader many times. Thus, I proposed a system where "people use it because they want to touch it." At the time, this was flatly rejected because "it would not contribute to sales." (laughter)

Nakamura I greatly agree, though. Sensory enjoyment is important. Making fans in this area while working to realize the developments will be key to breaking apart the sense of despair in Japan today.

KAZUO NAKAMURA

Building a framework for health management from the perspective of those who receive care

Ishida Recently, the number of jobs related to healthcare and nursing care has increased, but I have noticed that the shift to IT has been quite slow. When people become ill, almost everyone goes to see a doctor, but if people could practice thorough care in their daily lives, then they would only need to make a comparison against their baseline data and find the differences.

Nakamura This is precisely what we are interested in right now. Particularly at present with COVID-19, people are minimizing their visits to hospitals, and how one manages one's own health has become extremely important. I think we can learn many things from video game development, but what do you think?

Ishida Recently, the keyword "idle" has become popular in the video game industry. Until now, games were

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Conceived harmo.

things that you concentrate on while playing, but with idle games, something happens while you leave the game, and you can check the new event when you come back and play. It might be interesting if this sort of system could be made in harmo, too. "Pokémon GO" serves as a reference. If you make walking itself into a game, then people start walking. Smartphones have a pedometer function, so the issue becomes how to make it interesting.

Fukushi Listening to what Mr. Ishida said, I remembered that I tried to make a game called "Medicine Notebook Battler" after taking a hint from "Barcode Battler".[*3] Barcode Battler is a game in which you scan barcodes to generate characters, and you can make the characters fight each other. I wondered whether I could make a version of this with medicine. If you could have the medicines you are currently taking fight each other, you would come to recognize those medicines, and you would always register new medicines when you get them, so it would be really good. But when I suggested this, I was scolded with the words "don't be ridiculous!" (laughter)

Ishida No, I think that is interesting, without a doubt. I too think it would be good to anthropomorphize medicines.

Nakamura In the past, the only ideas came from the viewpoint of people providing healthcare, so perspective was lacking in terms of blending medicine and the healthcare management system into each person's life to enable people to make maximal use of them. Do you have any ideas about this?

Fukushi I think that people in general, including myself, do not have much

interest in health. People do not usually do something if it is not interesting, so I think it is necessary to have a system which enables people to do something enjoyable without overexerting themselves, and this state actually helps with health management.

Ishida I think it may be good to expand the functions of pharmacies so that they become destinations. Now, they are only places for getting medicine, but they could become bases for the neighborhood if they have useful information for people and functions for encountering the new. Also, if pharmacies become fun places, the barrier to healthcare will be lowered significantly, and perceptions of health may change as well.

Nakamura COVID-19's impact has put healthcare systems at a crossroads. Going forward, it will be necessary to build a new ecosystem related to healthcare and health. As you pointed out, I think the position of pharmacies will change under this new framework. However, in reality, it is tough to train staff to acquire new functions, and so it would be good if harmo could assist in that.

Going beyond a mere medicine notebook to create new value

Nakamura One problem is that medicine labels are hard for regular people to understand. Even if they look at the list of adverse effects, it does not seem real. For example, if there was site for facilitating exchanges between people who take the same medicine, I think they could all support each other and manage adverse effects in order to optimize

use of the medicine.

Ishida When I take medicine, I personally feel concerned, and I think I would be encouraged just by knowing that there are others taking the same thing. For example, even if the records for people taking medicine were simply published anonymously, others would see such people taking the same medicine without forgetting, and this may make them think that they should work hard, too.

Fukushi We are thinking precisely the same thing. For example, the message "Several thousand harmo users are taking this medicine now" by itself can create a sense of camaraderie because "so many others are taking it." It may be just a number, but I think that one's desire to continue taking the medicine will change depending on the presence of this number.

Nakamura Through exchanges between users, an optimal way to take the medicine may emerge. For example, with medicine taken after eating, the timing differs if it is "immediately after eating" or "after eating." The former means within 5 minutes of eating, while the latter means within 30 minutes of eating, but regular people may not be able to tell these two apart. People take more medicines as they get older, and so they may take all of their medicines together because it is bothersome to split them up into the categories of before and after eating. However, in principle, medicines have an optimal way to be taken, so I think such information exchange would be excellent.

Apart from this, there may be unexpected discoveries if we accumulate data such as whether people taking a certain medicine have COVID-19, or what happens when

people take the same medicine for many years.

Ishida For example, during disasters, it is important to know what kind of medicines are present in which locations. People may find that a certain district or user group still has at least one kind of medicine. This may allow people in that district to circulate the medicine to others who have an urgent need for it. This could also be done by comprehensively gathering the status of medicine registration and use.

Nakamura If people could ascertain where a certain type of medicine is and its expiry date, the entire production process could be adjusted, so there is also the possibility for revolutionizing supply chains.

For people to live lives in their own ways in a post-COVID-19 society

Nakamura COVID-19 has significantly shaken up our values. How do you think society will change in the future?

Ishida I think we will transition into an age of more individual expression. Regarding the topic at hand, for example, I think people who develop medicine have the characteristic of being significant medicine nerds. In the past, information has only been given about effects, but I think it would be good for people to talk more about their feelings regarding the medicine or stories from development. Users can enjoy this content, so it might be good for harmo to include a space like this, too.

Fukushi This pandemic was a chance for me to rediscover the importance of

NAOTO ISHIDA

connections between people, as we have not been able to meet others for a long time due to COVID-19. I hope that harmo will serve as a tool for supporting these personal connections. I felt I want to make it so that people can communicate their feelings through this tool. For example, a grandson could receive a message if his grandfather properly takes his medicine every day.

Nakamura The COVID-19 pandemic has led me to understand the importance of each person living his or her life based on something to live for, not just treating diseases. I think that harmo will be an important tool for supporting such efforts. Moving one step forward, I want to make it into a tool where people touch it involuntarily because it is interesting, and through this process increase their healthcare literacy naturally. We want to advance while racking our brains together on how to achieve this, so I would appreciate your assistance in the future. Thank you for taking the time to talk today.

*3 Barcode Battler is an electronic game console that was sold by Epoch in 1991.