

Director

Representative Executive Officer

President and CEO

Kibe Kazunari

# [ Kibe-log ]

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## INFRONEER'S VIEW OF "DX"

Dear Stakeholders, I am Kazunari Kibe, the President and CEO of INFRONEER Holdings Inc.

Thank you very much for reading the "Kibe-Log" again.

Today, I would like to share my thoughts on Digital Transformation (DX) in the construction industry.

When you hear the word DX, you may think of the digitization of various business tools, operations and manufacturing processes, and the transformation of business models and entire organizations using digital technology. Of course, that is true, but I believe that the essence of DX lies in the "X".

"X" means "Transformation," or in other words, changing the rules. The essence of DX is to change the rules using digital technology.

### Japanese companies that have failed to change the rules.

The wave of digitization has come many times in the past. However, in each case, only the tools have been digitized, and there have not been rule changes in operations, manufacturing processes, or business in general.

Since the mid-1990s, the widespread use of personal computers has made e-mail communication commonplace. However, I think it has been the mere replacement of traditional telephone communication with e-mail and it seems questionable whether the productivity of the organization has really increased and whether the return on investment has been worth it.

The same is true for enterprise backbone systems. Over the past 30 years, paper-based workflows have been gradually replaced by backbone systems. However, Japanese companies have not been thinking about sharing their backbone systems, and each company has been striving to introduce its own backbone systems.

However, since there is not much difference between companies in terms of accounting systems, there should be more thought into sharing such systems within the industry.

In fact, in the early 2000s, when I was a general manager in General Planning Division of Maeda Corporation, I asked another company in the same industry to develop financial backbone systems together and use them in each company since all general contractors' backbone systems are similar, and I thought it would be more efficient to jointly develop and share them.

However, the head of the general contractor we approached was negative about the idea, saying, "We don't want our company's information to be seen." What I proposed was a mere joint development of systems and not sharing management data. They probably thought that if they shared the systems with us, their information might not be secure.

Cloud services have developed significantly since then, but at that time, there was no concept of sharing services.

Since the 2000s, disruptive Internet services have emerged one after another, especially in the U.S. The cloud service that AWS pioneered is a good example. These services are real rule changers using digital technology.

Looking back with a sense of self-discipline, there were ample opportunities for Japanese companies to implement "X (Transformation)" in the 2000s and 2010s. What didn't work was the fact that management was not able to implement "X". The reason why it did not work was the lack of commitment to "X" by the management.

Japanese companies have competitive advantages in building up from the bottom up, mainly on the frontlines. But if we want to change the rules in a real sense, we need to reverse our way of thinking, and instead of building up from the bottom up, we need to set goals and think about what we need to do to achieve them. This can only be done if management is committed.

**"The cage of norms "\* in which the construction industry is trapped.**

\*Quoted from "The Fate of Liberty." by Acemoglu and James A. Robinson (2020)

So why were executives unable to commit? I am sure there are many circumstances that vary from company

to company, but I feel it is because executives are trapped in a "cage of norms". I feel this even more strongly because the construction industry we are working in is a significantly regulated industry bound by "business law".

As I have mentioned in my previous Kibe-log articles, the construction industry, which is centered on contracting, has been constructing facilities, buildings, and infrastructures in response to the demands of the government and other clients. However, since the late 1990s, the construction industry which has traditionally been engaged in contracting has found itself at a crossroads in the face of a long-term decline in public fixed capital formation and declining profit margins due to overheated competition.

In order to change the rules, we have been expanding our business domain to include not only contracting but also structuring and investing in infrastructure projects, as well as post-construction operation, management and maintenance. To achieve this, we are focusing our business on social infrastructure such as roads, airports, and water supply and sewage systems. In a nutshell, this is what the INFRONEER is working towards. However, having worked for many years in a contracting structure with the government at the top, general construction companies still have a strong sense of being subcontractors, and still think that they must not speak out against the client. Recently, the construction companies have been working on a proposal-based bidding system, which is a new concept in the construction industry. In addition, although proposal-based bidding has increased recently, the national and local governments often determine specifications in detail for public works projects, and there is not a strong atmosphere for construction companies to submit proposals that go beyond those specifications.

In fact, when Maeda Corporation, a member of the INFRONEER Group, raised its hand for the Aichi Toll Road concession, we were asked by an official of the Ministry of Land, Infrastructure, Transport, and Tourism (MLIT), "Did you forget what MLIT has done for you?" Of course, that was a joke, and they supported us from beginning to end. If some companies are too concerned about higher authorities, they may cancel their bids in order not to irritate the government.

Even though toll roads are owned by Aichi Prefecture, roads are extremely important to the MLIT. The former Japan Highway Public Corporation was divided into the National Expressway Company (NEXCO) and settled. It is not surprising that MLIT is wary of concessions, a form of privatization. This would be another "cage of norms".

Under this circumstance the INFRONEER Group has been promoting innovative measures not seen in the conventional construction industry, such as the introduction of a "cost disclosure method" that discloses the cost of construction projects to the client including concessions for roads and airports. Our toll road concession projects are not only in Japan, but have also spread to Ghana, Africa.

The fact that we were able to move forward with such edgy initiatives was a result of the management team at that time taking on new challenges without getting caught in the "cage of norms. It is not enough yet, but of course I too intend to remove the "cage of norms" and continue stepping on the accelerator toward the "X" of INFRONEER.

## INFRONEER's "X" started from infrastructure

In order to promote the "X" of INFRONEER, we have begun to shift our business model by utilizing digital technology.

One such example is data-driven operation and maintenance in concessions.

Six years have passed since the operation of the Aichi Toll Road started and a variety of data is beginning to be accumulated. In July 2019, together with Accenture, we started a wide-ranging analysis of data utilization in road operations in order to study what can be done with this data.

Data utilization is difficult to achieve without purposeful analysis, but even at this point in time, we are making interesting discoveries one after another.

For example, in toll road maintenance and management, it is necessary to periodically repair road surfaces and bridge piers. These repairs can range from large-scale (several hundred million yen), medium-scale (several million yen), and small-scale (frequent) repairs.

These repairs have been done as scheduled based on the past experience. However, as we dig deeper into the data, we are beginning to understand details such as where major repairs should be done earlier, where they can wait longer, where small-scale repairs should be done more frequently, and when repairs to the roadbed and bed beneath the pavement should be done.

Repairing a road is a time-consuming and costly process of bidding and ordering. To be honest, we repeat several thousand bids and orders per year. Simply optimizing the timing of these repairs can be of great benefit to the operator.

This kind of data utilization is not limited to toll roads.

We are currently building a maintenance and management system for Aichi toll roads. This system should

be applicable to all social and public infrastructures that INFRONEER is involved in their operation, such as airports, water and sewage systems, exhibition halls, arenas, and so on.

The data that can be obtained for each infrastructure is of course different, but the content to be simulated by utilizing the data is the same, such as early detection of infrastructure problems, realization of carbon neutrality based on energy conservation, reduction of cost for operation, maintenance, and management, etc.

If this is the case, the quality and cost of maintenance and management would be greatly improved if a comprehensive system for infrastructure management is created, data to be input for each infrastructure is determined, and on-site managers can check the data using an app.

If we succeed with "X" in the maintenance and management of the infrastructure, I believe that this successful experience will spread to existing businesses in Maeda Corporation and Maeda Road eventually.

The term "DX" is widely circulated, but actual DX must be accompanied by rule changes. To achieve this, company executives need to be freed from the "cage of norms. It may not be a major rule change that will transform the energy of the world, but we will continue to move forward with our "X".

We hope you will look forward to the future of INFRONEER.