

Column C The Utilization of DX at the City Level in Kansai and Osaka

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1. Expectations and Risks for Future Cities Using DX

The “2040 Potentially Disappearing Cities Map,” published by the Japan Policy Council in 2014, indicated that, while the population was declining, simultaneous migration into the Tokyo area would continue, estimating that by 2040, the number of potentially disappearing cities would reach 896. Subsequently, the “Town, People, and Job Creation Act” went into effect in 2014, and initiatives to revitalize local communities have been implemented. However, due to the spread of the novel coronavirus, remote work and migration to rural areas have increased. In November 2021, under the Kishida Cabinet, deliberations on the “Digital Garden City Nation” vision commenced.

The government’s objective under this vision is to maintain and reinforce public services and invigorate local economies through the strategic application of digital technology. In doing so, the government aims to accelerate and intensify regional revitalization endeavors by leveraging digital technology to facilitate social transformation while honoring the unique characteristics of each region. Furthermore, the government aspires to establish a society in which anyone can reside comfortably and conveniently in any region of the country. To achieve this, it will encourage strategic initiatives that engage businesses at the regional level, rather than relying on individual business initiatives alone. Furthermore, the Ministry of Economy, Trade and Industry has put forth an “architecture” for collaboration between industry, government, and academia, expressing its intention to engage in a partnership with industry, specifically through the Ouranos Ecosystem (METI/Ministry of Economy, Trade and Industry). However, as the data collection and utilization activities of such U.S.-based platforms as GAFA are more notable than those of domestic initiatives, this has resulted in a situation where data that should be managed and utilized by individuals and regions is being concentrated in the hands of global platformers that are far removed from individuals and regions.

In Column C, we will present a series of proposals for the optimal

urban OS infrastructure, to be pursued in the future. These proposals are based on an analysis of market research and an examination of the issues outlined below.

- A historical overview of digital platforms and a forecast of their future evolution.

Issue 1: Problems with the centralized platforms that are currently in use.

Issue 2: A future society with advanced centralized platforms.

- Trends towards decentralized platforms.

Issue 3: Towards decentralized platforms.

Issue 4: The importance of international rule coordination and data coordination.

- Community development through local data platforms.

Issue 5: Local production of data for local consumption.

Issue 6: Mechanisms for achieving digital democracy.

2. The Most Popular Digital Platforms Currently

In traditional capitalist economic systems, the generation of new value has been achieved through the input of tangible assets. To illustrate, firms have allocated considerable financial resources toward the acquisition of raw materials and manufacturing equipment, in addition to investing a substantial amount of labor in the production of goods. Economic growth has been achieved through the mass production and mass consumption of standardized products.

In the digital age, however, the significance of intangible assets has increased considerably at the expense of tangible assets. The most significant of these intangible assets is data, which is essentially invisible. The American platform companies, collectively known as GAFA, have expanded their markets on a global scale through the use of centralized platforms. Nevertheless, centralized platforms have been the subject of criticism for their role in concentrating excessive wealth in the form of data.

■Problems with centralized platforms: Why does wealth (data) become centralized?

The following three factors are said to create an oligopolistic market structure with a centralized platform provider, resulting in “winner-takes-all” and the restriction of free competition.

[1] Characteristics of data as an intangible asset

- Zero marginal cost: The financial outlay required to create new assets is negligible.
- Non-competitiveness: Raw material data remains unchanged even in instances where goods are produced.
- Strong scalability: The characteristics of data as an intangible asset with zero marginal cost result in a geometrical expansion of business scale.

[2] Unequal profit distribution

- In return for supplying their personal data to a platform provider, individual users receive a complimentary service from the platform provider for free. Nevertheless, the value of personal information exceeds the value of that service, resulting in excess profits for the platform provider.

[3] Opaque market dominance

- Data as an intangible asset is easily transferred across borders and bundled with multiple services, meaning the characteristic of “scalability of business models.” However, the process of how the collected data (so to speak, raw material) is used for a single service or multiple services is not disclosed. Consequently, it is not feasible to ascertain whether there is market power, and the conventional market mechanisms¹⁾ and regulations are rendered ineffectual, culminating in the emergence of an oligopolistic market structure and other market distortions (Figure 4-CC-1).

1) The conventional market mechanism here means a pricing mechanism in which the equilibrium price is determined by the market as a proxy for the balance of supply and demand.

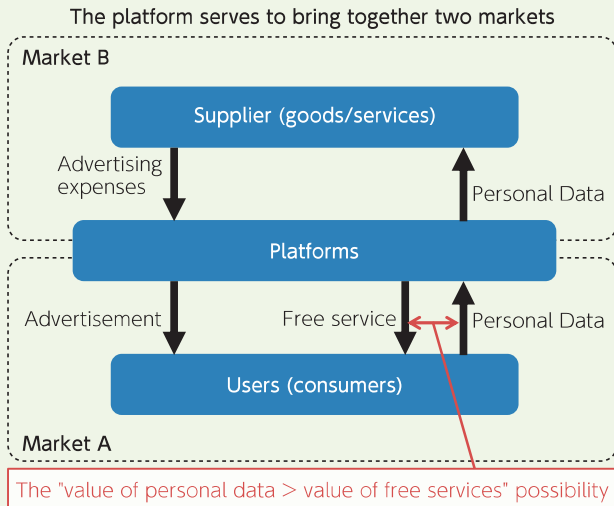


Figure 4-CC-1 Unbalanced value provision by platforms

Source: Prepared by the author from Taniwaki (2023)

3. The Future of Digital Feudalism

The world has thus far been unable to anticipate the significant concentration of power that will be enabled by big data. However, should the proliferation and advancement of centralized platforms persist, a future characterized by digital feudalism may emerge. Previously, there was considerable optimism that technology would facilitate the growth of grassroots democracy and enhance the capacity for collective decision-making. In fact, it has now become evident that technology is being harnessed as a tool for surveillance and the consolidation of power. The proliferation of blogs has given the impression of an information democracy, yet the flow of information and the nature of culture are predominantly shaped by a small number of companies headquartered primarily on the West Coast of the United States. When viewed through the lens of a population pyramid based on personal wealth, historical data indicates a bell-shaped distribution, with the “wealthy class” at the apex, the “middle class” in the center, and the “low-income class” at the base.

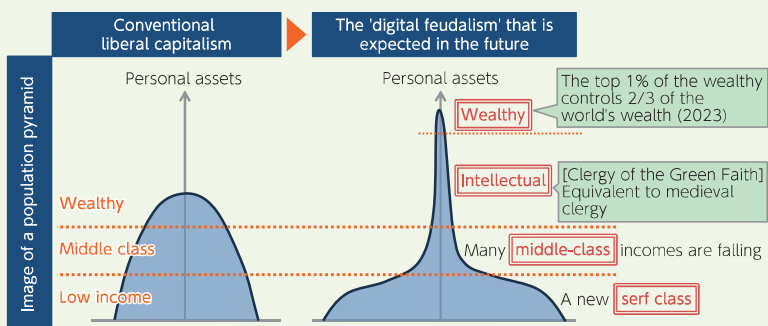


Figure 4-CC-2 Expansion of the inequality due to digital feudalism

Source: Prepared by the author from Kotkin (2023)

This structure is characterized by a robust middle class. However, in a society characterized by digital feudalism, it is predicted that a significant proportion of the middle class will transition to the low-income class. Indeed, as of 2023, the top 1% of the wealthy holds two-thirds of global wealth (Figure 4-CC-2).

4. Distributed Platforms and Data Sovereignty

(1) What Is the “Data Space”?

- In today’s world, where data has become a strategic resource for companies, it is data sovereignty that is becoming the core of the new platform (Figures 4-CC-3 and 4-CC-4).
- The concept of a “data space” represents an approach that does not integrate disparate data sets that are distributed across numerous systems; rather, it allows for the coexistence of these data sets.



Figure 4-CC-3 ID management in the future

Source: Almasi (2019)

[Data sovereignty]

- The reason why it is safe to share data is that data spaces have "data sovereignty."
- The data provider decides the destination and period, etc.

① The data is from the data provider.



The data is managed by the data provider.



The data is not managed centrally.

② Can only be shared with specific users.

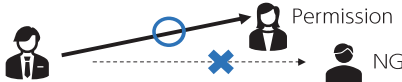


Figure 4-CC-4 Data sovereignty

Source: Information-technology Promotion Agency, Japan (2023)

(2) Cross-Border Data Collaboration

[1] The importance of international rule coordination

In contemplating the prospective data utilization for businesses, it is essential to acknowledge the absence of geographical boundaries between nations in cyberspace. While physical networks are constrained by national borders, the separation of hardware and software has resulted in a significant shift in the operational focus of networks towards the software side. This shift has created an opportunity for the software side to be provided from overseas on a cloud basis. One of the primary reasons for the considerable influence of the huge platform providers is their capacity to operate across national boundaries, enabling them to develop their business in a borderless manner and thus to achieve notable scalability.

Consequently, while the data utilization business is developing in a borderless manner, the laws of each country have been applied domestically without question to date.

Nevertheless, in the absence of national borders in cyberspace, there is a debate surrounding the question of whether the application of laws should be extended beyond national borders, or extraterritorially. Should such extraterritorial application be promoted, there is a risk that a company may be subject to the laws of multiple countries, potentially leading to a complex and confusing legal landscape. In such a scenario, the company in question would be required to adhere to the most stringent regulatory standards of all the nations concerned. In this context, there is a movement to align national regulations with international standards.

5. Local Production of Data for Local Consumption

(1) The Need for a Model of Internal Circulation in the Regional Economy

As the population continues to decline, people are prioritizing convenience and ease of access. For example, even if a product can be easily purchased in the local area, purchasing it on Amazon will result in the money flowing out of the local area and going overseas, while the product will come from outside the region. If such economic outflow persists,

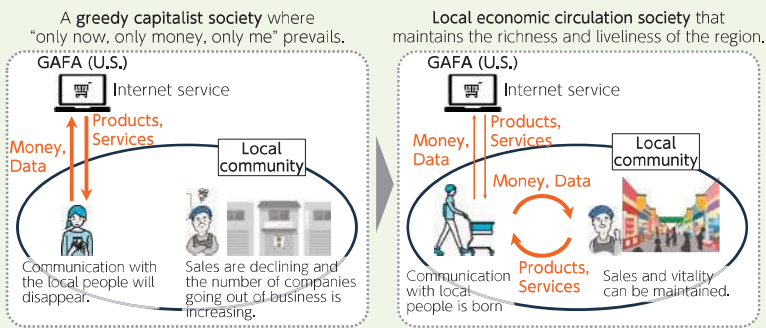


Figure 4-CC-5

The need for local economic circulation through local production of data for local consumption

Source: Prepared by the author.

it will not only result in exhaustion of the local economy, but also in a loss of communication between consumers and local people. This will ultimately lead to the emergence of a society characterized by what is popularly known as "greedy capitalism," where individuals are solely driven by self-interest and the pursuit of wealth. In order to maintain the prosperity and vitality of local communities, it is necessary to cultivate awareness among local residents of the importance of consuming data within the region (local production of data for local consumption) and to construct a society with a local economic cycle. The concepts of data sovereignty and data space, as outlined in Column 3.4, serve as a crucial foundation for the local production and consumption of data (Figure 4-CC-5).

(2) The Need for a Mutual Assistance Community

As the population declines and ages, public assistance is decreasing, and the capacity for self-help among those who remain is also limited. Consequently, a new system of mutual assistance is required. It is within these mutual assistance communities that data circulates.

■ Case study of a mutual assistance community: 'Web3 town' in Shiwa Town, Iwate Prefecture

In Shiwa Town, Iwate Prefecture, a decentralized autonomous

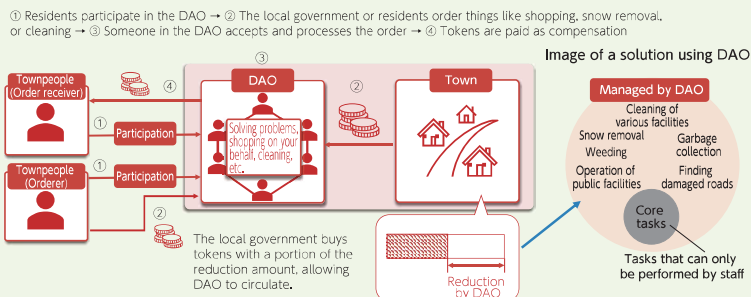


Figure 4-CC-6

Case study of “Web3 Town” in Shiwa Town, Iwate Prefecture

Source: Shiwa Town, Iwate Prefecture (2022)

organization (DAO²⁾)-based collaborative assistance platform is being utilized to reduce the expenditure and burden on the town hall. This is achieved by soliciting the assistance of residents in performing tasks that do not necessarily require the involvement of municipal employees. The system is designed to provide incentives to residents who provide assistance through rewards facilitated by the DAO (Figure 4-CC-6).

(3) Learning from Successful Examples of Urban Development: The Value of Data Creation

[1] The case of the Town Management Organization (TMO) for the Umekita advanced development district

In the town development of the Umekita Phase I area, a Town Management Organization (TMO) was established as a separate entity from the landowners and developers, with the objective of managing the area as a whole (Figure 4-CC-7). Consequently, since the area was opened, the official land prices in Grand Front Osaka have increased at a greater rate than in the surrounding areas. Furthermore, the cumulative number of visitors reached 470 million on April 26, 2023, which marked the 10th anniversary of the opening.

2) See Asia Pacific Institute of Research (2024), p.31.

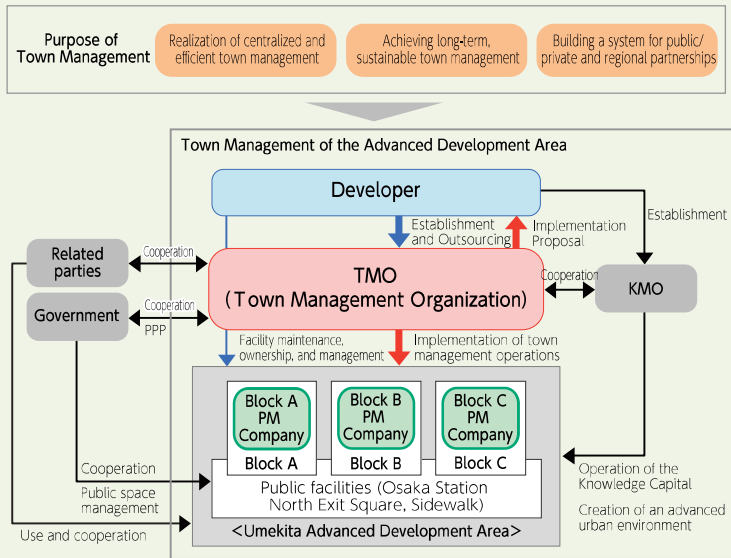


Figure 4-CC-7 Overview of the Umeda Town Management Organization

Source: Kansai Economic Federation (2009)

[2] The case of the Marugamemachi Shopping Arcade in Takamatsu City, Kagawa Prefecture

The 470-meter-long Marugamemachi Shopping Arcade in Takamatsu City, Kagawa Prefecture, was subdivided into seven distinct blocks. Since 2006, each block has been redeveloped with new buildings, which are managed as if they comprised a single shopping center. Consequently, in 2014 the highest land price in Takamatsu City was once again observed in the Marugamemachi Shopping Arcade, for the first time in 23 years (Figure 4-CC-8). The factors that contributed to the success of this case can be summarized as follows.

As the landowners of the shopping arcade lacked the expertise to manage commercial buildings, the Takamatsu Marugamemachi Town Development Company was established to implement the following two initiatives.



Figure 4-CC-8

Before and after the development of the Marugamemachi Shopping Street

Source: Takamatsu Marugamemachi Shopping Street Promotion Association, "Takamatsu Marugamemachi Town Development Strategy"

i) Separation of ownership and management

The key to the success of the town development company is the replacement of shops that are no longer aligned with the company's vision or are not performing well. Accordingly, a fixed-term land lease contract was entered into with the landowner, whereby the landowner granted the town development company a leasehold interest in the land, while retaining ownership of the land itself. This leasehold interest gave the town development company the right to use the land, which means the company is entrusted to the town development company. Although it may outwardly resemble a traditional shopping street, Marugamemachi Shopping Arcade is, in fact, a shopping center. The management style is comparable to that of Lumine and AEON MALL, with a headquarters-led tenant mix that is aligned with the overarching concept.

ii) "Owner variable land rent system" that delays payment of land rent

The proprietor (landowner) receives rent, but the level of rent is not a fixed amount; rather, it fluctuates in accordance with the tenant's performance. The proprietor assumes the risk in conjunction with the tenant, thereby compelling the proprietor to collaborate in enhancing the sales of individual shops and the shopping arcade as a whole.

[3] “Ownership and usage rights” of data: Lessons from the similarities between the Umekita Phase I and Marugame-machi Shopping Arcade

The Umekita Phase I project and the Marugame-machi Shopping Arcade both exemplify a similar approach to land use, namely the separation of ownership and usage rights. This approach has the effect of bringing together individuals from diverse industries and fields, who then engage in discourse regarding the optimal utilization of the land in question. It can thus be argued that the creation of value is contingent upon the combination of data and wisdom from disparate industries and fields through the partitioning of ownership and usage rights.

6. Mechanisms for Achieving “Digital Democracy”

In order to counteract the phenomenon of digital feudalism, it is essential to complement the system of local data production for local consumption outlined in Column C.5 with the development of local residents into “thinking citizens” and the reinforcement of their “connecting power.” In Column C.6, we will present a case study of a deliberative democracy platform that employs digital technology.

■ A case study of Barcelona: Superblock development in a redevelopment district

[1] What is a “superblock”?

The idea is to conceptualize the nine grid-shaped city blocks (3×3) as a single, expansive city block (superblock, 400m square). This approach entails the prohibition of automobile usage by non-residents within the area, accompanied by speed limitations to 10 km/h and the implementation of a one-way street system. These measures are designed to foster a secure and comfortable living environment for citizens (Figure 4-CC-9).

The objective is to extend the available social spaces within the city, with the specific uses of those spaces within the superblocks to be determined by the local residents.

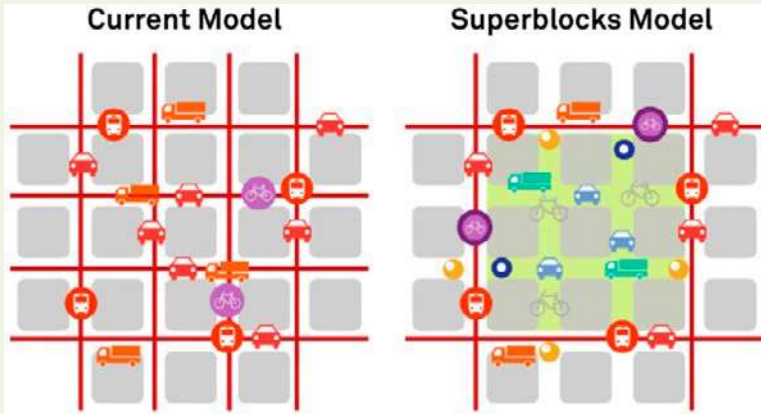


Figure 4-CC-9 Superblock

Source: BARCELONA ARCHITECTURE WALKS (2016)

[2] “Decidim,” a system for citizen participation

- As a component of Barcelona’s municipal initiatives, in 2016 the city introduced Decidim, a digital platform designed to facilitate citizen engagement in municipal governance and administration. The platform’s objective is to promote networking, discussion, and active participation in the decision-making process by citizens.
- In the project to introduce superblocks, the local residents were involved in the decision-making process. The utilization of the space that had previously been used as a roadway was determined through a bottom-up approach, where citizens discussed the matter among themselves (Figure 4-CC-10).
- The procedure entails the citizens deliberating online on the matter of Decidim, attaining a sufficient degree of consensus, and subsequently integrating their proposals into policy through the council.



Figure 4-CC-10 Before and after the development of the Superblock

Source: Tokyo Metropolitan Government, Bureau of Digital Services, "Report on the Barcelona City Business Trip"

7. Toward Regional Revitalization Through a Regional Circular Economy

In order to counteract the emergence of digital feudalism, it is essential to implement a system for the local circulation of information. [Table 4-CC-1](#) illustrates the various proposals for the realization of such a system.

In terms of implementation, the following two initiatives are of particular significance and are regarded as indispensable.

- (1) Regional information infrastructure, exemplified by the data linkage platform "ORDEN," which supports the Osaka Super City Concept.
- (2) The development of management organizations, third-party organizations, funding schemes, and other entities that engage government, business, and citizens.

Kansai, as a "Super City," is a pioneer in the implementation of (1). Additionally, it has demonstrated advanced practices in (2) through the Umekita Phase I project. However, there is a perceived need to further promote these initiatives on a global scale, utilizing Expo as an opportunity to showcase these advancements.

Table 4-CC-1

Proposals for the realization of a system for circulating information in the community

No	Item	Contents of Proposal
1	Securing data sovereignty	In order to prevent the concentration of wealth (data) through centralized platforms, it is necessary to implement a system that maintains data sovereignty, such as data spaces and Decentralized Autonomous Organization (DAO).
2	Realizing a smart city with diversity and tolerance	In contrast to a "centralized/centrally managed smart city," it is essential to facilitate the diversity and tolerance of local communities, including the distinctive attributes of each region. To this end, a "local platform" that is self-organizing and capable of local data production for local consumption should be implemented.
3	Expanding the secondary use of personal data	It is imperative that this information be segregated from general personal data and that it be permitted for secondary utilization through screening, in addition to the consent principle. Furthermore, the establishment of a new third-party organization for utilization screening is recommended.
4	Separating ownership and usage rights of data	It is imperative that initiatives be implemented that differentiate between ownership and usage rights in order to expedite the generation of value from data.
5	Improving the literacy of residents	A society with widening disparities leads to the polarization of education and the entrenchment of social stratification. To build a robust and thriving society that fosters "thinking citizens," it is imperative to provide residents with opportunities for reskilling (continuing education).
6	Data sharing infrastructure to support local production for local consumption of information	It is necessary to establish a regional information infrastructure that enables the utilization of various types of information within the community while promoting its free and fair circulation.
7	Providing a platform for digital democracy	It would be beneficial to consider the introduction of a platform that facilitates the involvement of local residents in local issues, encourages deliberation on these matters, and enables decision-making. Furthermore, the implementation of a citizen-participatory budget would be advantageous in this regard.

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