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A Study on the Introduction and Operating Direction for Smart Building Certification

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SUMMARY

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□ Study Overview

Currently, we live in an era of rapid transformation as a result of the Fourth Industrial Revolution's technical progress, market expansion, and breakthrough innovations in daily life. The scale of the market for technologies associated with the Fourth Industrial Revolution, such as AI, self-driving vehicles, and robotics, is expanding and is anticipated to continue growing. Consequently, the government is promoting the establishment of a foundation for industrial development by constructing plans and policies for the creation, development, and enhancement of competitiveness associated with an industrial ecosystem related to the technology of the Fourth Industrial Revolution.

The building and construction industry has a slower rate of digital transformation and technology adoption is still in its infancy compared to other industries. As the final destination for the technologies and services of the Fourth Industrial Revolution, buildings are anticipated to operate and serve as a test bed and platform.

In this context, this study considers the connection with the fourth industrial technology from the architectural planning stage, introduces a certification system for smart buildings, and suggests operational directions.

□ Certification sector and item composition

Smart building certification comprises a convergence service of physical and non-physical technology and architecture, as well as a platform that facilitates the

operation of these services.

As the fourth industrial technology convergence service, the physical features of self-driving vehicle charging in the self-driving sector, design/construction for parking, and self-driving vehicle operation support infrastructure were first derived. Second, standards for the structure/safety/creation of take-off and landing facilities, transportation operation support infrastructure, and so on were developed in the UAM/drone sector. Third, autonomous robot movement failure mitigation design and robot service support infrastructure were derived from the robot sector.

As a smart building environment service, the non-physical properties included the health care sector, the education and work support sectors, and living convenience items. Concerning the service support platform, certification sectors were comprised of service operation support infrastructure through integrated control of communication and network employing IoT, AI, and sensors.

□ Certification subject: building use and size

Smart building certification seeks to improve user convenience in the home, life, and work and certifies the usage of buildings that satisfy this criterion. In the early stages of certification operation, it is promoted for buildings that are simple to demonstrate through pilot projects, such as public office buildings, office buildings of large corporations, apartment housing complexes, and large-scale complex developments in station areas, and large buildings that have a significant ripple effect. It is pushed in the early stages for medium and large-sized new buildings and in the mid-to-long term for buildings of all sizes that can run smart construction services.

□ Method of evaluating certification

To increase the convenience and flexibility of certification, smart building certification evaluates whether each service can be performed. Its purpose is to assess whether the service to be installed can be operated to acquire certification. In the early stages, for example, communication/sensor technology is applied to buildings to obtain certification for delivery robot services, and in the mid-to-long term, certification can be achieved by running self-driving automobiles or UAM services.

□ Operation direction for certification

A public-private consultative organization for the smart building is constituted to oversee the implementation of smart building certification. The first certification is introduced and operated as a service-oriented private certification, and it will be

changed to national certification through legislation so that incentives may be awarded. Moreover, public (research) institutions that have established expertise and visibility in the field of smart building certification are recognized and run as certification operational institutions. Following institutionalization, certification evaluation agencies will be identified and expanded in the medium to long term.

□ Direction for providing incentives

According to the findings of the private sector incentive demand survey, there are demands of incentive requirements such as financial assistance and tax reductions. So, it is vital to identify and deliver particular and effective incentives in response to such private sector demand.

□ Direction for regulatory reform

In tandem, the development of smart building-related technologies as well as strategies to identify and eliminate/mitigate laws that impede the vitalization of the private sector must be carried out. As a consequence of gathering comments on regulatory reform in the private sector, demands for improving flight limitation rules, recognizing parking spots in accordance with the Parking Lot Act, simplifying the certification stage, and improving personal information regulations were most notable.

□ Direction for institutionalizing smart building certification

As an institutional foundation for the efficient operation of smart building certification, we suggest legislative measures through a review of alternatives such as the introduction of a special law. It includes adding new provisions relating to smart building certification to the existing building legislation and providing the comprehensive certification requirements by official announcements. As for the second direction, the creation of a special law is an alternative to bolstering the driving power of smart building policies and more aggressively stimulating the private sector's engagement. Lastly, we recommend including broad issues for supporting smart construction policy, such as certification standards, alliances, research and development, pilot projects, and incentives.

Keywords

Smart Building, Certification, the 4th Industrial Revolution, Convergence, Service