Publication of "Smart City Case-Study Collection [Introduction]"

(Research period: FY2020 to FY2022)

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Key words: smart city, case-study collection, matching urban problems with new technologies

1. Introduction

In October 2022, the NILIM released "Smart City Case-Study Collection [Introduction]" ("Case-Study Collection"), which allows users to search for new technologies to solve urban problems regarding 76 smart city projects around Japan[1][2][3]. The purpose of the Collection is to support the implementation in each district and promote nationwide horizontal development by presenting in an easy-to-understand manner issues and responses to the introduction of new technologies that address urban problems, methods for evaluating the effects of introduction, and examples of evaluation indicators. This paper describes the outline of the Case-Study Collection.

2. Background and purpose of the Case-Study Collection

For the development of smart cities aiming to solve urban problems through the use of new technologies such as IoT, the number of initiatives in each region is steadily increasing due to the promotion of national model projects and the sharing of know-how through the Smart City Public-Private Partnership Platform. However, there are still many local governments that have not yet implemented such initiatives, and the issue of nationwide horizontal expansion is still an issue.

According to the results of a questionnaire survey[4] conducted by the NILIM to local governments and companies to grasp the issues in implementing smart city initiatives, many respondents answered that they were uncertain about what new technologies could be used to solve urban problems. Since the need for support through information sharing and systematic organization regarding the matching of urban problems and new technologies was recognized, the NILIM worked on the preparation of the Case-Study Collection.

3. Outline of the Case-Study Collection

(1) Characteristic

The Case-Study Collection is expected for use by local governments and companies that intend to work on smart cities in the future. Although there are many publicly available information and materials on smart city initiatives, most are presented on a project-by-project basis. The Case-Study Collection is characterized by introducing new technologies that could be introduced for major urban problems on a one-to-one correspondence basis and therefore allowing local governments and others to search for possible solutions to their urban problems using the new technologies as a dictionary (for this reason, the title is appended with "[Introduction]").

(2) Targeted "urban problems" and "new technologies"

Focusing on cases adopted by national model projects, out of the smart city initiatives around the country that have a track record of introduced new technologies at the implementation or demonstration experiment stage, we extracted 76 cases of combinations of urban problems and new technologies as shown in **Table**, taking into account the balance between the classification of urban problems and new technologies and the variation of combinations.

(3) Table of Contents

Three tables of contents are provided to facilitate search: "List of Urban Problems," "List of New Technologies," and "List of Local Governments," which are arranged in a different order of cases.

Table: Targeted "urban problems" and "new technologies"

Urban problems	h Automobile	f Data utilization	c Analysis and / forecast	b Observation	a Communication	i Robot / drone	d Data base	e Big data	g Energy	Grand total
A Transportation	13		3		2	1	1			20
C Liveliness	2	4	4				2	1		13
D Health / Medical	2	3		1	1		2	1		11
G Disaster prevention		1		2	2		1	2		8
B Industry	2	1				4				7
E Infrastructure	1		1	2		1	1			6
H Security					2	3				5
F Environment				1		1			2	4
I Common to all fields		2								2
Grand total	20	11	9	8	8	7	7	4	2	76

(4) Information contained

For each combination of urban problems and new technologies, information on the following items is presented in a common format of basically three pages. **Figure** below shows an image of the information provided in the case studies and how to see case studies (extracted from the Case-Study Collection).

1) Information on features and introduction of new technologies
- Outline of urban problems and new technologies
- The effects of solving urban problems expected from new technology introduction
- Conditions for application of new technologies, and challenges and responses in introducing new technologies
2) Data on Key Performance Indicators (KPI) to measure the effects of new technology introduction
- Example of evaluation viewpoints
- Examples of KPI setting and quantitative indicators

4. Conclusion

The NILIM is also developing methods for evaluating the effect of solving urban problems through the introduction of new technologies.

In the future, we intend to revise the Case-Study Collection from time to time, such as increase in the number of cases in the environment field of high social concern and update of the content to reflect increase in the number of cases of smart city initiatives and technological innovations.

☞**See the following for details.**

1) "Smart City Case-Study Collection [Introduction]" PDF file URL (Available in NILIM's Urban Planning Division website.)
http://www.nilim.go.jp/lab/jbg/smart/smart.html#smart
2) NILIM Press Release Material "The latest 76 smart city case studies in Japan -- Smart City Case-Study Collection [Introduction]"
http://www.nilim.go.jp/lab/bcg/kisya/journal/kisya20221021.pdf
3) Smart City Public-Private Partnership Platform: Report on the 2nd Online Seminar in FY2022
https://www.mlit.go.jp/scpf/archives/docs/event_seminar_221021_kokusouken.pdf
4) KATSUMATA Wataru, KUMAKURA, Eiko, and SHINGAI, Hiroyasu (2021)， Survey on Demands for New Technologies towards Smart Cities to Solve Urban Problems - Questionnaire Survey for Local Authorities Having Use Cases and Demands and Companies Holding Smart City Technologies-, Journal of the City Planning Institute of Japan, Vol. 56-3, pp. 1413-. 1420
https://doi.org/10.11361/journalcpij.56.1413

Figure: Image of the information provided in the case studies and how to see case studies (extracted from the Case-Study Collection).