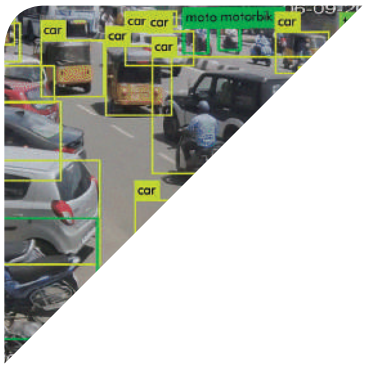
Handbook of

Multimodal Transport for Smart City

Application of Sensing, Networking and Big Data Analysis



SATREPS Project of
"Smart Cities Development for Emerging Countries
by Multimodal Transport System Based on Sensing,
Network and Big Data Analysis of Regional Transportation"

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Preface

Today, cities around the world are facing various environmental problems. In order to continue sustainable development in the future, it is necessary to streamline all activities in the city and form a society without waste and congestion. To achieve this goal, many cities are aiming to realize smart cities.

This handbook introduces the technologies necessary to realize such a smart city in India and the methods of low carbonization using these technologies. Much of the content presented in this handbook is the result of the project entitled “Smart Cities Development for Emerging Countries by Multimodal Transport System Based on Sensing, Network and Big Data Analysis of Regional Transportation,” which is one of the Science and Technology Research Partnership for Sustainable Development (SATREPS) implemented by Japan International Agency (JICA) and Japan Science and Technology Agency (JST). This project is a joint research between the Indian Institute of Technology Hyderabad, Nagoya Electric Works Co. Ltd., and Nihon University and was carried out from 2016 to 2022 with the city of Ahmedabad in India as the study area. In addition, faculty members from the Tokyo Institute of Technology and the University of Tokyo also participated in this research. As shown in Appendix, many experiments were conducted on the campus of the Indian Institute of Technology Hyderabad as well as Ahmedabad. As the title suggests, this research group focuses on the essential traffic among the various elements that make up a smart city and utilizes the latest technologies such as information and communication technology, image analysis technology, and AI technology to multi-purpose. The goal is to realize modal, environmentally-friendly transportation and reduce greenhouse gas emissions.

This handbook consists of two parts of this handbook. Part Ⅰ presents the basic ideas for smart cities, multimodal transport, and greenhouse gas reduction. Part Ⅱ presents the advanced technology developed in this project and demonstrated in the field. In the last Appendix, we present the contents of the demonstration experiment conducted on the campus of the Indian Institute of Technology Hyderabad as a test bed.

The technologies introduced in this handbook are still under development, but they are essential technologies for promoting multimodal transport and realizing smart cities, and after that, smart cities will be introduced in other cities. We strongly believe that it will help consider it.

Finally, we would like to thank Ahmedabad Municipal Corporation (AMC), Ahmedabad Traffic Police, BRTS-Ahmedabad Janmarg Limited, Gujarat Metro Rail Corporation (GMRC) Limited, Ahmedabad Auto Rickshaw company (G-Auto), JICA, JST, and other related parties for their cooperation as the project’s leader.

Dr. Tsutomu TSUBOI

Project Leader of SATREPS “Smart Cities Development for Emerging Countries by Multimodal Transport System Based on Sensing, Network and Big Data Analysis of Regional Transportation”

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Part Ⅰ Role of Multimodal Transport for Smart City

Part Ⅱ Advanced Technologies to Realize Multimodal Transport

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By SATREPS Project of
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SATREPS

科学技術振興機構
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