

# **Practical Asset Management System for Developing Countries**

## **Project Leader**

Seigo NASU, Dr. Eng.  
Professor, Economics and Management  
Graduate School, Entrepreneur Engineering Course  
Director, Research Center for Social Management Systems

## **Faculty Members Involved in this Project**

Masataka TAKAGI, Dr. Eng.  
Professor, Infrastructure Systems Engineering  
  
Masahiro OUCHI, Dr. Eng.  
Professor, Infrastructure Systems Engineering

## **1. Objective**

### **This project is aimed at:**

This project is a part of Cross-ministerial Strategic Innovation Promotion Program operated by Cabinet Office of Japan in the field of Comprehensive research on development of road infrastructure management cycle and its application in Japan and abroad, which aims to establish and implement improved Asset Management System for Road Infrastructures. Asset Management system under development is going to deal with error, and uncertain data which has been making Asset Management System not perfectly performing mostly in the world. We also aim to implement developed Asset Management System to developing countries.

## **2. Project Outline**

### **To that end, the project will consist of the following phases:**

Any central and local government at any countries have to deal with deteriorating infrastructures, therefore, appropriate maintenance and rehabilitation of infrastructures has to be executed properly, yet few asset management systems which perform perfectly exist. This research is to develop Asset Management System for road bridges (AMSB) which is a part of the project of Cross-ministerial Strategic Innovation Promotion Program operated by Cabinet Office of Japan, whose function is to manage voluntary functions improvement of AMSB such as inspection, prediction of deterioration, rehabilitation planning, etc. at developing countries. Taking into account of regional circumstances such as climate, traffic condition, culture and organization, we aim to develop AMSB at various developing countries under this research to overcome issues as follow.

- (a) Precision level of BMS do not match to the error, uncertainty of the bridge condition data and environmental data, so that prediction of deterioration is not believed.
- (b) Engineer's ability who especially work for inspection has an uncertainty, and condition at the site differs very much at each region, so that engineer has to be educated and evolve based on the qualification system and experienced based education.

AMSB is going to be developed by major research procedure as follows.

- (a) Analyze country characteristics to be investigated to promote implementation of AMSB internationally.
- (b) Analyze compatibility between AMSB developed for local government in Japan and developing countries' infrastructure maintenance systems by implementing and observing periodical inspection system, inspector qualification system, system to improve inspector's ability, and related systems.

- (c) Analyze applicability of management cycle which improves systems of (b) and establish customized system for developing countries.
- (d) Investigate prediction model performance of physical deterioration for bridges at developing countries.
- (e) Develop AMSB for developing countries whose rehabilitation planning function matches engineers' career based feel at the field.
- (f) Investigate engineers' behavior to operate AMSB and develop appropriate operation system for developing countries.

These research will realize Asset Management System which consists of management cycle and maintenance cycle developed at Kochi University of Technology. This Asset Management System will benefit developing countries as below.

- (a) Creating safe and reliable local society by the local effort.
- (b) Creating implementable and sustainable infrastructure maintenance at local government
- (c) Designing effective and efficient Asset Management System by utilizing local organization and local personnel
- (d) Creating Infrastructure Asset Management System for the future of sustainable local governments and local companies

### **3. Expected Performance**

**In this project, the successful candidate would be expected to:**

- (a) Understand asset management system of maintenance and rehabilitation, which has a lot of sub-systems
- (b) Plan, design, and program AMSB for developing countries
- (c) Communicate with local government official at developing country
- (d) Understand inspection system of bridges and educate local government officials
- (e) Communicate with Japanese researchers in English like a native

### **4. Required Skills and Knowledge**

**The successful candidate for this project will have the following knowledge and skills:**

- (a) Fundamental knowledge of civil engineering, such as concrete engineering, structural engineering
- (b) Ability of programming, computing and numerical simulation
- (c) Especially good at communication in English

### **References**

[http://www8.cao.go.jp/cstp/panhu/sip\\_english/sip\\_en.html](http://www8.cao.go.jp/cstp/panhu/sip_english/sip_en.html)

(Cabinet Office, SIP Program: Cross Ministerial Innovation Promotion Program)

[http://www8.cao.go.jp/cstp/panhu/sip\\_english/34-37.pdf](http://www8.cao.go.jp/cstp/panhu/sip_english/34-37.pdf)

(Developing Technology to Support Long-Term Infrastructure Use Toward Safe and Robust Infrastructure Systems)

### **See our admission guidelines:**

[https://www.kochi-tech.ac.jp/english/admission/ssp\\_aft19oct/ssp\\_application\\_guideline.html](https://www.kochi-tech.ac.jp/english/admission/ssp_aft19oct/ssp_application_guideline.html)

### **Contact**

E-mail: [nasu.seigo@kochi-tech.ac.jp](mailto:nasu.seigo@kochi-tech.ac.jp)