



# 2022 Smart JAMP Study on the Realization of Smart Cities Related to Infrastructure Management



## Target Area

- Indonesia, Singapore, Thailand

## Background and Purpose

- Many ASEAN countries highly expect to obtain infrastructure management and maintenance technologies with low-cost, long-term, and stable, because they are facing the stage of keeping road assets in good condition for economic growth.
- Some counties have started to collect information digitally, such as the detection of road damage by artificial intelligence (AI) or video analytics (VA), or smartphone-based posting services from citizens, and to create a database and use it for road maintenance and management activities on their roads.
- The main purpose of the study was to find how to install such smartphone-based road maintenance tools in the countries or what is an acceptable business model for the countries through the demonstration and exchanging opinions.

## Related Organization

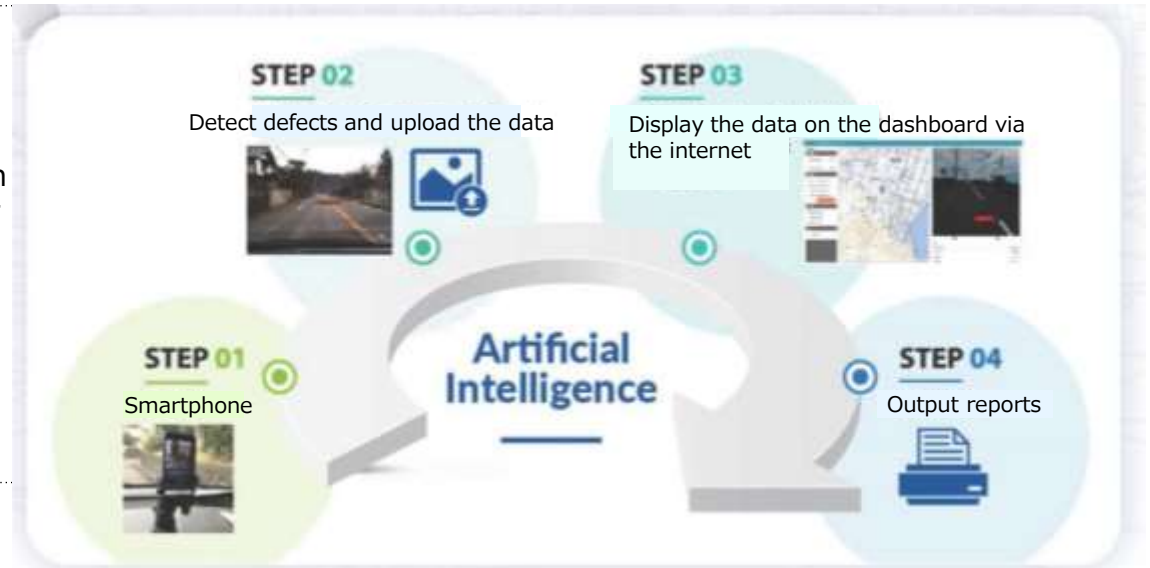
- Indonesia: Directorate General of Highways(Bina Marga), National Road Implementation Agency (BBPJJN), etc.
- Singapore: Land Transport Authority(LTA), etc.
- Thailand: National Road Implementation Center, National Road Implementation Center (NECTEC), Suranaree University of Technology

## Project Stage

- Pre-feasibility Study, Experimental implementation

## Contents and Results

1. Evaluation of accuracy between visual and AI inspection
  - Regarding severe defects such as potholes, the accuracy was almost acceptable.
  - Other types of defects are considered potential risks; the AI solution detected much more numbers than a human inspector
2. Application for big data acquisition and predictive maintenance
  - The capacity to detection of defects easier was expected to move predictive maintenance works.
  - The severity of defects was required to categorize using training data/images.
3. Needs on data usage and acceptable business models
  - Business models are considered not only using the application directly but also buying detected data or some reports.



Source: Urban X Technologies Inc

Figure 1: Overview of smartphone-based road damage detection system using AI

Share of Defects RM detected, except for Faded markings

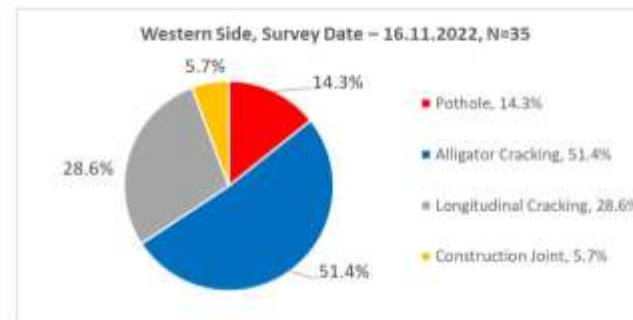
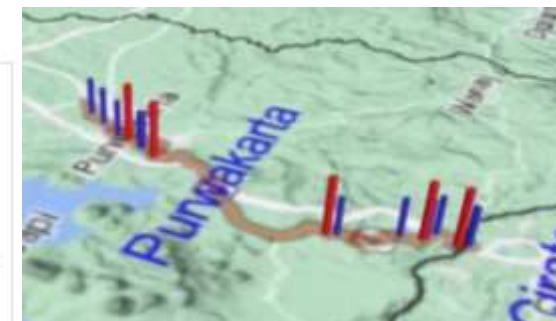


Figure 2: Share of defects by types



Legend ●: Potholes, ●: Alligator cracking

Figure 3: The relationships of locations and numbers between potholes and alligator cracks