

Smart City supported by Japan ASEAN Mutual Partnership-Smart JAMP
APPLICATION for researching and setting up a smart city project

(1) Project title: Develop digital map for smart city planning and management (Virtual Danang).

(2) City Name: Danang, Vietnam

(3) Category of the study: E

E) Experimental Implementation

To confirm applicability of a specific solution or technology to a smart city project with the assistance of a Japanese solution provider.

(4) Justification of the Project

- Current status of a smart urban project in the target city:

- Da Nang has deployed many applications and utilities in the digital environment, in the form of mobile apps for mobile phones, and has gained great use and interaction of people and businesses; digital data form and initially share data with each other; deploying Open Data Portal to provide data and publicize information to people and businesses.

- The city has actively acted as a focal point, connecting and mobilizing the active participation of domestic and international organizations and businesses, especially the resources of local units and businesses to implement a number of smart application systems branded Da Nang (Made in Da Nang).

- However, at present, the city does not have a plan for the sensor network for automatic data collection; Each sector is self-built to serve only the purpose and profession of its branch, wasting investment and lack of connection and synchronization. Big data for smart city has not been formed; data from security camera systems, traffic, monitoring sensors, ... are also stored distributed in each unit, have not been collected, integrated, and managed systematically to serve as a basis for intelligent data analysis and decision making support.

- Digital data partly formed from databases or specialized applications; but not yet complete, accurate and unique need to go through the optimization and cleaning process to make sharing (via shared data hub) and inheriting data more efficient.

Data of central agencies located in the area (police, tax, customs, treasury ...) has not been shared for other sectors. The city has only initially used digital data to replace paper documents in the provision and use of public administrative services; Not many intelligent applications, especially applications from intelligent data analysis to serve the direction and administration in data analysis have not yet formed.

- Currently, the implementation of detailed planning for urban technical infrastructure and civil works along the roads as well as the management of the

works after construction is carried out separately by different agencies and not shown on an overall map

Therefore, evaluating the reasonableness of planning solutions for construction investment is difficult, especially assessing the impact of the investment in crowded-people works along the urban routes in considering the capacity of transport infrastructure and other technical infrastructure networks (electricity supply, water supply, drainage, ...).

- Therefore, it is necessary to study to develop digital maps capable of integrating existing infrastructure data and planned projects to be implemented (including civil works such as hotels, shopping centers, ... and social infrastructure works such as parks, schools, hospitals, ...),

thereby building algorithms for analyzing, forecasting, assessing the suitability and responsiveness of technical infrastructure works (traffic, water supply and drainage, ...) that have been existed or will be invested as well as the suitability of urban landscape of civil works to be deployed; support for decision-making related to construction planning or investment.

- Virtual Danang will include 4D map layers of the city. When completed, Virtual Danang will be a 4D digital platform for government leaders, businesses, the people and researchers. It will allow users from different sectors to develop testing tools and applications and services, planning and decision making, and researching technologies to address emerging complicated challenges for Danang City.

- Outline of the Study:

a) Domestic and international research

- Study the implementation status of a number of similar projects in advanced countries around the world to help cities become more creative (Singapore, Amsterdam - Netherlands, Paris - France, Toronto- Canada , Newcastle- England, ...).

- Evaluate the possibility of project implementation in Da Nang as well as expansion in other cities in Vietnam (feasible technology solutions tailored to Vietnam's needs and real situation, meeting national data security criteria for technology as well as data).

b) Proposed project solution

- Research to build a real time 4D map platform, that can display 4D (3D space and fourth dimension is time and sensor devices) on the map, ensuring the request:

- Ensure security and confidentiality in accordance with the Law on Cyber Security,

- High accuracy, compatible with popular coordinate systems in the world and Vietnam (WGS84, VN2000, HN72),

- Ability to integrate with multiple systems, saving development time and money,

- Being updated continuously by agencies, functional units and independent on any third party.

- The system is capable of integrating IoT technology solutions for all objects on the map, and is ready for the application of the latest technologies such as VR, Machine Learning, AI

- Provide a full SDK (Software Development Kit) for 3rd parties to develop 4D map-based applications in enterprise products

- Purpose (short-term goals)

- The project proposes to develop a technology platform to build a digital twins of the city in the form of a 4D map for the city government and state authorities to build future scenarios, make the best urban planning decisions and connect with citizens by visually sharing information

- 4D here includes a 3D digital map platform, which fully simulates objects and their information of a real-world city with connection elements of time and sensing systems

- Used as a planning tool, the digital twins combine spatial modeling of the urban environment, modeling of urban buildings based on mathematical descriptions and real-time sensory data derived from IoT, VR, AR ... devices, analyzing big data, applying artificial intelligence to support decision making....

- Objective (long-term goal) of the Study or the whole project

- To be implemented and expanded to other cities in Vietnam.

- Other relevant projects if any.

- The demo video illustrates the same project:

<https://www.smartnation.gov.sg/what-is-smart-nation/initiatives/Urban-Living/virtual-singapore>