# NITA CONSULTANT Co., Ltd.
## Development and implementation of DX promotion tools for Tourism Supply Chain to reduce natural disaster risks and strengthen resilience
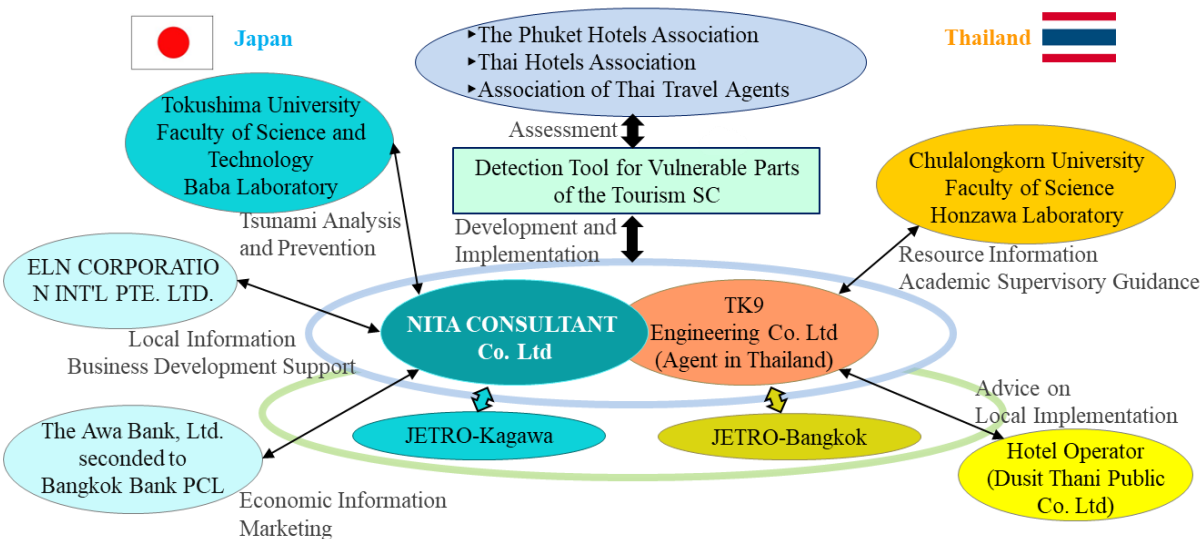
## Objective of the project

The disruption of tourism supply chain (SC) due to floods in Thailand has caused significant damage to the tourism industry. To strengthen SC against flood damage, it is important to visualize inundation risk, detect vulnerable areas, and share the information. This project develops and implements a tool to detect vulnerable areas of tourism SC by visualizing inundation risk by tsunami or heavy rainfall using scientific methods for the hotel industry in the Patong district of Phuket Province. Through these activities, we aim to promote DX and contribute to solving local issues.

## Targeted economic/social issues

Phuket has been hit hard by the Indian Ocean Tsunami (2004) and torrential rains, and the disruption of tourism SC due to such natural disasters has caused not only direct damage but also tremendous indirect damage to the tourism industry in the province.
- Direct damage: Buildings, equipment, facilities, roads, vessels
- Indirect damage: Decrease in the workforce due to employees being affected by the disaster, disruption of distribution routes, spread of false rumors such as deterioration of sanitary conditions and the spread of infectious diseases

Tourism is a key industry in Thailand, accounting for 19.7% of the GDP and 21.4% of the employment contribution. In particular, this industry is centered around Bangkok, the capital city, and beach resorts in southern Thailand, such as Phuket. However, according to local interviews, there has been no visualization using scientific methods for tsunami and other inundation risks in southern Thailand even after 2004. Reducing natural disaster risks and strengthening the resilience of the tourism industry, which is vulnerable to flooding, is an economic and social issue in Thailand. Detection of vulnerable areas through visualization of inundation risk is important to strengthen SC resilience in the event of flooding. In addition to safety for tourists, improving business continuity and reducing indirect damage caused by floods is also important in lessening the impact on the local economy, including employment stability.

## Cooperation with local companies/governments



Japan

Thailand

‣The Phuket Hotels Association
‣Thai Hotels Association
‣Association of Thai Travel Agents

Tokushima University Faculty of Science and Technology Baba Laboratory

Assessment

Detection Tool for Vulnerable Parts of the Tourism SC

Development and Implementation

Tsunami Analysis and Prevention

Chulalongkorn University Faculty of Science Honzawa Laboratory

Resource Information Academic Supervisory Guidance

ELN CORPORATION INT'L PTE. LTD.

Local Information Business Development Support

NITA CONSULTANT Co. Ltd

TK9 Engineering Co. Ltd (Agent in Thailand)

Advice on Local Implementation

The Awa Bank, Ltd. seconded to Bangkok Bank PCL

JETRO-Kagawa

JETRO-Bangkok

Hotel Operator (Dusit Thani Public Co. Ltd)

Economic Information Marketing

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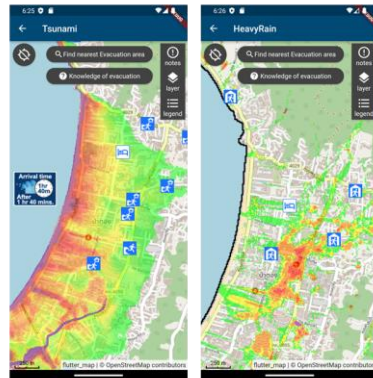## Demonstration period

September 2022 – January 2024

## Details of demonstration

We developed a system that visualized inundation risk and detected SC vulnerable areas by superimposing information on local facilities such as roads and the distribution of inundation depths in the event of tsunami inundation or heavy rain inundation on Web Geographic Information System (WebGIS) . The clarification of vulnerable areas using this system enabled efficient and effective proactive response and shared awareness among all parties concerned.

It also included information on facilities that serve as disaster response centers, such as police stations, fire departments, and local government buildings, as well as facilities important for recovery, such as hospitals.



Confirm in advance information that will protect you during a natural disaster    ★ Works offline
● Display the assumed tsunami inundation area and evacuation sites on the map.
● Display the assumed inland flooding area due to heavy rain and evacuation sites on the map.
● Display your current location on the map.

Display the shortest route from your current location to the nearest evacuation site.
Please Use for considering evacuation routes in advance.

Tap the icon for each evacuation site to display its information.

## Project outcome / Future plans

We conducted local workshops based on the developed system and obtained the following insights.

(1) Visualizing inundation risk enables each individual who has a mobile device to have an image of what would happen in the event of a disaster, leading to quick action to evacuate to a safe location and to guide tourists away from danger.

(2) The system can be used for disaster response training for employees , and by showing the training status both internally and externally, it can contribute to improving the hotel brand as a hotel that provides safety and peace of mind.

(3) The developed system has the potential for horizontal deployment to other beach areas in Phuket and coastal tourist destinations in ASEAN countries that face similar inundation risks.

By utilizing the function "Display the latest news from the hotel" to provide information on seasonal tourist attractions and limited-time events, it can be expected to contribute to attracting repeat customers (inbound customers).

In the future, we will also consider the possibility of using this disaster prevention support application for content marketing.