

Disaster Warning System in Thailand through Enterprise Engineering Perspective

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Introduction

Identify, assess and monitor disaster risks and enhance early warning has been set as one of the five priority areas of action in the Hyogo Framework for Action 2005-2015. This study is a part of our research project on disaster warning process management analysis as well as Leelawat et al. (2013).

Enterprise Engineering & DEMO

Enterprise engineering is an interdisciplinary field focusing on investigating of each aspect of the enterprise, including a business process, information flow, and organizational structure (Dietz, 2006). While most of the current modeling tools (e.g., BPMN) cannot achieve the enterprise engineering principles, *Design and Engineering Methodology for Organizations (DEMO)* (Dietz, 2006; Perinforma, 2012), an enterprise engineering and business process modeling language, has capability to demonstrate the validity of some principles (Dietz & Hoogervorst, 2012). Thus, DEMO has been selected in this study.

Data Collection

(Primary and Secondary) Data collection took place during Aug.-Dec. 2013. The face-to-face interviews with the acting Director of National Disaster Warning Center (NDWC) of Thailand and the Director of the Seismological Bureau, Thai Meteorological Department (TMD) were conducted in Sep. 2013 through the semi-structured style interviews, together with the observation.

Findings and Discussion

There are 2 main actual players in the Thai warning system as mentioned. The case has been analyzed by DEMO. According to Perinforma (2012), the *Organization Construction Diagram (OCD)* and *Transaction Product Table (TPT)* have been created to show the compact form of the system. DEMO shows its capability to express the sketch of the organization, together with some interesting issues.

First, we can understand the authority and responsibility from OCD and TPT. It can be seen that announcement decision is authorized to only NDWC (i.e., one actual warning announcer). It is a good practice because it does not create the confusion that may occur from many announcing sources.

Second, through the TPT, we can see the chain of warning message announcement, from monitoring information to seismological information. It means that the duty of declaring seismological disaster and declaring warning is separated to different actor roles which in turn increase the performance because each executor can focus on their responsibility works and increase the accuracy since the seismological information has been confirmed by the initiator.

Third, by comparing with Japanese case, it can be seen that the warning system in Japan is mainly executed by one organization (i.e., JMA) while Thai case contains 2 main organizations plus other 4 monitoring organizations regarding to the aspect of information. One reason is probably from the different government hierarchical structures which separated the expertise into each departments (in different ministries) in Thai case.

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References

- Dietz, J. L. G. (2006). *Enterprise Ontology - Theory and Methodology*. Heidelberg: Springer-Verlag.
- Dietz, J. L. G., & Hoogervorst, J. A. P. (2012). The Principles of Enterprise Engineering. In *Advances in Enterprise Engineering VI* (pp. 15-30). Heidelberg: Springer Berlin Heidelberg.
- Leelawat, N., Suppasri, A., & Imamura, F. (2013). Analyzing the essence of the disaster warning system in Japan. In *Proceedings of the Second International Education Forum on Environment and Energy Science 2013*.

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Perinforma, A. P. C. (2012). *The Essence of Organisation Version 1.2*. South Holland: Sapio.

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