

# AN APPLICATION OF CONTROL THEORY TO VISUAL MANAGEMENT FOR ORGANIZATIONAL COMMUNICATION IN CONSTRUCTION

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## 1 IDENTIFICATION OF PROBLEM

- Insufficient process transparency is one of the main reasons for process waste, quality deviations and safety non-conformances in construction.
- Lean Production frequently resorts to a range of visual communication strategies called Visual Management (VM) to increase the level of process transparency and to support continuous improvement at the workplace.
- Theoretical or empirical studies on the role of VM in team activities are scarce although VM is a fundamental part of the Lean toolbox.

## 2 PROPOSED METHODOLOGY

- As part of the theory development, a conceptual approach to VM and a number of generic requirements to VM tool design are presented by a graphical block diagram from control theory as shown in Figure 1.
- The method has been widely known in mechanical engineering, inventory management, and supply chain management.

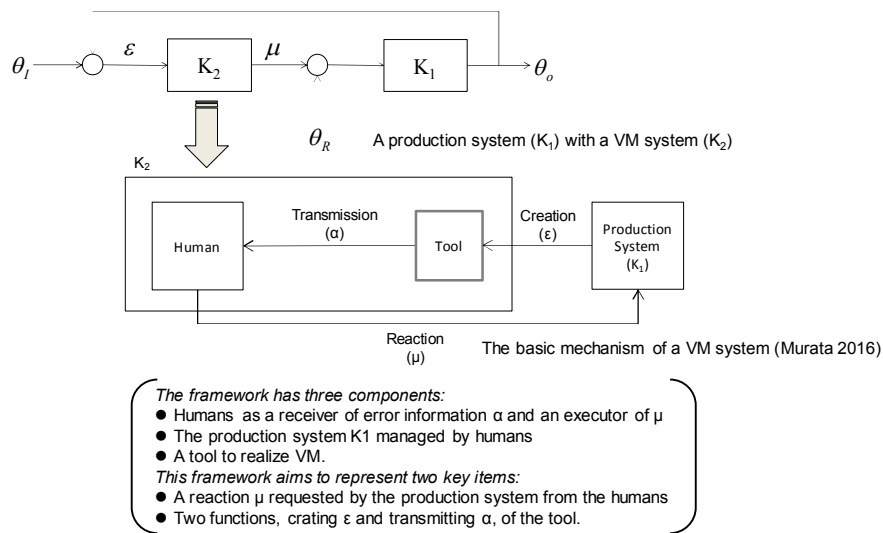


Figure 1: Analysis framework of VM system.

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### 3 CASE BACKGROUND

- The characteristics of communication in the construction industry is shown in Figure 2.
- Construction projects are executed at the same time and in different locations. Many different specialists join one project according to the plan progressing by turns. While the former causes a geographical boundary, the latter draws out a temporal boundary for communication.
- This two-boundary structure has other structures nesting inside it. Each structure involves each worksite of each project at present as shown in shows

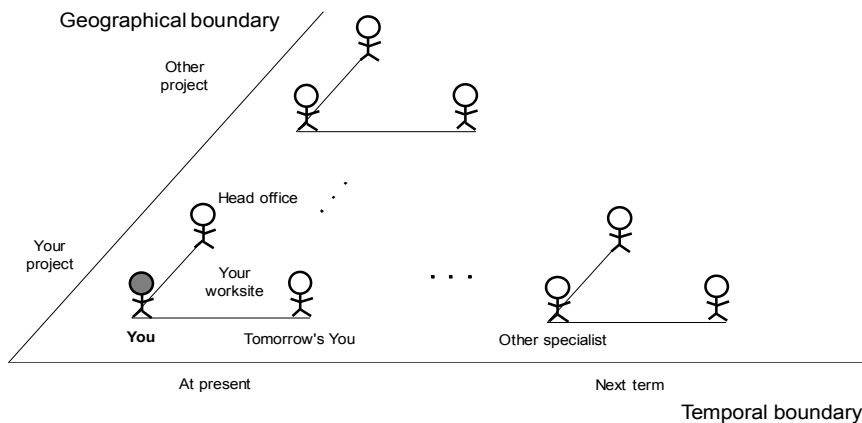


Figure 2: Nested structure model of communications in the construction industry.

### 4 RESEARCH FINDINGS

- The analysis of the two systems revealed the roles and functions of VM. The analysis demonstrates that the generic conceptual approach to VM can be used also in construction.

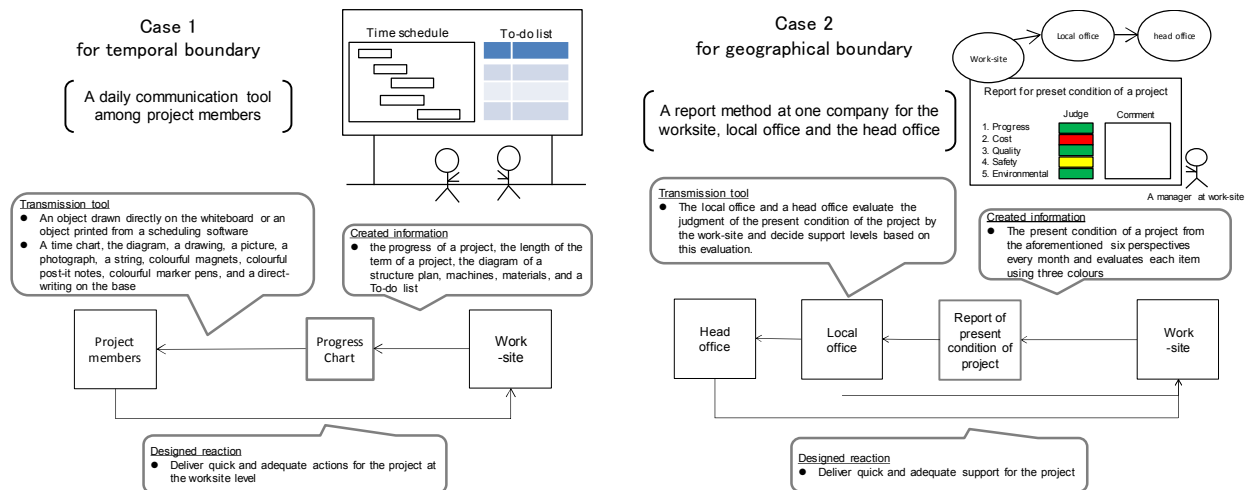


Figure 3: Analysed result of two cases by the proposed framework.

### 5 REFERENCE

Murata, K. (2016). A Case Study for Knowledge Sharing of Kaizen Activity in Construction Industry. *In Proceedings of 46th International Conference on Computers & Industrial Engineering (CIE46)*, 8 pages, Tianjin University, Tianjin, China, 29th -31th October, 2016.

