

Model-based Systems Engineering applied to an ERP system

From Business Processes to System Requirements

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Abstract. In this paper, Model-based Systems Engineering methodology has been applied to an ERP system in order to define System Requirements starting from existing Business Processes. A formal language (BPMN) has been used in order to describe very complex processes and another modeling language (SysML) has been used for the system behavior analysis and architecture design. Using “top-down” analysis, the following steps have been defined during the work, from the description of the Business Processes to the definition of the System Requirements.

1. Business Processes
2. System Context
3. Use Cases
4. System Architecture
5. Functional Analysis
6. Functional Requirements

The main target of the whole project was to upgrade the existing ERP system. Due to the high level of complexity of the processes (involving many actors, organizations and systems) it turned out to be necessary to adopt a systematic approach, using formal languages. A bridge from Business processes and System Architecture has been built.