Improved Manufacturing Visibility at SIUS AG

Degree programme: BSc in Industrial Engineering and Management Science | Specialisation: Business Engineering
Thesis advisor: Prof. Dr. Jörg Grimm
Expert: Thomas Blaser
Industrial partner: SIUS AG, Illnau-Effretikon

If a company wants to grow, product innovation is often the approach selected. But neglecting the further development of internal processes can lead to major inefficiencies and coordination problems in the mid-term to long-term since operational transparency is the foundation for good decision making. This thesis addresses the current transparency in the operations of a Swiss SME and develops a concept for an automated operating data acquisition system.

Introduction and Objectives

SIUS AG is the world's leading manufacturer of electronic target systems for the shooting sport industry. The Swiss based company managed to conquer a global niche market through continuous, pioneering product innovations. But as many organically grown family SMEs with a strong focus on product innovation, the management of the internal business processes and their continuous improvement was second priority for the company.

A previous project revealed fields for internal processes improvements. The bottom line of the analysis was that a lack of clearly defined and documented business processes, vague operational transparency, and ineffective communication between the parties involved are major challenges for the company. Especially, the exclusively manual and rather weakly structured data collection in the company's self-developed ERP system accounts for many inefficiencies.

The objective of this thesis is to develop a concept for an operating data acquisition (ODA) system based on barcode technology. The aim is to improve the operational transparency within the company by improving the acquisition of the operating data. The system shall ease the data entry, more reliable, and prompt, while integrating seamlessly into the existing workflows.

Research Design

The thesis uses a qualitative research approach. First, previously developed end-to-end process models of the core activities at SIUS were analyzed and by means of interviews with individual employees, transparency gaps were identified. Second, the stakeholders of an ODA system and their goals were identified. Through several potential use cases, the specific requirements for the system were developed and documented. The thesis concludes with a concept for an overall to-be process model and recommendations regarding its implementation.

Results

Nine different use cases across four departments were elaborated and, where appropriate, complemented with corresponding BPMN models for increased understanding. The automated posting of ERP accounting records lies at the core of the concept for an ODA system. The use of personal handheld barcode scanners is intended to provide employees with a tool to record production activities in real time, efficiently and safely. The thesis presents a detailed scheme for the use of an ODA system which can be applied as a basis to all production processes within the company. Together with the process, system and infrastructure requirements, all the foundations are laid which are necessary for the introduction of the system.

Implications and Recommendations

The development and implementation of the conceptualized automated ODA system is strongly advised. Such an automated system does not only have the potential to significantly simplify the process of posting in the ERP system, but also makes it more reliable. Additional benefits would be: increased operational transparency through near real-time data acquisition, clearer responsibilities, and reduced risk of information loss in case employees are absent. In summary, thanks to the implementation of an ODA system, business continuity can be improved and the company can be made more agile, robust and efficient.

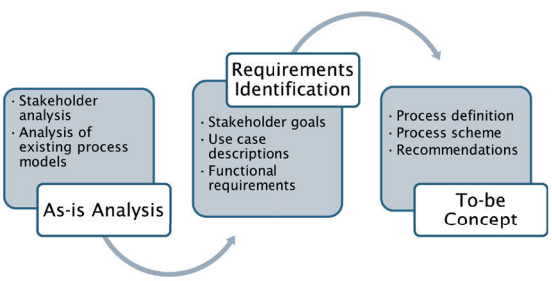
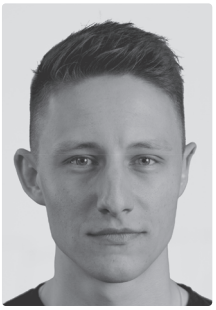


Figure 1: Research Design Concept



Christoph Dürr
chduerr@bluewin.ch