

CASE STUDY OF HIGH LEVEL PROCESS MAP IN AUTOMOTIVE INDUSTRY

Cristina-Mihaela FLEACĂ*, **Radu-Marian BUJDOIU**

*Specialization: Quality Engineering, Faculty of Industrial Engineering and Robotics,
National University of Science and Technology POLITEHNICA, Bucharest, Romania*

*Corresponding author: Cristina-Mihaela Fleacă, cristina.fleaca@stud.fiir.upb.ro

Scientific coordinator: **Aurelia LITVIN**, Professor, Dr. hab., UTM

Abstract. *In today's business environment, all companies strive to boost efficiency and productivity to save costs and time in their activities. Recognizing this necessity, it's crucial to have tools that assist management in making informed decisions and implementing actions to improve overall organizational performance and efficiency. Process mapping is one such tool that provides a clear understanding of company processes, enabling streamlined and effective workflows. The objective of this paper is to tackle a macro-level process mapping, specifically targeting the automotive industry and delving into various categories of processes within organizations. To enable a concrete application of process mapping methodology, the case study examines established practices within well-known companies in the automotive sector. Analysing and structuring the main processes of an organization through a process map lays the foundation for subsequent action plans to be implemented by the company's management. This process maps not only enhances decision-making capabilities but also identifies areas requiring improvement, fostering better communication between processes within the organization.*

Keywords: *organizational management, process map, organization's improvement.*

Introduction

Both for the internal environment of the organization, as well as for effective communication with its stakeholders, process mapping by the companies is one of the most effective activities that provide a qualitative tool that assists its managers and members. That is the reason why a macro flowchart or a high-level process map should be used to communicate or understand the big-picture view of the major steps of a process [1].

In this paper, a process map for a process from the automotive industry has been chosen to create such to highlight the help that this can offer through visual notation, such as the boxes, and the arrows between them giving the direction of the flow of the process; all of which provide clarity for how a process should be carried out.

General considerations

As management practices have continuously evolved over the years, it has been concluded that process maps are much more effective and useful tools, both within the company and for its clients and suppliers [4]. As it has been demonstrated, thanks to the visual notation, process maps are cognitively efficient tools [6] for understanding the process compared to their narrative descriptions [4].

There are two broad guidelines for notations and symbols when it comes to processing maps. Therefore, the international standard ISO 5807:1985 confers symbols for documentation of processes and conventions for different types of charts. The other one refers to the guideline BPMN (Business Process Model and Notation) developed by the Object Management Group (OMG), which offers standardized graphic notations for business processes.

Also, in specialized literature, there are two ways of reporting such as process maps and flowcharts. And, for this reason, some authors made a difference between a flowchart and a process

map that can be represented through a flowchart with some additional "process-related information" [4] such as an SIPOC diagram. While others considered the simple flow of processes a high-level process map [7]. Regardless of the inherent positioning, process mapping is an independent procedure, while a flowchart serves as a tool utilized within this [4].

Case study

In this paper, a high-level process map has been performed through a macro flowchart, but also through the SIPOC diagram and the case study addressed the automotive industry and its processes. Below are presented the steps to create a process map and subsequently the processes chosen for approach within the organizations in the automotive industry.

To create a process map, it should be followed some basic steps, such as those listed below:

1. Determine the process which will be mapped. This means that it should be determined the boundaries of the process [4] and this is achieved by answering the questions: *Where or when does the process start and finish?* [1], *What are the inputs/ outputs of the process?* *What is the context of the process?* [7];
2. Collect information that is relevant to the process and its activities. Team brainstorming, interviews of experts, and a workshop approach may be used to better understand the process [7]. At this point, the order of activities is not important, although sequential thinking may help members remember all the steps and it is also important that all the members involved with the process be interviewed [1];
3. Build the process by arranging the activities in a specific order;
4. When all the steps and activities are collected, the flow of the process can be created by drawing the direction arrows or it can be created a cross-functional flowchart or a SIPOC process map. Here are multiple types of representing a process map;
5. The final step is reviewing the process flow, verifying the completeness and appropriateness, involving all the members (supervisors, workers, customers etc.) that work with the process to see if they agree with the final form of the map [1].

It is also important to consider the recommendation to limit the activities of a process to six or eight steps otherwise can become a much-detailed flowchart for a macro view [1]. Another tip is represented by using nouns in the flowchart, rather than verbs because verbs tend to introduce excessive detailed thinking [1].

Having the stages of the mapping process explained above, the case study of the present paper focused on a single operational process.

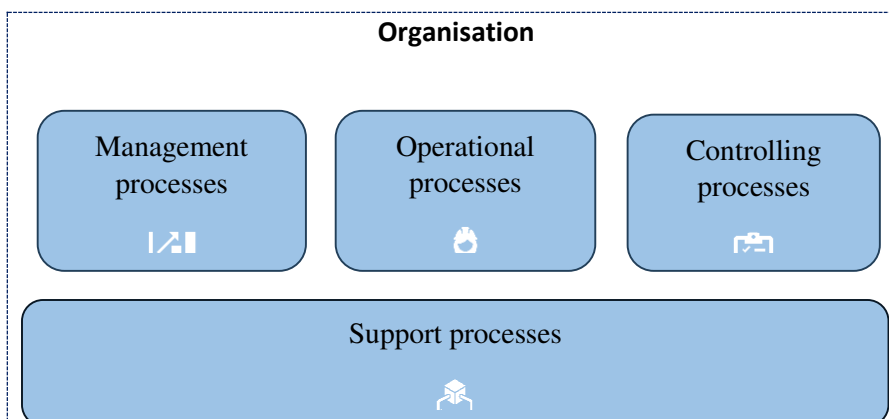


Figure 1. The four major types of processes through an organization

As scientific literature said, it is known that in organizations exist four major types of processes [2] that are represented in Fig. 1 and provided below:

1. Management processes;
2. Operational processes;

3. Support processes;
4. Controlling processes.

To create a high-level process map, an operational process was chosen from the above categories, namely the manufacturing process of cars composed of the subprocesses presented through a flowchart in Fig. 2. The high-level map of the manufacturing process is presented in Fig. 3, where we can see the flow of its activities, as well as the characteristic elements of the SIPOC diagram.

Manufacturing cars



Figure 2. The flowchart of the manufacturing process [3]

To create a high-level process map, additional information (such as Suppliers, Inputs, activities of the Process, Outputs, and Customers) was added to the flowchart from Fig. 2, through the SIPOC method, as can be seen in Fig. 3. This will add better improvement in understanding the process.

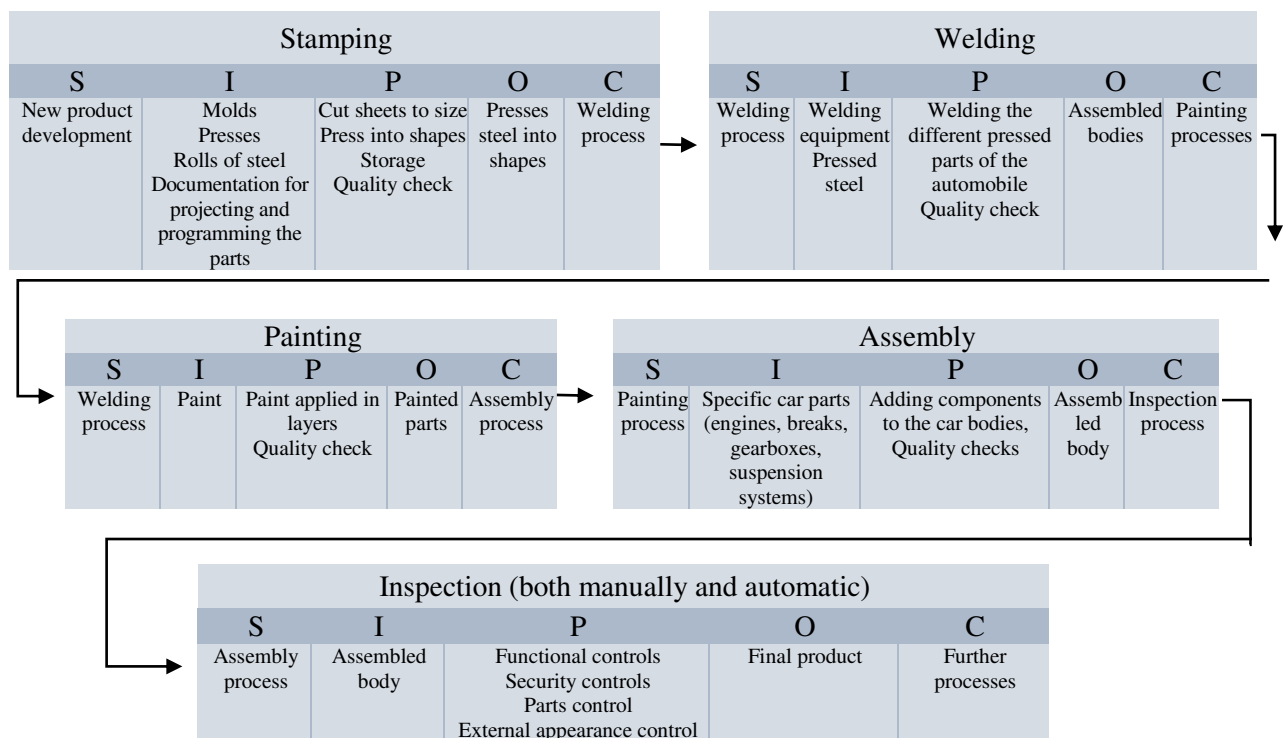


Figure 3. High-level process map of the manufacturing process, adapted after [5]

Conclusions

In this paper, the valuable implications of process maps for managers and employees have been pointed out as well as the valuable help that this tool may bring to an organization. By performing a process map, both through a flowchart and a SIPOC method, it has been shown that any company can choose its proper way of defining process maps for its success. Also, by following the procedure of process mapping, the confidence in an exhaustive analysis of the processes has been increasing, especially by involving in the analysis all members who are related to the process because they can bring to the table information that might otherwise escape.

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