Process Decomposition of a Business

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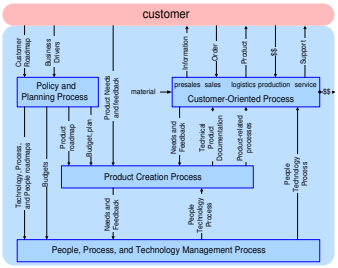

Gerrit Muller
Embedded Systems Institute
Den Dolech 2 (Laplace Building 0.10) P.O. Box 513, 5600 MB Eindhoven The Netherlands
gerrit.muller@embeddedsystems.nl

Abstract

This article positions the system architecture process in a wider business scope. This positioning is intended to help understanding the processes in which the system architect (or team of system architects) is involved.
It focuses on an organization that creates and builds systems consisting of hardware and software. Although other product areas such as solution providers, services, courseware, et cetera also need system architects, the process structure will deviate from the structure as presented here.

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1 Introduction

This chapter positions the system architecting process in a wider business scope. The objective of this chapter is to provide system architects insight in the business processes and especially in the processes where system architects actively contribute.

The focus is on companies that create physical products. Other types of businesses, such as solution providers, services, courseware, also need systems architecting. The process structure will deviate somewhat from the structure presented here. See Intermezzo "Products, Projects, and Services" for a discussion on the processes in these other businesses.

2 Process Decomposition

The business process can be decomposed in 4 main processes as shown in Figure 1. We have on purpose ignored the supporting and connecting processes. This simplification will allow us to get a number of more fundamental insights in the main processes.

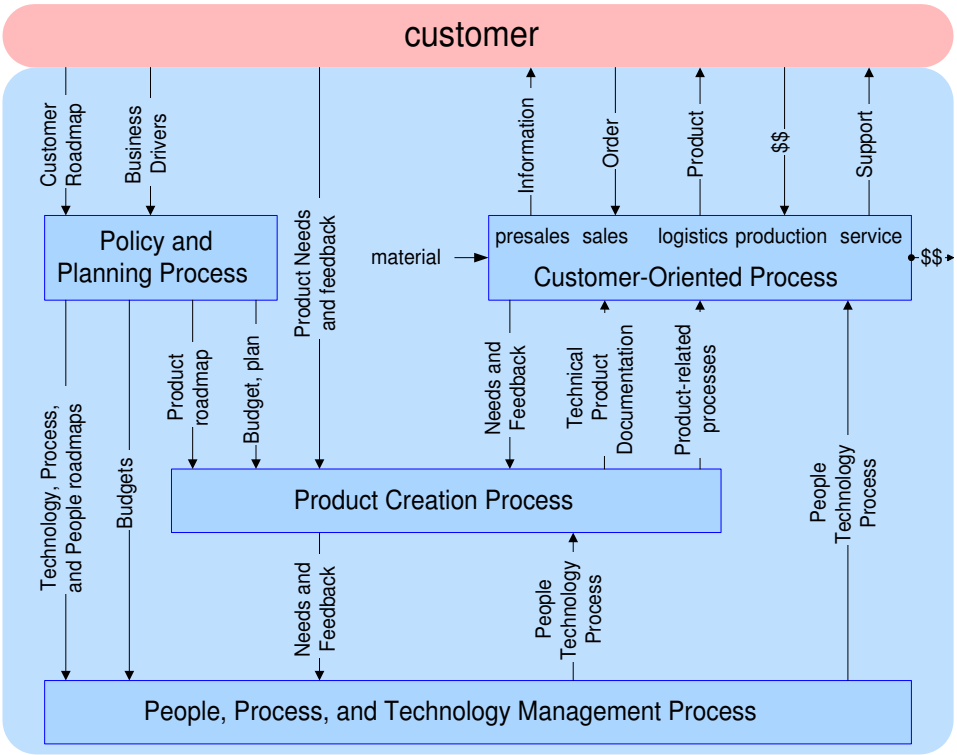

Figure 1: Simplified decomposition of the business in 4 main processes

The function of the 4 main processes is:

Customer Oriented Process performs in repetitive mode all direct interaction with the customer. This process is the cash flow generating part of the enterprise. All other processes only spend money.

Product Creation Process feeds the Customer Oriented Process with new products. This process ensures the continuity of the enterprise by creating products that keep the company competitive. In this way the Product Creation Process enables the Customer Oriented Process to generate cash flow in the near future as well.

People, Process, and Technology Management Process manages the competencies of the employees and the company as a whole. The competencies of the employees and the company are the main assets of a company.

Policy and Planning Process is the management process. The Policy and Planning Process defines the strategy, the long term direction of the company, and it balances the shorter term tensions between the three other main processes. The Policy and Planning Process uses roadmaps and budgets to define the direction for the other processes. Roadmaps give direction to the Product Creation Process and the People, Process and Technology Management Process. For the medium term these roadmaps are transformed in budgets and plans, which are committal for all stakeholders.

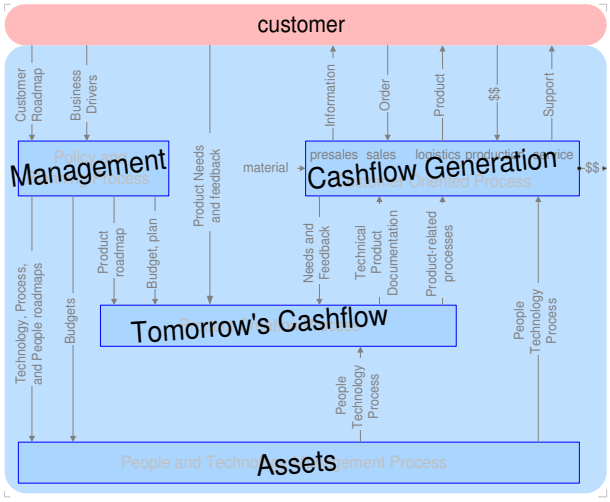

Figure 2: Decomposition of the business in 4 main processes, characterized by their financial meaning

The 4 processes as described here are different in nature. The Customer oriented process executes over and over a well defined set of activities. The system architect

does not participate in active role in this process. However since the Customer Oriented Process is the main customer of the Product Creation Process, it is crucial that the system architect understands, or better has experienced, the Customer Oriented Process.

The system architect is in continuous interaction with many stakeholders, mostly about technical aspects. From this perspective the architect will generate inputs for the People and Technology Management Process. This might even result in participation in this process for instance by coaching, participation in the appraisal process, or participation in technology studies.

The number of instances of each process is related to different entities:

Customer Oriented Process: Depends on geography, customer base, and supply chain.

Product Creation Process: One per entity to be developed, where such an entity can be a product family, a product, or a subsystem.

People and Technology Management Process: One per "competence", where a competence is a cohesive set of technologies and methods.

Policy and Planning Process: One per business. This is the pro-active integrating process.

The evolutionary developments of product variants and new releases are seen as individual instances of the Product Creation Process. For example the development of a single new feature for an existing product is performed by following the entire Product Creation Process. Of course some steps in the process will be (nearly) empty, which does not cause any harm.

3 Process versus Organization

This process decomposition is not an organization, see Intermezzo "What is a Process". A single person can (and often will) fulfill several roles in different processes.

System architects specifically spend most of their time in Product Creation Process (circa. 75%), a considerable amount of time in the Policy and Planning Process (circa 20%), and a small fraction of their time in the People, Process and Technology Management Process.

Most engineers will spend a small amount of time in the People, Process, and Technology Management Process, working on technologies and capabilities, while the majority of their time is spend in the Product Creation Process.

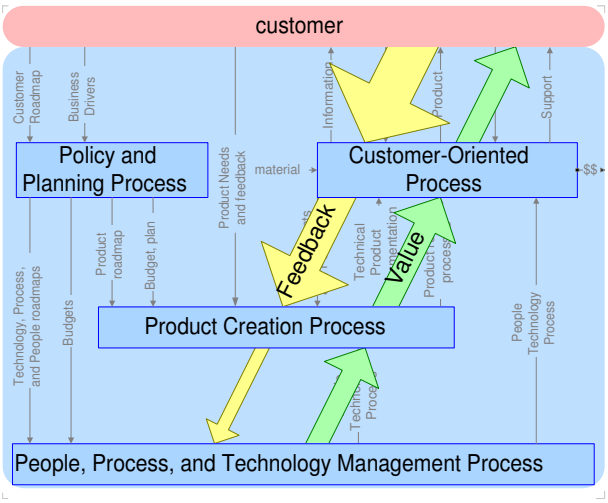

Figure 3: The value chain and the feedback flow in opposite direction

4 Value Chain and Feedback

The value chain in these processes starts at the assets in the People, Process, and Technology Management Process. The assets are transformed into potential money by the Product Creation Process. The Customer Oriented Process finally turns it into real money. Figure 3 shows the value chain.

The feedback flows in the opposite direction, from customer via the Customer Oriented Process and the Product Creation Process to the People Technology and Process Management Process. Customer will communicate mostly with sales and service people. Needs and complaints are filtered by the reporting system before the information reaches Product Creation Teams. Only a small part of the customer feedback reaches the People, Process, and Technology management.

This simple model explains why the knowledge about the customer gets less deeper in the organization. The consequence is that internal technology and process provides show to little concern for urgent customer or business challenges; the sense of urgency seems to be lacking. We can take preventive measures, such as sending process and technology managers to customer sites, once we are aware of the gap caused by this natural information flow.

5 Decomposition of the Customer Oriented Process

The Customer Oriented Process is often the largest process in terms of money. From business point of view it is an oversimplification to model this as one monolithic process. Figure 4 shows a further decomposition of this process.

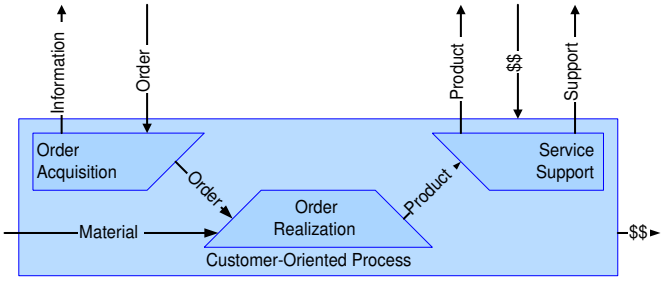

Figure 4: Decomposition of the Customer Oriented Process

The Order Acquisition Process and the Service Support Process are operating quite close to the customer. The Order Realization Process is already somewhat distant from the customer.

The owners of all these three processes are stakeholders of the Product Creation Process. Note that these owners have different interests and different characteristics.

6 Extended Process Decomposition; Generic Developments

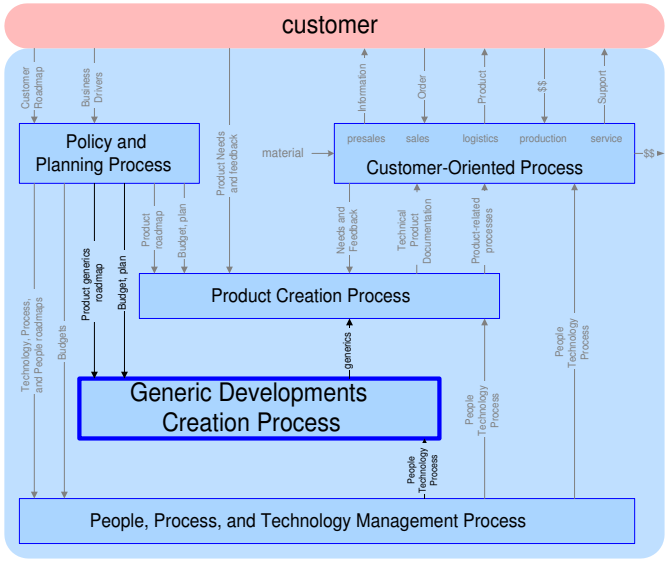

Figure 5: The Process Decomposition extended with a generic developments creation process

Companies which develop product families try to capitalize on the common-

ality between the members of the product family. This is often implemented by the development of common subsystems or functions. In the diagram 5 this is called **Generic Developments Creation Process**. A wide variety of names is used for this phenomena, such as re-use, standard design, platform et cetera.

7 Acknowledgements

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Discussion with Ab Pasman helped to remove some architect bias from the process decomposition, by providing a further decomposition of the Customer Oriented Process.

Jaap van der Heijden helped to improve the layout of the diagrams and with the document structure.

References

[1] Gerrit Muller. The system architecture homepage. `http://www.gaudisite.nl/index.html`, 1999.

History

Version: 1.1, date: June 14, 2010 changed by: Gerrit Muller

- textual improvements
- status changed to concept

Version: 1.0, date: June 14, 2005 changed by: Gerrit Muller

- Added color to figures
- some visualization improvements
- figures according to naming convention

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- minor changes only

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- abstract added

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- Generic **Something** Creation Process changed in Generic **Developments** Creation Process

Version: 0, date: February 24 2000 changed by: Gerrit Muller

- Created by taking the relevant sections of the article "Positioning the System Architecture Process" and adding more Process specific information to it.