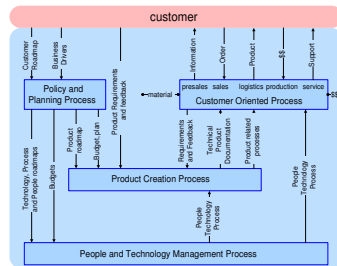


Process Decomposition of a Business



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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

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2 Process Decomposition

The business process for an organization which creates and builds systems consisting of hardware and software is decomposed in 4 main processes as shown in figure 1.

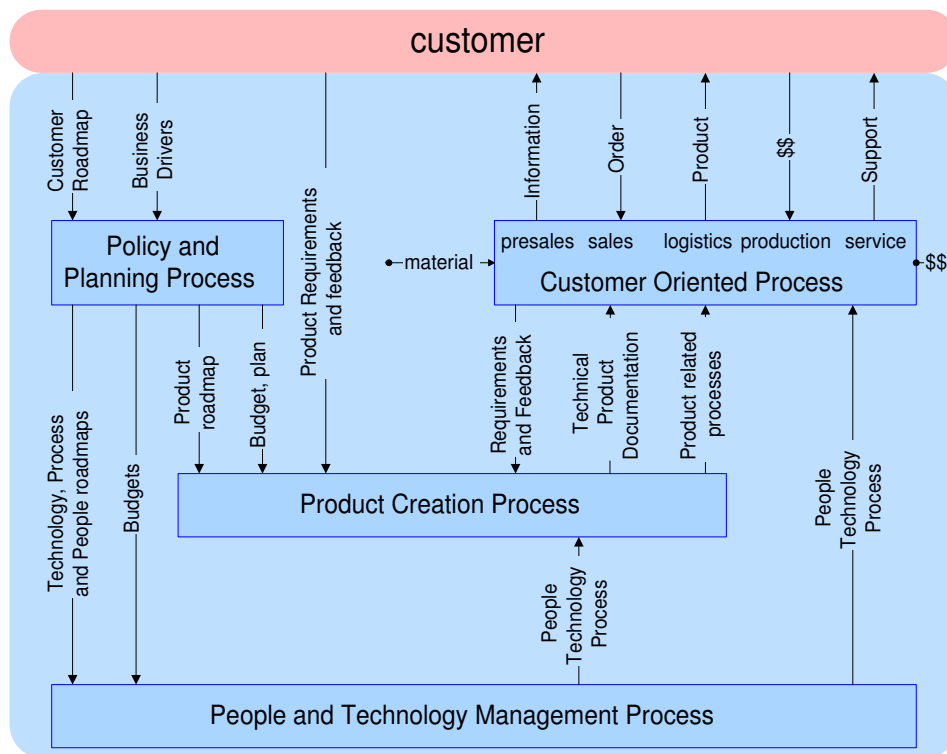


Figure 1: Simplified decomposition of the business in 4 main processes

The decomposition in 4 main processes leaves out all connecting supporting and other processes. The function of the 4 main processes is:

Customer Oriented Process This process performs in repetitive mode all direct

interaction with the customer. This primary process is the cashflow generating part of the enterprise. All other processes only spend money.

Product Creation Process This Process feeds the Customer Oriented Process with new products. This process ensures the continuity of the enterprise by creating products which enables the primary process to generate cashflow tomorrow as well.

People and Technology Management Process Here the main assets of the company are managed: the know how and skills residing in people.

Policy and Planning Process This process is future oriented, not constrained by short term goals, it is defining the future direction of the company by means of roadmaps. These roadmaps give direction to the Product Creation Process and the People and Technology Management Process. For the medium term these roadmaps are transformed in budgets and plans, which are committal for all stakeholders.

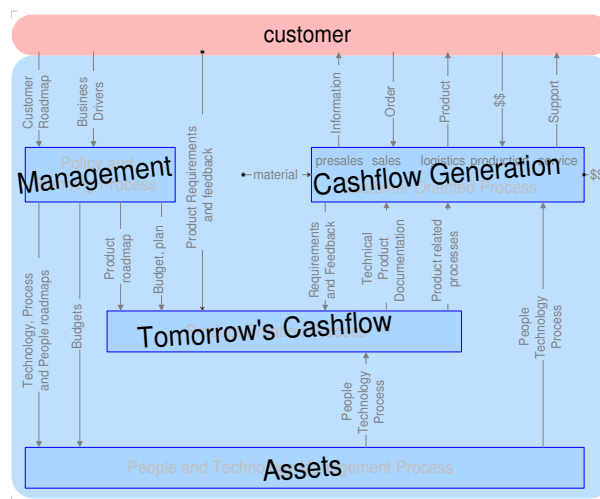


Figure 2: Decomposition of the business in 4 main processes, characterized by their financial meaning

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 imminent that the system architect understands, or better has experienced, the Customer Oriented Process.

In different scopes than the limited scope of organizations which create and builds systems consisting of hardware and software, for instance in solution oriented

businesses, the architecture function can be even closer to the customer. This function can be fulfilled by the system architect or by more specialized architects, for instance a solution architect.

The system architect is in continuous interaction with many people, mostly about technical aspects. From this perspective he 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 split up of the Policy and Planning Process from the Product Creation Process gives the Product Creation Process a clear focus: the entity to be developed.

In this decomposition the evolutionary development 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 [2]. A single person can (and often will) fulfill several roles in different processes.

The system architect specifically will spend most of his time in the product creation (circa. 75%), a considerable amount of time in the policy and planning process (circa 20%) and a small fraction of his time in the people and technology management.

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.

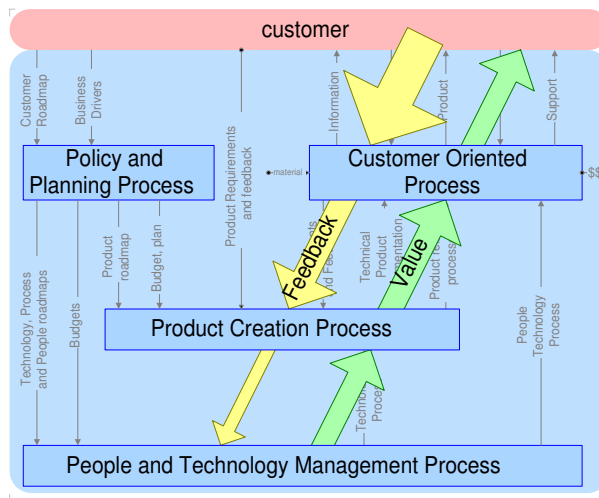


Figure 3: The value chain and the opposite feedback flow

4 Value Chain and Feedback

The value chain in these processes starts at the People and Technology Management Process, the assets, which is turned 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.

5 Decomposition of the Customer Oriented Process

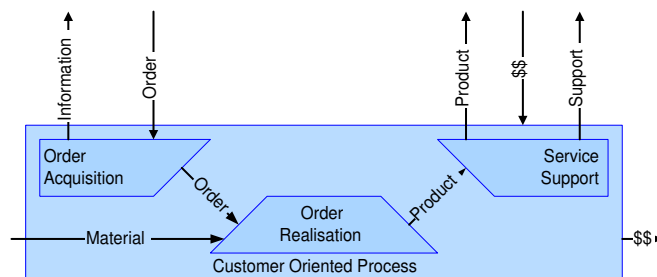


Figure 4: Decomposition of the Customer Oriented Process

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.

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

6 Extended Process Decomposition; Generic Developments

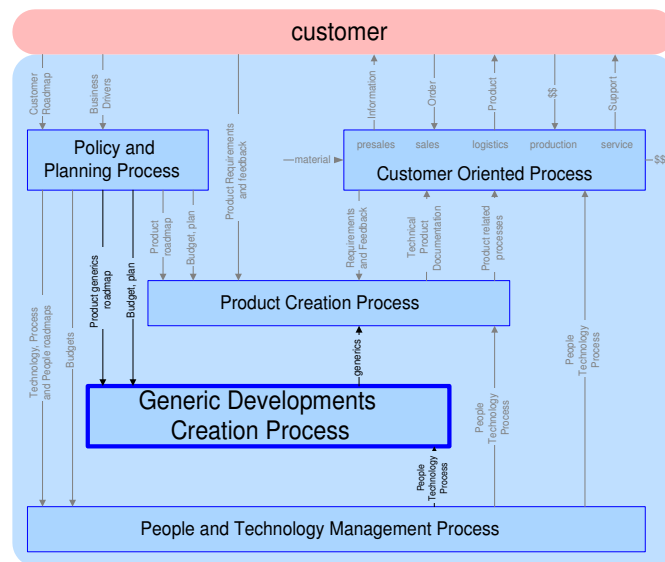


Figure 5: The Process Decomposition extended with a generic developments creation process

Companies which develop product families try to capitalize on the commonality 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

Discussions with and critical comments from Rard de Leeuw, Jürgen Müller, Henk Obbink, Ben Pronk and Jan Stadius Muller helped to shape, to improve the structure

and to sharpen the contents of the article "Positioning the System Architecture Process". This intermezzo is based on the first sections of this article. I am grateful for their contribution.

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.
- [2] Gerrit Muller. What is a process? <http://www.gaudisite.nl/WhatIsAProcessPaper.pdf>, 2000.

History

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

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

Version: 0.3, date: April 9 2002 changed by: Gerrit Muller

- minor changes only

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- abstract added

Version: 0.1, date: March 7 2000 changed by: Gerrit Muller

- 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.