

5 Streamlining the Product and the Processes

This chapter adds a little to the three standard process-performance parameters (lead-time, cost, quality) and takes a look at component-related processes, their interplay with the product and their contribution to “added value”. We move into component categories and how components affect the product and the enterprise at various levels of corporate component-maturity.

We provide examples from the manufacturing and software industries, with some highlighting of the automotive industry where component strategy is relatively mature. Towards the end, driving forces of modularity in business are listed and the relationship of configurators and dynamic product structures is demonstrated in a very simple yet revealing calculation exercise.

5.1 A Targeted Process Thinking

Accomplishing more by less takes a significant initial effort and a continued push, simply because there’s no way of accomplishing everything by doing nothing. As we move further into automation, we keep discovering new issues and tasks to be tackled. Mass Customization implies a large portion of focused, down-to-earth process orientation. Development effort with products, production, and business processes, is targeted at a new common objective beyond the usual, standard process parameters (lead-time, cost, quality). This new common objective is *flexibility and customization* – cost-effective, yet ranging from the initial customer acquisition activities all the way to internal fulfillment processes and after-sales. Systematically challenging all unnecessary activities and delays is included (as in all process re-orientation); nevertheless, the point and focus *in this new approach* is flexibility and customization. The business case study in supplement S1 for Air Products and Chemicals Inc. highlights the need for process re-evaluation as a core part of a mass-customization strategy; Air Products used “Value Engineering” as an enabling methodology. As a side-effect, a consequent acceleration in automation and process-redesign usually boosts the standard process parameters as well; that is to say, Mass Customization brings about a con-

stant innovation push. While the bottom line may appear similar to a superficial industry analysis based on the standard process parameters, there is a clear difference in the starting-point, in the objective, and in the path of thinking throughout the company.

Mass Customization is both cross-functional *and* inter-process, requiring a smooth interplay of *most* roles in the organization. The first “product” the customer actually sees is a proposal, bid or quotation presented either through a web-site or directly by a salesperson. It is every bit as important to *mass customize* these offer documents as it is to mass customize the product itself, ensuring that both the external customers and internal fulfillment planners benefit from *complete, accurate and detailed bids*.

Similarly, after delivery/deployment, the “product” in the customer’s eyes transforms from initial purchase into ongoing after sales services. Modular components can themselves extend product life-cycles and lead to increased customer loyalty. Although the implications and benefits of *modular* customized products for *after sales* are most often ignored, they are nonetheless crucial in the field of *complex* products.

From both the *initial-bid* and the *after-sales* perspectives, there’s a remarkable gap between the front runners and the mainstream organizations in many sectors of industry. It takes component maturity, IT maturity and an enterprising spirit to realize that components (and configurators) are no longer limited to the narrow production-planning issues they were a decade ago.

Market-related processes respond to tangible customer requirements, to ensure that the right product variety is provided to the right customer. *Component-related processes* run continuously and respond to a broader spectrum of requirements from both internal and external stakeholders. Component-related processes, in conjunction with knowledge management, act to provide all other business processes with a palette of “shared” generic components and associated business tools such as configurators and PDM. The interplay between component-related processes and market-related processes parallels sowing (i.e. requests for new components) and harvesting (i.e. satisfying market requirements by picking pre-designed components for reuse)¹.

¹ Detail on how to apply this thinking to software products can be found in (Mc Gibbon et al., 2003) or (Allen and Frost, 1998).