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## 4.2. Tackling the First Process of the Trilogy: Designing Innovative Products

An organization's ability to satisfy its customers depends on the robustness of the design processes because the goods you sell and the services you offer originate there.

The design process is the first of the three elements of the Juran Trilogy. It is one of the three basic functions by which management ensures the survival of the organization. The design process enables innovation to happen by designing products (goods, services, or information) together with the processes—including controls—to produce the final outputs. When design is complete, the other two elements—control and improvement—kick in to continuously improve upon the design as customer needs and technology change.

This handbook addresses two versions of the design process. In this chapter, we will discuss the first version, Juran's universal Quality by Design model. It has been in place since 1986 and provides a structure that can be incorporated into an organization's new product development function, or it can be used independently to be carried out project by project as needed.

The second version, Design for Six Sigma (DFSS), which is referred to by the steps in the process DMADV (define, measure, analyze, design, and verify), is the most recent adaption to Juran's model. It builds upon the Six Sigma Improvement or DMAIC (define, measure, analyze, improve, and control) methodology to improve performance. DMADV was first introduced by GE. It uses elements of the Juran model and incorporates many of the statistical tools common to improvement. DFSS is covered in detail in [Chap. 17](#), Continuous Innovation Using Design for Six Sigma.

The Juran model is especially useful for designing products and redesigning processes simply and economically. The authors have witnessed the design of superb products, processes, and services using this model.

Examples include a prize-winning safety program for a multiple-plant manufacturer; an information system that enables both sales and manufacturing to track the procession of an order throughout the entire order fulfillment process so customers can be informed—on a daily basis—of the exact status of their order; and a redesigned accounts receivable system much faster and more efficient than its predecessor.

The DFSS model is the classic model enhanced by the addition of computers and statistical software packages, which permit the utilization of numerous design tools not easily used without a computer. The Six Sigma model is suitable for designing even complex products and for achieving extraordinary levels of quality. Although it is time consuming and expensive in the short term, when executed properly, it produces a healthy return on investment.