TRANSACTIONS FROM
THE SYMPOSIUM ON
QUALITY FUNCTION DEPLOYMENT

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Medical Device 2011

The QFD Process at Medtronic — Creating the Next Generation of Insulin Pumps and Sensors

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Changes in technology and customer expectations are creating many new opportunities for medical device organizations. As the oldest and most respected diabetic medical device organization in the world, Medtronic MiniMed strives to stay ahead of the competition by quickly responding to these changes with new and improved insulin pumps and continuous glucose monitoring products. Recently, we have began using QFD to discover the unspoken customer needs for targeted portions of our population. QFD has allowed us to convert their needs into new products, services, and features to delight and attract new customers as well as retain current customers. This paper will describe some of the new opportunities we are facing, and show step by step how we are addressing them by understanding the Voice of the Customer and innovating and implementing exciting solutions.

Keywords: Voice of the customer, QFD, cross-functional teams, design, prioritization, AHP, segments, medical device QFD

IT Architecture / IT Service Management 2011

Applying QFD Process, Tools and Techniques for Service Management: Business and IT Service Management (BSM & ITSM)

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Quality Function Deployment and the House of Quality (HoQ) are tools that have relevance for field of IT management, particularly architecture management (including requirements management) and IT service management (including service quality management). This paper provides a detailed method to use QFD and HoQ in the 1) Requirements Management Process; 2) Architecture Development Management Process; as well as 3) Service Management Processes such as: Availability Management, Continuity Management, and Incident Management, among others.

This paper focuses on the use of QFD and HoQ and their applications for enterprise architecture domains and IT service management domains. Specific examples of applications of QFD for IT enabled business services (such as CRM services) and IT services (such as messaging services) will be discussed.

Keywords: Service Management, Six Sigma, QFD, Architecture Management, Requirements Management

Design for Six Sigma (DFSS) 2011

Using QFD to Organize Design for Six Sigma

Benson Tendler, VP, First Solar (formerly VP Quality at Research In Motion, Canada); Gregory Watson, Business Excellence Solutions, Ltd., Finland; and Camille DeYong, Associate Professor, Oklahoma State University, USA

DFSS tools require organization using Product Line Management methods. QFD provides a means to sequentially develop market features into engineering functions that are specified by quantitative requirements which are testable. Understanding the Voice of the Customer and using the Kano Model to characterize engineering functions that are integrated with QFD can help to provide creative insights. This paper illustrates how to develop and deploy this approach to DFSS using QFD as an organization method and using the Kano Model to focus on the transition of market features into engineering functions.

Keywords: Design for Six Sigma (DFSS), Kano model, Voice of the customer (VoC)

Healthcare Service Development 2011

Using QFD to Design a Multi-Disciplinary Clinic

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Pediatric patients and families have become discriminating shoppers for healthcare. Hospitals must improve quality and attract and retain patients. This paper proposes Quality Function Deployment (QFD)as a way to ensure focus on the vital few requirements, creating a structured planning and decision making methodology for capturing and translating stakeholder requirements into useful clinic language for the building of the Virtual Clinic. The QFD tools used include Customer Segments Table, Customer Process Model, Customer Voice Table, Gemba Visit Table, Customer Needs Hierarchy Diagram, Analytical Hierarchy Process, Customer Needs Hierarchy Diagram With AHP Priorities.

Keywords: AHP, Multi-Disciplinary Clinic, Patient and Family Centered Care, Virtual Clinic, VOB, VOC

Corporate Governance / Policy Development 2011

QFD Applications for the Board of Directors

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QFD is not just a methodology that is useful for engineering or marketing — it is also helpful for organizing the design and development of policy by the Board of Directors. The International Academy for Quality (IAQ) has been developing the concept of "governance quality" over the past 15 years. Recently, IAQ has published an assessment methodology for Boards of Directors to apply in assessing their level of maturity in application of quality in the practices of their activities. This paper and presentation will extend this work by developing infrastructure for the leadership initiatives of a Board in the encouragement of continuous improvement of the organization from their level of executive oversight. The methodology for developing a strategic approach to quality definition and deployment will be the "Voice of the Customer" as developed using QFD.

Systems Engineering / Complex Systems 2011

Systems Engineering (SE) and Quality Function Deployment (QFD): A SE Perspective on Opportunities for Complementary Application in the Development of Complex Systems

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Basic principles of SE are described with emphasis on the SE process and the challenges associated with development of highly complex systems. SE and QFD are top-down, structured, disciplined and tailorable problem-solving processes for identifying customer-focused system solutions, and both processes typically start with an effort to fully understand customer needs. SE can be generally characterized as a functional architecture-based analysis approach to embed quality requirements into the system, and QFD can be generally characterized as a physical architecture-based analysis approach to embed quality functions into business processes. The different perspectives offer potential for complementary application to improve complex system development. Opportunities for complementary application of SE and QFD in the areas of problem understanding, requirements engineering, quality management, cross-functional teamwork, communication, risk management, value engineering, verification and validation, and integrated life-cycle engineering are summarized. The relationship between SE and QFD is illustrated in some cases using figures and diagrams generally accepted to represent best practices. A generalized method for estimation of system complexity early in SE and QFD process is described and a research framework for retrospective analysis of Department of Defense (DoD) Major Defense Acquisition Programs (MDAPs) and commercial engineering projects is discussed. Hypotheses of the relationship between system complexity, design effort, design review, requirements stability, and program success are suggested to gain further insight into the correlation between SE and QFD (comprehensive, 4-phase model, SE+QFD) design effort and successful development of complex systems.

Dynamic Capability and Kano Model 2011

Applying Dynamic Capability Theory to Understand the Kano Model for Attractive Quality

Ali Masoudi, PostTech, South Korea; Gregory H. Watson, Chairman, IAQ; Camille De Yong, Assistant Professor, Oklahoma State University, USA; Benson Tendler, VP, First Solar / RIM (ret.), USA

The concept of Dynamic Capability was proposed by David J. Teece as a means to explain certain phenomena regarding innovation in new product development. The Theory of Attractive Quality developed by Noriaki Kano explains the relationship between functional design capability and customer satisfaction for three functional quality conditions. This paper links these two concepts. A proposed scalar relationship between the Kano functions will be proposed based on the degree of capability or incapability based on the Teece concept of Dynamic capability as a means to better explain the erosion of quality functions over time.