



Chapter XI

An Optimization Model for Telecommunication Systems

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The Optimization Model for Telecommunication Systems (OMTS) is designed and developed to optimize System Designers and Developers (SD&D) efforts in the Telecommunication Industry (TI). Using the life-cycle process, OMTS continuously evaluates business value and utility of every activity in the systems design and development process. The primary objective of the OMTS is to increase business value of the TI system and improve their performance. Through OMTS, SD&D are able to answer such critical questions as “Do modern telecommunication technologies pay off?” and “How can we best use modern technologies in the TI?” The OMTS is capable of facilitating higher business profitability and productivity by enhancing systems’ strategic goals such as product position, product quality, and customer service.

INTRODUCTION

It is well understood that telecommunication systems are continuously evolving and changing. Change is the only constant attribute in the telecommunications industry (TI). To satisfy market demands, this evolution needs system designers and developers (SD&D) to constantly upgrade their expertise, be aware of up-to-date technologies, and proactively capitalize on these changes. The SD&D must be conditioned to stay ahead of this evolution and to influence the changes for the better. Today’s telecommunication SD&D with extensive expertise in software,

hardware, and integration know that it takes a great amount of effort and synergistic planning to develop a user-friendly product. The SD&D know that they must be constantly aware of the changes in industry, market, and technology when they are developing state-of-the-art systems. The SD&D are also aware that such design and development expertise come neither easy nor cheap. The modern SD&D are conditioned to minimize mistakes and capitalize on the scientific breakthroughs (Fitzer, 1997; Goldman, 1998).

The OMTS is a unique model, which may require integration of various hardware, software, and different expertise when it is implemented. In addition, the model sets its own dimensions, specifications, user requirements, environment, and constraints. The SD&D implementing OMTS must be aware of all the critical factors influencing their decisions, and changes that may occur during the system's development process from its concept to its production (Blanchard & Fabrycky, 1998). The OMTS is capable of optimizing SD&D efforts by increasing the system's performance payoff, application of new technologies, business value, product position in the market, and service quality (Lyu, 1995).

This chapter addresses some of the issues and concerns confronting SD&D implementing OMTS during the system design and development efforts. It also discusses the areas of expertise needed to manage the technology changes that occur during the development of telecommunication products and services (Bourrea & Dogan, 2001; Goldman, 1998). The rationale behind OMTS is an urgent need to optimize the system's design and development activities in the TI. Because most telecommunication systems are designed for change, OMTS must be able to adapt to market demands. The SD&D are aware that it is more difficult to design for the TI than industries that require modularity with a set of predetermined standards and practices. OMTS makes it easier for the SD&D to develop complex systems under adverse conditions with no predetermined standards and practices (Chong & Chow, 1999; Moyer & Umar, 2001).

In the TI, it is difficult to predict and effectively implement technology changes, because the market is constantly fluctuating, users are unique, a new product's window of opportunity is short (about 6 months), and the design and development phase is costly. OMTS capitalizes on these characteristics in the TI and is designed to adapt to the changes and use them as a driving force to open new market opportunities (Goldman, 1998). Because most of the system design and development phases are directly impacted by user demand and technology evolution, SD&D efforts are mostly reactive rather than proactive, requiring new guidelines and practices. To optimize their efforts, SD&D can use OMTS to minimize their production costs, anticipate and adapt to market changes, and be flexible at all times (Chong & Chow, 1999; Comer, 2000).

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