Chapter 7

Growing a University's Technological Infrastructure:
Strategies for Success

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ABSTRACT

This chapter considers concepts, planning models, and related processes associated with infrastructure growth at institutions of higher learning. The author offers various definitions of infrastructure, describes an infrastructure maturity model, and discusses strategies and models for related strategic planning. In addition, the chapter provides portions of actual strategic plans related to infrastructure. The chapter closes with a description of how the author's home institution has grown its technological infrastructure in order to provide required administrative services, communications, and instruction to a growing student body engaged in an expanding curriculum. The impact of infrastructure growth on the university community is also discussed.

INTRODUCTION

Using technology to administer to nearly 10,000 students at a growing regional institution of higher education such as Texas A&M University-Corpus Christi (TAMUCC) stands as an ongoing challenge. Most all institutions of higher education face the same challenge. The many aspects of university administration that must be addressed include student enrollment and financial management, library services, distance education delivery, telecommunications, smart classrooms, budget management, software licensing, desktop computing, computer lab management, and computer network security, and e-mail among other things. Completing these tasks effectively and efficiently

requires that a given institution maintain an adequate technological infrastructure. This chapter explores in largely non-technical terms considerations for growing the required infrastructure. Specific objectives for this chapter, then, include the following:

- To define technological infrastructure
- To describe an infrastructure maturity model
- To define strategic planning
- To describe some recommended strategic planning processes
- To provide real-world examples of strategic planning concerning infrastructure
- To describe the general strategy used at TAMUCC to grow its technological infrastructure
- To describe the impact of infrastructure growth on the university community

The chapter's overall purposes are to provide insights, models, examples, and guidance on infrastructure planning to others who are interested in such planning but are not necessarily technology experts. The author's underlying thesis is that infrastructure planning is a critical process for institutions of higher education to complete if they are to deliver required administrative, communication, and instructional service for optimum success and efficiency. So the problem at hand is to describe some planning options and related concepts and to suggest some effective planning approaches and strategies.

WHAT IS INFORMATION TECHNOLOGY INFRASTRUCTURE?

As is often the case, definitions of critical concepts such information technology infrastructure (ITI) vary from author to author. Kling (1992) describes computing infrastructure as the types of resources that are required to effectively operate computerized systems. Kling and others suggest that infrastructure consists of both human resources who deal with professional development and support and technology, dealing with hardware, software, and facilities. Gartner (2007), a technology consulting group, defines ITI as a system of software and service components that supports the delivery of applications and IT-enabled processes. IT infrastructure can also be conceived of as the combined human capabilities and IT resources that a given organization shares in support of the use of technology applications to complete business processes and as a "... distributed technical framework in support of user and enterprise computing" (University of California Davis, 2003, p.1).

GARTNER'S INFRASTRUCTURE MATURITY MODEL

Gartner (2007) developed a six-level infrastructure maturity model. The model's purpose is to enable an organization to conduct self-evaluation and to develop a strategic plan in order to reduce infrastructure costs, increase agility, and improve management of services and staff development. Agility in this context refers to the ability of a given network's software and hardware components to automatically control themselves across varied network devices. The model is not dependent upon specific vendors or products. The model may be modified to any organization's unique goals, including institutions of higher education.

Three concepts are foundational to the Gartner's model: consolidation, virtualization, and real-time infrastructure. Consolidation allows an organization to increase its server utilization by consolidating physical servers and applications. This results in lower hardware, maintenance and electrical costs. Reduced costs are also realized by making better use of technologies by sharing of resources. Related to this concept is virtualization: this allows **"**The pooling of resources in a way

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