

# Chapter VII

## Applying Pattern Theory in the Effective Management of Virtual Projects

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### ABSTRACT

*The management of virtual projects is fundamentally different from that of traditional projects. Furthermore, the research in this area comes from different reference disciplines and perspectives, and a unified view or theory of best practices does not yet exist. We use the theoretical frame of patterns to propose a unified view. We focus on three concepts as the underlying theoretical elements for identifying patterns of effectiveness in virtual project management: (a) coordination, (b) communication, and (c) control. As a first step in the identification of specific patterns, we conducted a series of virtual focus groups with participants from industry who had real experience with virtual projects. The brainstorming data from the focus groups were analyzed to develop an initial set of patterns. Based on this first step, we also present a structured process for the discovery and continuing validation of patterns of effectiveness in virtual projects, and discuss the issues involved in applying the process.*

### INTRODUCTION

Project management (PM) is a challenging activity in the best of circumstances, and it has become even more so in the virtual world. The increasingly

popular use of virtual teams for dispersed projects has resulted in new challenges for both research and practice. We use the term *virtual projects* to refer to any project in which team members are at least partly geographically dispersed and rely

on information and communication technologies to accomplish their work. The project team may be dispersed on other dimensions as well, for example, culturally or organizationally, but geographic dispersion is a minimal condition. The challenge in virtual projects is to go beyond a simple transfer of knowledge from traditional environments by developing a theoretically sound set of practices that are relevant for the virtual domain.

We use the theoretical frame of patterns to address this challenge in a novel way. Pattern theory was introduced in architecture (Alexander, 1965; Alexander, Ishikawa, Silverstein, Jacobson, Fiksdahl-King, & Angel, 1977) and was later applied to software design (Gamma, Helm, Johnson, & Vlissides, 1994) as a way of developing accepted solutions for specific problems in a defined context. We propose that patterns of effective management for virtual projects can be identified, applied, and validated. We focus on three concepts as the underlying theoretical elements for identifying such patterns, namely, communication, coordination, and control. Different types of projects can be expected to have different patterns for successful project management. The key research question for the study is the following: What patterns of communication, coordination, and control can be identified for the successful management of virtual projects? The answer to this question is important because it advances theory in a significant research domain while also providing practical advice to managers on a question of real importance.

Based on the theoretical foundation just described, we conducted an empirical study in order to identify patterns. Brainstorming comments and questionnaire data from a series of virtual focus groups provided the data for textual analysis. Themes in the text were identified and related to the theoretical model. This analysis was used to extract patterns of effective virtual project management. The next section provides the theoretical development of patterns and the definition

and background of key concepts. The method is then described, followed by the data analysis and results. The discussion section highlights the key findings and elaborates on additional issues related to validation and a process for the continuing discovery of patterns. The chapter concludes with a summary of the contributions as well as implications for research and practice.

## **THEORETICAL FOUNDATION**

The management of virtual projects is a complex phenomenon, and the relevant theory and concepts that govern that phenomenon come from different domains. We begin with a definition of key concepts in order to set the boundaries for the specific study that is described here. First, projects are defined and characterized in terms of a parsimonious typology. Second, virtuality is defined, and the role and nature of technology are developed. Third, key factors for managing virtual projects are presented. Fourth, the concept of patterns is defined. Each of these separate pieces is built on existing literature and presented in the context of our overarching theoretical frame.

### **Typology of Projects**

Projects are the lifeblood of organizational activity. A project can be defined as a “temporary endeavor undertaken to create a unique product or service” (Project Management Institute [PMI] Standards Committee, 1996, p. 4). Projects vary on many dimensions, including purpose, size, time span, urgency, scope, and complexity, and these dimensions are often overlapping. For example, are scope and complexity two independent characteristics of projects, or do they interact, or does one lead to or contribute to the other? These are not mere semantic arguments since a coherent characterization of projects is the first step to understanding and managing them.

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