

# Chapter 6.11

## Patterns for Effective Management of Virtual Projects: Theory and Evidence

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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. Being able to combine perspectives in a seamless way with skills and technology could provide integrative blueprints for best practices in virtual projects. We use the theoretical frame of patterns to propose such a view. We focus on three concepts as the underlying theoretical elements for identifying patterns of effectiveness in virtual project management: (1) coordination, (2) communication, and (3) 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 was analyzed to develop an initial set of

patterns. The study represents a first step in an iterative and evolutionary process.

### INTRODUCTION

Project management 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 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 to 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. 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: *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 paper concludes with 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 research. 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” (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.

A number of different typologies of projects exist, based on dimensions such as cultural differences (Carmel & Agarwal, 2001), uncertainty vs. scope (Shenhar, 1998), type of coordination structure (Gassmann & Von Zedtwitz, 2003), and organizational characteristics (Evaristo & Munkvold, 2002). Three consistent themes can be observed in much of the literature on characterizing projects, and we use these three themes as dimensions that characterize projects for the current study. First is *complexity*, which in general we define as the issues that have to be managed for successful completion of a project. Specifically, complexity is affected by team attributes such as size, culture, language, gender composition, personal characteristics, complementarity of resources, and nature of project knowledge

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