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Chapter X

An IT-Based Heuristic Model for Enterprise Engineering

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ABSTRACT

Around the world complex enterprises are being undertaken in distributed and even virtual environments. Processes, services, infrastructure and so forth must be developed to address these major projects. This article presents an information-technology-based heuristic model to help the enterprises' integrators in their new responsibilities and duties. This IT-based model conveys to a taxonomy to manage the coordination and transaction among all the partners of a major project, addressing a new discipline named enterprise engineering. This is an issue challenging most companies in the world, as new ways of operating these complex enterprises are being undertaken worldwide by most integrators. The search for a new model is therefore demanded by most of the international companies. Hence, this article intends to present an heuristic model that is able to integrate productive processes, services and information technologies among the players through a huge network of coordination. Conclusions are presented at the end of this article.

INTRODUCTION

Enterprise engineering deals with the implementation and operation of an enterprise (Liles, Johnson, Meade & Underdown, 1995). In a continually changing and unpredictable competitive environment, enterprise engineering needs new tools to analyze, design and deploy an enterprise. It addresses how to design and improve all elements associated with the total enterprise through the use of integrated systems, processes, information and organizational design.

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A new enterprise workflow is being asked for, to overcome the barriers of this distributed and virtual environment where coordination is absolutely fundamental (Lefler,1994).

Three worldview assumptions reflect the depth of enterprise engineering (Liles et al., 1995):

- the enterprise is a complex adaptative system (Sherman & Schultz, 1998; Brown & Einsenhardt, 1998);
- the enterprise is a system of processes that can be engineered (or reengineered) both individually and holistically (Brown & Einsenhardt, 1998);
- coordination science is paramount to better implement an enterprise (Malone & Crownston, 1993)

There are nowadays different types of hiring an enterprise from an integrator—the one in charge of the enterprise through the coordination of all the players involved. To better understand this article, a brief description of these ways of contracting are presented:

Turn-Key

This encompasses all the stages of an enterprise. The data have shown that profits reach at most 2% of the total operational revenue. Nevertheless, there is a great possibility of losses, not only at the end of the enterprise, but also due to severe cash-flow variations. This is, obviously, a type of contract whose risks should be forecast before the beginning, as the price is determined previously for a well-defined scope. Naturally, it is impossible to foresee formerly all the involved risks.

In this kind of contract, all the risks are taken for granted by the contractor, not by the owner of the enterprise. Risk analysis is therefore imperative. According to Macomber (1982), this is the ideal contract for an integrator with large experience in similar enterprises.

BOOT (Build-Own-Operate-Transfer)

As it was said there is a global trend for privatizations, due mainly to the:

- lack of investments from the third-world governments;
- reduction in the amount of investment transferred from the developed countries to the emergent economies;
- awareness that the state is a quite inefficient manager to resource allocation;
- visible perceptions of privatization's benefits to the countries.

In the BOOT contract, the integrator gets a concession from the state to build and operate, for a certain time, an enterprise. The firm must get its return on investment from the time it is the enterprise's operator. Thereafter, the state may either reassign or cancel the concession to the firm, according to its performance.

There are a lot of examples of BOOT implementations worldwide (Mathews,1986), such as the Dartford Express Highway (Thames River, London), Eastern Harbour Crossing (Hong Kong), some enterprises in Malaysia and Turkey (energy, highways) and finally the Channel Tunnel linking France and England.