# Building Situational Applications for Virtual Enterprises

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## INTRODUCTION

Traditionally enterprise information systems have been used by big organisations to manage their customers and customer related activities. Most of them are centrally control systems, mission critical, and designed for the long term. Enterprise information systems have thus become critical for organisations. The ability to modify their behaviour by modifying existing processes or by adding new ones has been limited, often by design. It is a great challenge for these systems to adapt to today's business speed. Today business users demand many situational applications which can handle business needs within a short time and normally do not need to support so many users. Traditional enterprise information systems are not designed for such situational applications for virtual enterprises. In this chapter, we present a design methodology for building situational applications for virtual enterprises. We discuss how situational applications should be modelled so that existing resources can be identified and executed. A real world situational application in electrical power systems is discussed.

There is increased pressure to build enterprise applications quickly in order to respond to situational needs of the business (de Vrieze, Xu & Xie, 2010; Xu *et al*. 2011). Many of these applications never get delivered because they are too difficult to write, too costly to implement, too brittle to customize and maintain once deployed, or cannot be provided in a sufficiently timely fashion. As a result, many of the needs are addressed by business people who have some knowledge on IT techniques creating often inadequate solutions using tools like Excel, Access and Visual Basic for Applications.

Business process management is the technology of choice for handling long-lived dynamic software. Traditionally it has been hard to configure such systems, and many of the activities have been linked up in ad-hoc ways (Nguyen *et al*, 2009a, 2009b). Nowadays there is a large and growing provision of web services that could be very valuable in supporting business goals. Their use, procurement and provisioning is exceedingly simple. While the use of web services is relatively easy, they represent programming interfaces, and are not always straightforward from the perspective of end-users (even power users). Enterprise business process mashups aim to address these issues by both providing end-users the power to define custom processes, as well as to use web services, and information structured in various ways.

Enterprise business process mashups (Xu *et al*. 2011), are enabled through development and deployment services that use and allow for the execution of what can be seen as a domain specific language. These development and deployment services, combined with a "situational" mindset and methodology, can offer significant advantages. Unlike traditional enterprise applications, situational enterprise applications are relatively simple. They are not missioning critical for organisations. Many situational ap-

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plications are developed at the point of need with short development cycle, not under central IT control with little or no recognized budget.

The situational applications under consideration will not replace core business applications, such as ERP (Enterprise Resource Planning), SCM (Supply Chain Management), CRM (Customer Relationship Management) etc (de Vrieze, Xu & Xie, 2010). They address different needs, and may be built for just a handful of users. Situational enterprise applications could be used for only a few weeks or months, or address a small piece of functionality. For example, within the perimeter ERP applications, departmental operation solutions, such as vacation scheduling, seminar and presentation management, purchase procedure management within a work unit, etc., normally are not included in an organisational ERP system. Such functionality, customized towards the department, can however be beneficial for individual departments. Much of the role of departmental staff on a daily basis involves such applications, and improved support for automation could significantly enhance productivity.

The target users for situational applications are educated professional (e.g., accountant, HR personnel) with modest computer literacy (and interest) that equates to a level of being able to create spreadsheets with modest use of formulas. Situational enterprise applications are built upon Internet and web standards. They allow for easy use of web services within and across organizations (Baghdadi & Al-Rawahi, 2006). This chapter proposes a design methodology for the building of situational applications for virtual enterprises. This methodology is illustrated based on a case in the de-monopolised power generation and distribution domain, and in particular a set of business scenarios for situational needs. This case will be detailed in the next section.

## BACKGROUND

### Definition of Enterprise Information Systems

We define Enterprise information systems (EIS) as the large complex computing systems which handle large volumes of data and enable organisations to integrate and coordinate their business processes. Such systems normally are a single system central to organisations and ensure that information can be shared across all functional levels and management hierarchies.

### Definition of Business Process Management

According to Gartnet (2013), business process management (BPM) is the discipline of managing processes (rather than tasks) as the means for improving business performance outcomes and operational agility. Processes span organizational boundaries, linking together people, information flows, systems and other assets to create and deliver value to customers and constituents.

### Definition of Virtual Enterprises

A virtual enterprise is a temporary alliance of enterprises that come together to share skills or core competencies and resources in order to better respond to business opportunities, and whose cooperation is supported by computer networks (Camarinha-Matos, Afsarmanesh, Garita, & Lima. 1998).