Enterprise Resource Planning Maintenance Concepts

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INTRODUCTION

Enterprise resource planning (ERP) is packaged software, and the accompanying set of best practices designed to integrate and serve different departments' needs, and to automate a corporation's business functions and processes on a single management system, database, and interface. ERP allows business to operate in a real-time, more effective and responsive manner and can facilitate better identification, storage, analysis, reuse and distribution of a company's business intelligence (e.g., performance, productivity, customer satisfaction, availability, inventory management, communication). SAP, Oracle, and PeopleSoft are the top three ERP software vendors. ERP software installation and popularity have grown over the past decade, especially in the late 1990s (it was once thought to be the panacea for Y2K problem). The motivations for ERP use are internal business integration, best business practices, competitive advantage, and operational cost reduction. Following the market trend, a large number of ERP implementation projects were conducted, especially by large enterprises. However, multi-million dollar ERP implementation projects are not without problems. In some companies, implementation takes much longer and requires a larger budget than expected, and a large number of modifications and configurations to the software are necessary. Some businesses have to change their existing processes to adapt to the software, and thus have to deal with significant internal resistance and change management. A few companies have even been bankrupted by unsuccessful ERP implementation projects.

A typical packaged software lifecycle, from the client perspective, involves implementation and installation, maintenance, and upgrade. Traditional software maintenance has been acknowledged by many researchers as the longest and most costly phase in the software lifecycle. This is also the case for the ERP context. It has been observed from experience and from the literature that there are inconsistencies in and confusion surrounding the terms used to describe the same ERP maintenance activity and tailoring options. Determining the most accurate and appropriate terms, together with their meaning, is a worthwhile endeavor as it can facilitate better communication among researchers and practitioners, and enable research results to be transferred more effectively to the real world. This paper aims to emphasize better understanding of ERP maintenance activities, and attempts to clear confusions and inconsistencies in the use of terms commonly applied in the ERP maintenance context. The discussion in this text focuses on SAP's ERP software. A Yankee Group survey of 350 business decision makers found that SAP is the most recognized name, followed by Oracle and PeopleSoft (Westervelt, 2004). The survey also revealed that 50% of the respondents preferred a large vendor. This indicates that the present paper will have relevance for a wide audience. In addition, the majority of research done to date has been based on the SAP software. This allows comparisons to be made with existing studies.

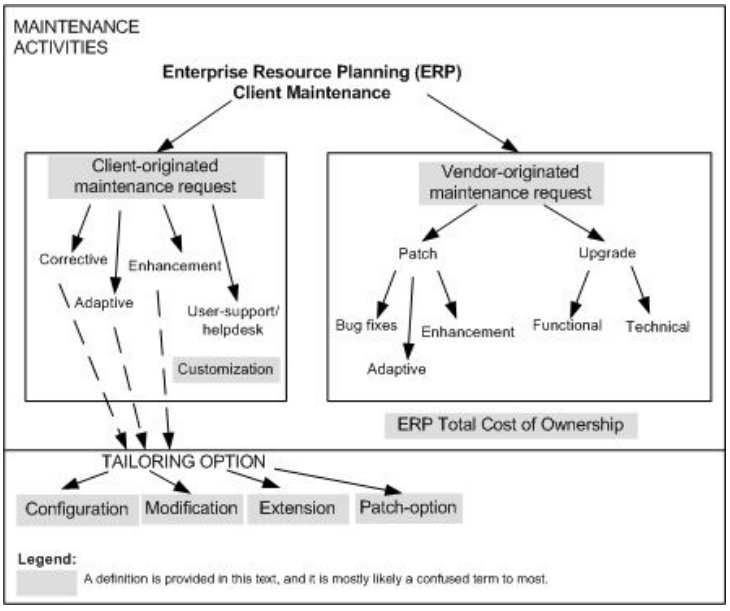
BACKGROUND

Overall, confusion about the terms used in the context of ERP maintenance, as well as inconsistencies in the terms used to refer to the same ERP maintenance activities and tailoring options, are observed in practice, in the trade press and in academic literature. For example, are patch maintenance and upgrade parts of the clients' ERP maintenance activities? Is ERP enhancement similar to ERP modification, and can the term "customization" be used interchangeably with "configuration"?

Client-Originated Maintenance Request Types

In an ERP environment, maintenance requests include those initiated both by the ERP client, and by the vendor (Ng, Gable, & Chan, 2002), see Figure 1. A survey conducted by Glass and Vessey (1999) on ERP maintenance has indicated that most maintenance requests introduced within an ERP-using organization are enhancement-driven. Enhancement is needed to change existing functionality in order to operate in a way that is desired and/or better than that offered by the original 'vanilla-flavored' software. Although in reality the clients' ERP maintenance also includes corrective, adaptive, and user-support (Ng et al., 2002), to the knowledge of the author

Figure 1. Terms defined in this text



very little has been researched and written about them. Previous research has been focused on the costly, lengthy, failure and critical success factors of ERP implementation projects. However, relative to maintenance that includes upgrading (even though some are supported by the vendor – at a cost), implementation issues are likely to be the tip of the iceberg of ERP software lifecycle costs and issues.

According to Ng et al., ERP maintenance is defined as:

post-implementation activities related to the packaged application software undertaken by the client-organization from the time the system goes live until it is retired from an organization's production system, to: keep the system running; adapt to a changed environment in order to operate well; provide help to the system users in using the system; realize benefits from the system; and

Table 1: SAP categorization of tailoring options

Tailoring option	Description*
Customization	— involves changes made within the standard vendor code by setting system parameters via SAP's configuration tables. In SAP R/3, the configurable elements are central functions, organizational elements, control elements, data validation, and system control (Bancroft, Seip, & Sprengel, 1998).
Enhancement using customer exits	— is for requirements that are not included in the standard SAP. Customer exits are incorporated in the standard as empty modification 'shells'. Customers fill the 'shell' with their own coding.
Enhancements using business add-ins	— allows ERP client organizations to add their custom code or the standard supplemental solutions provided by SAP, and also permits third-party software development to be incorporated in the standard code (Kessler, 1999).
Assisted modifications	— is done using the modification assistant to create customer-specific objects within the customer name range; e.g. screen layout, and function key assignment.
Modifications to the SAP standard	— involves modifying SAP standard objects.

**Source: Kessler, 1999; SAP, 1998*