Chapter 1.20
Testing Guidelines for Developing Quality EAI Projects

S.R.Balasundaram
National Institute of Technology, Tiruchirappalli, India

B.Ramadoss
National Institute of Technology, Tiruchirappalli, India

"The greatest challenge to I/S in every large enterprises finding better and simpler ways of making application systems work together more effectively" - Gartner Group

ABSTRACT

The rapidly changing nature of business environments requires organizations to be more flexible to gain competitive advantages. Organizations are turning into a new generation of software called Enterprise Application Integration (EAI) to fully integrate business processes. It is an activity that integrates and harmonizes an enterprise's isolated business applications, processes and functions involving real time data. Developing quality EAI projects is quite a big challenge. Even though success of EAI projects depends on so many parameters, 'testing' is the most significant phase that can ensure the quality as well as the success of EAI projects. Components integrated without testing in EAI systems may affect the enterprise system as a whole. This chapter focuses on the testing aspects related to EAI applications. Especially the significance of testing for various types of "Integrations" is discussed in detail.

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INTRODUCTION

Enterprises across the globe have come to the realization that within the increasingly complex environment of the business world, there is a fundamental need for many varied information platforms to be properly enabled and optimized. To possess the state of the art business processes, enterprises need to go for devising newer approaches to benefit the maximum from the underlying Information

Technology (IT) (Kumar & Mota, 2009) world. These approaches are strongly based on various types of integrations possible within as well as across the enterprises. Majority of the enterprise code deals with different types of integrations. Integration does not stop with linking various fragments of software products. Rather integration can be defined for databases, hardware, network, people, standards etc. This in turn will result in the following major benefits:

- Cost reduction towards expenses incurred in Technologies, Administrations and Operations.
- Improved customer satisfaction
- Better and faster business decisions.

Earlier information systems defined point-to-point interfaces from one application to all other applications to share information. Defining these interfaces and managing them were highly difficult as well as challenging. To overcome these problems the era of Enterprise Resource Planning (ERP) came into existence. In general, ERP has focused on the integration of various internal business functions to provide "one-system-fits-all" solution. The implementation of ERP requires a substantial amount of time and financial commitment (Inmon, 2000). As an alternate, Enterprise Application Integration (EAI) automates the integration process with less effort than that required with ERP. The strength of any EAI totally lies on the levels of integration and their supporting features. At each and every level of integration care must be taken to see whether the integration is possible, feasible and durable. Due to technological, physical and conceptual changes, these integrations may weaken the entire system.

Bringing harmony to the entire system by linking various entities of the system (entities -intra as well as inter) is quite a big challenge in any EAI development scenario. Also, developing successful EAI projects need lot of care to be taken related to the correctness of various entities, namely the individual components available in the integrated systems, the types of integrations and the environmental factors supporting these integrations.

Modern enterprises heavily rely on integrations linking systems and business processes using real time data. Components integrated without testing in EAI systems may affect the enterprise system as a whole. This in turn may result in revenue loss and status degradation in the competitive edge. To overcome this, testing becomes the mandatory process. Testing is an important activity in software development applications. It is the process of determining whether a system has any error or not. When testing is essential for simple applications, it becomes the most essential activity for enterprise applications.

This chapter focuses on the testing aspects related to EAI applications. Especially the significance of testing for various types of "Integrations" is discussed in detail.

ERP AND EAI

Enterprise Resource Planning (ERP) systems are more popular software applications that have emerged to help business managers to implement their business activities. The aim of ERP systems is to integrate all data and processes of an organization into a unified system (Polson, 2009; Enterprise, 2009). Typical ERP system will use multiple components of computer software and hardware to achieve the integration. An ERP system may combine the functionalities of several subsystems of an enterprise such as Inventory Management System (IMS), Marketing Management System (MMS), Customer Management System (CMS), Financial Accounting System (FAS), Supply Chain Management (SCM) System, etc.

ERP systems have certain limitations in defining the complete business processes. Building effective ERP systems is complex and costly. While integrating ERP systems with legacy systems,