Module (Architectures)

Solution Architectures Through Components

e-Business Applications, Architectures, Integration

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Chapter 2: e-Business Applications (CRMs, ERPs, eMarkets, SCM, ASPs, Portals)
Chapter 3: From Strategies to Solutions -- A Planning Methodology
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--From Strategies to Working Solutions

MODULE (EXAMPLES); Case Studies & Examples
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Chapter 2: Object-Orientation, Java, and UML -- A Tutorial
Chapter 3: Database Technologies and SQL -- A Tutorial
Chapter 4: Web Engineering and XML Processing – A Closer Look
Chapter 5: CORBA -- A Closer Look

A Technology Briefing Module from

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Module (Architectures): Solution Architectures Through Components

Module Overview

Building solutions that address business problems is a crucial aspect of business. In IT, the solutions are built by combining applications, databases, networks, computing platforms, and middleware services into a working system that delivers value to the customers. This module discusses the architectural issues in building and deploying information systems solutions. After an overview of solution architectures (chapter 1), we discuss how to use the component-technologies to architect enterprise applications (chapter 2), and show how to architect enterprise data -- also known as shared corporate data -- in the modern web-XML environments (chapter 3). Chapter 4 concludes this module by discussing how these architectures can be implemented through several examples.

Figure 1 lists the chapter titles of this module (dark border) and shows the interrelationship between this module and the other two modules that address the e-Business Application Engineering/Reengineering issues.

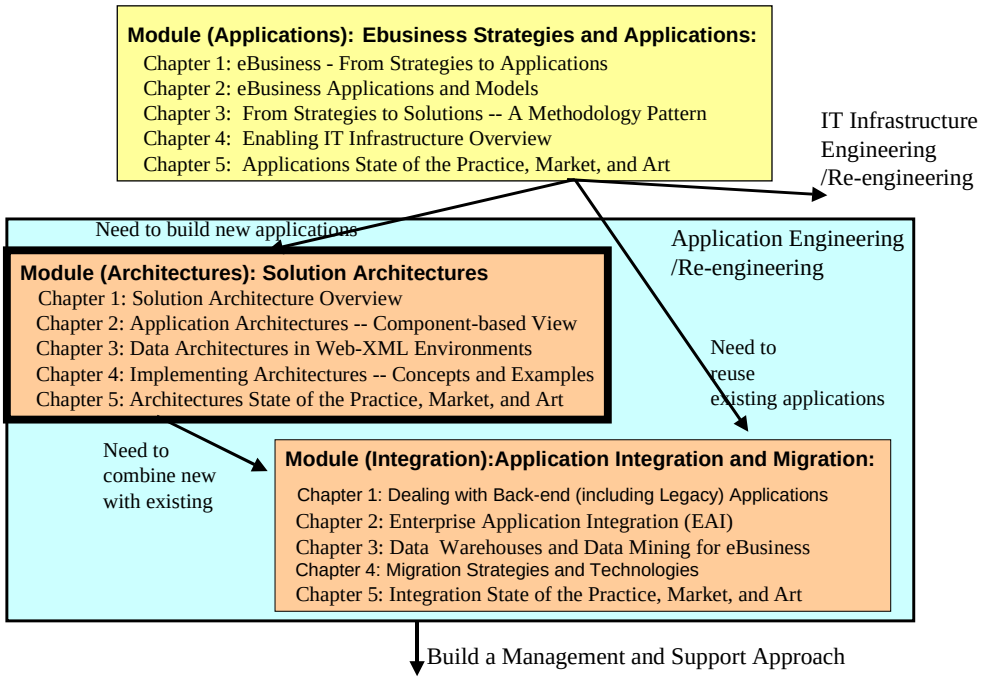

Figure 1: e-Business Application Engineering and Reengineering

Reader Background Expected

Readers of this module should have a basic understanding of the e-business strategies, applications, methodologies, and infrastructure issues as presented in the "Applications" Module of this book. Although not essential, some background in enabling technologies (e.g., Web technologies, Web services, .NET, J2EE, and application servers for mobile and EC/EB applications) as discussed in the "Middleware" and "Platforms" modules may be beneficial.

Module Case Studies

XYZCorp Case Study: Solution Architecture Task

The focus of the XYZCorp case study in this module is on the Solutions Architecture Task (Figure 2). The purpose of this task is to develop a solution architecture that shows how the enterprise applications will be interconnected and deployed. This task will mainly concentrate on new applications needed for e-business and establish an overall architecture that includes application and data architectures at the enterprise level and review some of the architecture implementation issues.

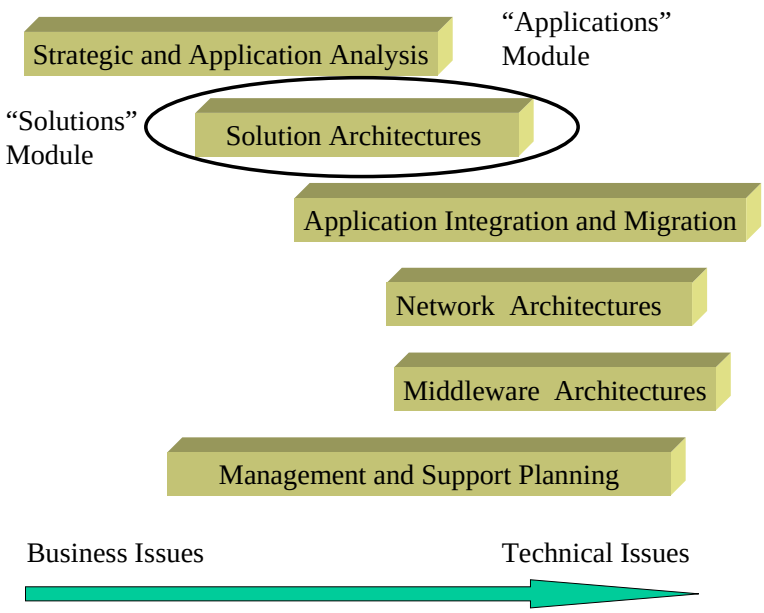

Figure 2: XYZCorp Planning Tasks

The Strategies and Applications Analysis Task has identified a wide range of new applications that will use the OCSI paradigm. Examples of the new applications are: a customer relationship management system, a new web-online purchasing system, a new "advanced" inventory management system for integrated order processing/inventory management, a management planning system that will support the management decisions in marketing and product planning, and a flexible manufacturing system to automate the manufacturing of electronic products. The following application engineering projects have been initiated:

1). Establish an overall Solution Architecture: This involves specifying application requirements and building an enterprise-wide architecture for these applications. What are the benefits and risks to develop these applications? What is the strategy to manage the risks? This project will be discussed at the end of Chapter 1 of this module.

2) Develop the detailed application software architecture for the new applications. What are the logical components of these applications? How many tiers will be used? What will each tier do? What type of middleware components will you use? This project will be discussed at the end of Chapter 2 of this module.

3) Develop the enterprise data architectures for the new applications. What will be the data allocation strategies? How will the data be accessed and shared across the XYZCorp network? This project will be discussed at the end of Chapter 3 of this module.

4) Implement the systems by using the chosen middleware components and develop detailed architecture diagrams and psuedo-code to map the system to the underlying platform. These diagrams should show the pieces of the systems, where do they reside and how do they interact with each other (i.e., middleware). This project will be discussed at the end of Chapter 4 of this module.

The initiative involves many existing, including legacy, applications. Examples of the legacy applications are: a financial information system that processes financial data (e.g., personnel costs, materials costs, etc.) stored on the IBM mainframe in a DB2 Relational database, a mainframe-based corporate material requirement planning (MRP) system that contains bill of materials (raw materials)information in IMS databases and outside vendor information in DB2 databases, and a UNIX-based order processing system that was developed in the 1980s to receive orders, verify them, and send them to the mainframe for shipping/receiving and billing purposes. Approaches to deal with these and other existing applications will be developed in the "Integration" Module.

Additional Case Studies and Examples

Several additional case studies and examples are discussed in the chapters of this module. A number of case studies that are relevant to the topics discussed in this module appear regularly in trade magazines, vendor documents, web sites and books. Chapter 5 of this module gives a sample of relevant case studies and points to numerous sources for additional case studies and examples.

In addition, the following case studies in the "Case Studies and Examples" Chapter of the "Overview" Module can be used to illustrate different aspects of the subject matter:

Section 2.3 E-commerce/e-Business Examples: These examples can be used to understand how different architectural choices were made some time ago and to analyze how component-based architectures could be used for the cases.

Section 2.5 A Financial Marketplace: After reviewing this case study, you can choose a solution architecture for this marketplace.

Section 2.9 A Customer Relationship Management Portal: Many architectural choices are made in this case study. Can you improve on this?

Section 2.12.1 Hewlett Packard's Migration to Client/Server Architecture: This is an interesting "classical" case study about architectures. How would you develop this architecture by using the latetst platforms (XML Web Services, .NET, and J2EE)?

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