Legacy Systems We cannot understand the impact of new technology without considering it with respect to legacy systems. Systems have been developed to solve specific high-priority problems or achieve specific productivity improvements.

Data warehousing emerged some years ago to address needs for decision support. Mainstream business systems contain the day-to-day operating information, but it is often difficult to access such information in a form that is appropriate for analysis of business problems.

Enterprise application integration (EAI) also involves the capture and transformation of data, but for a different purpose. EAI was driven by the need to integrate COTS applications.

EC - Electronic Commerce

WEA- Web-Enabled Applications

The **Extensible Markup Language (XML)** is a language for free-form expression of data structures in a universal character set. It is a a refinement of the basic syntax of HyperText Markup Language (HTML), the language of data exchange for Web browsers.

Workflow management systems (sometimes called business process management systems) have been around for many years. For the most part, they have been applied in small organizations for managing the flow of documents between activities performed by humans.

Distributed objects technology supports the development of systems with distributed components that interact as objects exchanging messages over a network. The objects may be shared services or objects of a business application.

Java Virtual Machine **(JVM)** Java Development Kit **(JDK)**

Unified Modeling Language (UML) is a specification language adopted by the OMG. It was based on a specification developed by Rational Software, but experts of the OMG specification represent the combined efforts of 21 tool vendors and industry experts.

Public Key Infrastructure **(PKI)**

Knowledge management involves the capture, cataloging, retrieval, and application of enterprise knowledge, as depicted in Figure 1.9. In product design in particular, lessons are learned over the years that contribute to the quality of the product, including its ease of use, maintainability, reliability, efficiency, and so on.

Agent Technology A software agent is an autonomous program that senses and reacts to its environment according to its own internal rules of operation.

Interactive Voice Few applications make use of voice input or output. This is because most systems are accessed with devices that have keyboards and displays. Voice input and output require additional functionality and increase the risk of errors.

Model Driven Architecture The Model Driven Architecture strategy of the OMG provides the ability to specify applications and standards as Platform Independent Models (PIM) that can be mapped to evolving technical platforms.

Enterprise Distributed Object Computing **(EDOC)**

Management Information Enterprise integration should enable managers to monitor the operation of the business, identify problems and opportunities, define desired changes and improvements, and measure results.

Five key elements are required for effective management information:

- Data consistency
- Data accessibility
- Process consistency
- Exception reporting
- Historical data analysis

Integrated Security Electronic exchanges raise new concerns about security. Web servers are connected to the Internet to be accessible by anyone.

Security must be an integral part of the integrated enterprise. The following key elements must be addressed:

- Firewalls
- Authentication
- Authorization
- Integrity
- Confidentiality
- Non-repudiation

commercialoff-the-shelf **(COTS)**

Reliable System Operation Enterprise integration will increase the enterprise dependence on its computer systems because people will come to rely on the automated processes, the streamlined business functions, the coordination of activities, and the accessibility of information.

There are three basic techniques to improve system reliability:

- Minimize the risk that the system will fail.
- Detect malfunctions early.
- Limit the impact of failure.

Economies of Scale The enterprise integration strategy must include a consideration of economies of scale. It is not enough simply to connect all the systems together.

Several important opportunities must be considered to achieve economies of scale:

- Standards
- Software reuse
- Common infrastructure
- Consolidated systems operations

Common Infrastructure A common infrastructure is the complex of computers, networks, software, and associated services that supports the operation and interconnection of many systems.

Such an infrastructure can yield substantial economies of scale in several ways:

- **EAI support**
- Web services
- Personal computing services
- System management facilities

This section describes the following general characteristics of the enterprise integration architecture:

- Distributed computing
- Component-based applications
- Event-driven processes
- Loose coupling of business functions
- Decision support information
- Workflow management
- Internet access
- Personalization of interfaces

Meta Data Repositories A meta data repository is similar to what used to be called a data dictionary. It contains data about data but also data about systems and interfaces. The traditional data dictionary was used to provide common data models for programmers.

Business-to-Business **(B2B)**
Business-to-Customer **(B2C)**
Customer -to- Customer **(C2C)**

Create, Delete, and Update Database entries must be created, deleted, and updated to correspond with the creation, deletion, and update of objects in the computing environment.