

14. E-Commerce Applications and Infrastructures

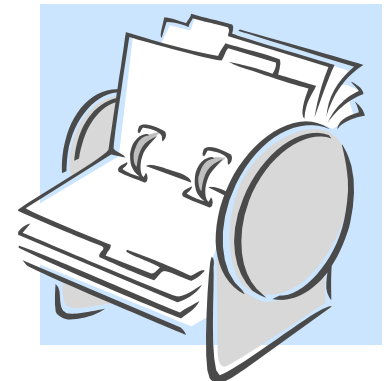
Building E-Commerce Applications and Infrastructures



- Code: 166140-01+02
- Course: Electronic Commerce
- Period: Autumn 2011
- Professor: Sangwon Lee, Ph.D.

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14. E-Commerce Applications and Infrastructures

Building E-Commerce Applications and Infrastructures



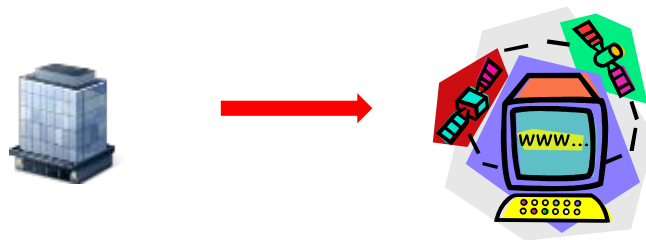
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Learning Objectives

- 01. Discuss the major steps in developing an EC application.
- 02. Describe the major EC applications and list their major functionalities.
- 03. List the major EC application development options along with their benefits and limitations.
- 04. Discuss various EC application outsourcing options, including application service providers (ASPs), software as a service (SaaS), and utility computing.
- 05. Discuss the major EC software packages and EC application suites.
- 06. Describe various methods for connecting an EC application to back-end systems and databases.
- 07. Discuss the value and technical foundation of Web Services and their evolution into second-generation tools in EC applications.
- 08. Understand service-oriented architecture (SOA) and virtualization and their relationship to EC application development.
- 09. Describe the criteria used in selecting an outsourcing vendor and package.
- 10. Understand the value and uses of EC application log files.
- 11. Discuss the importance of usage analysis and site management.

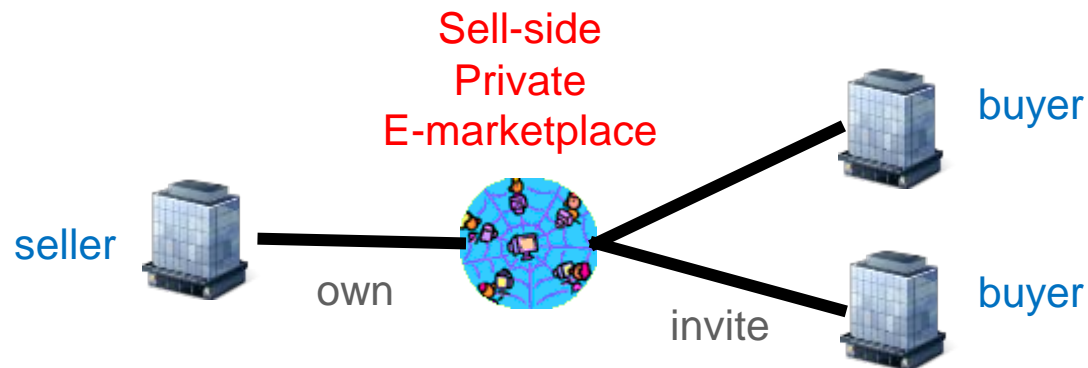
01. Major E-Commerce Applications

- B2C Storefronts
 - An electronic storefront should have the following functions:
 - A product presentation function
 - An order entry function
 - An electronic payment function
 - An order fulfillment function
 - A customer service function
 - A product support function



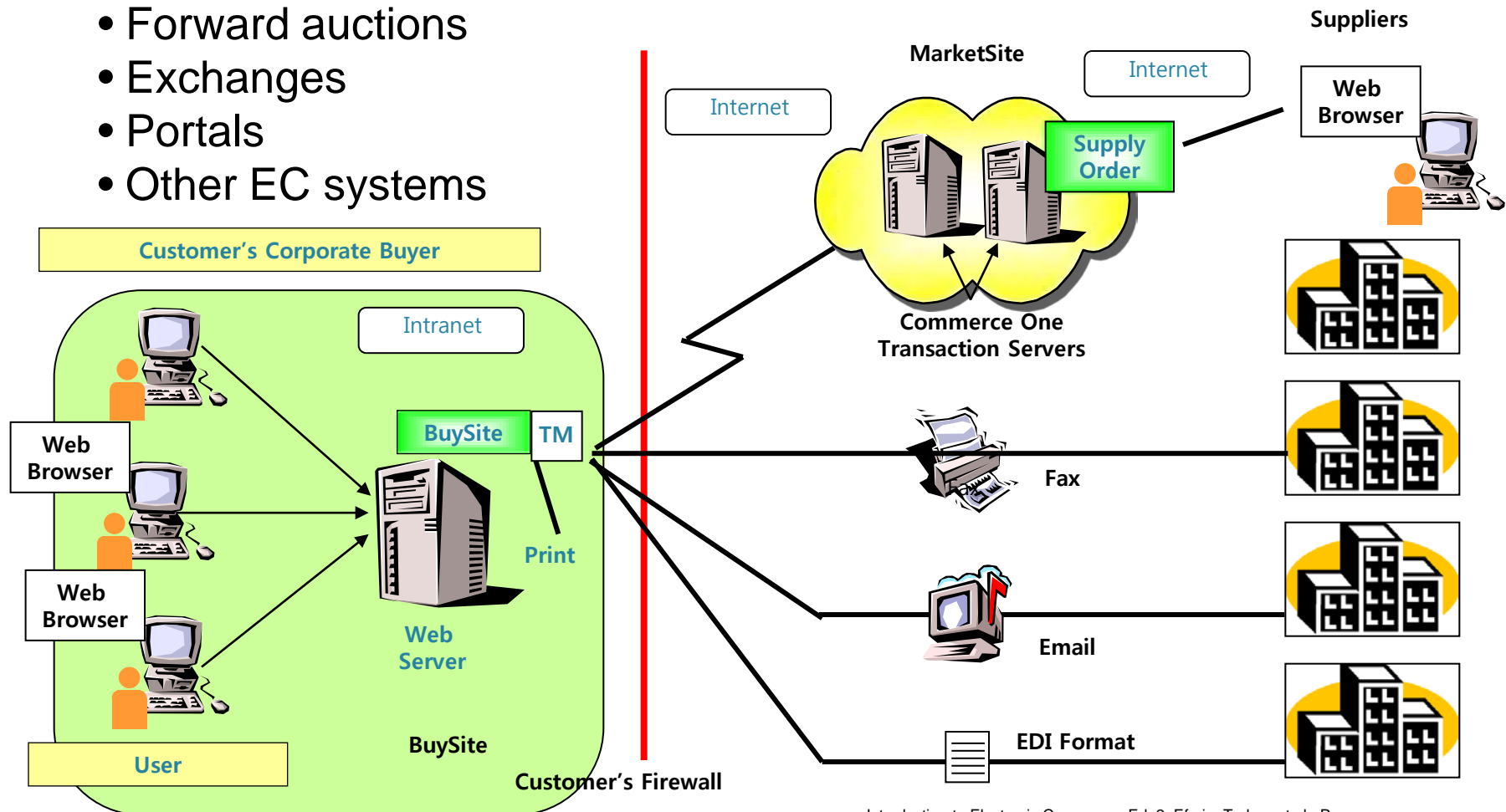
01. Major E-Commerce Applications

- Supplier Sell-Side B2B Sites



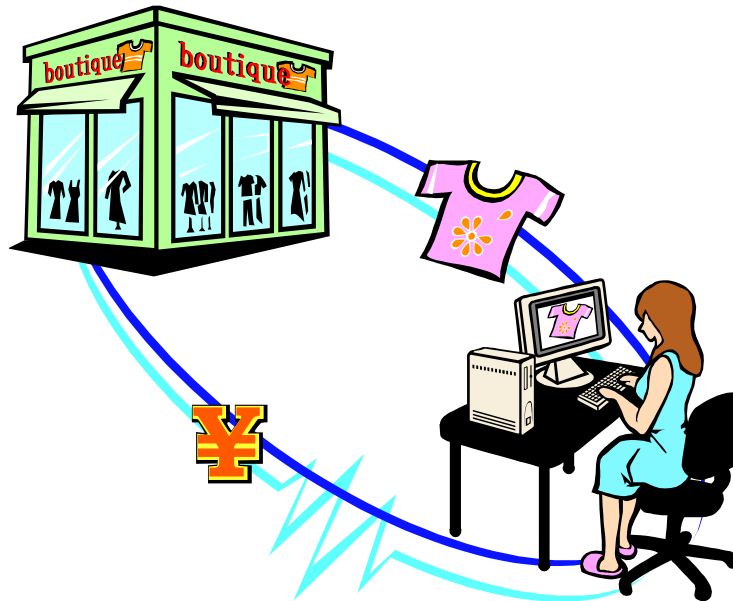
01. Major E-Commerce Applications

- E-Procurement
 - Aggregating catalogs
 - Reverse auctions and tendering systems
 - Forward auctions
 - Exchanges
 - Portals
 - Other EC systems



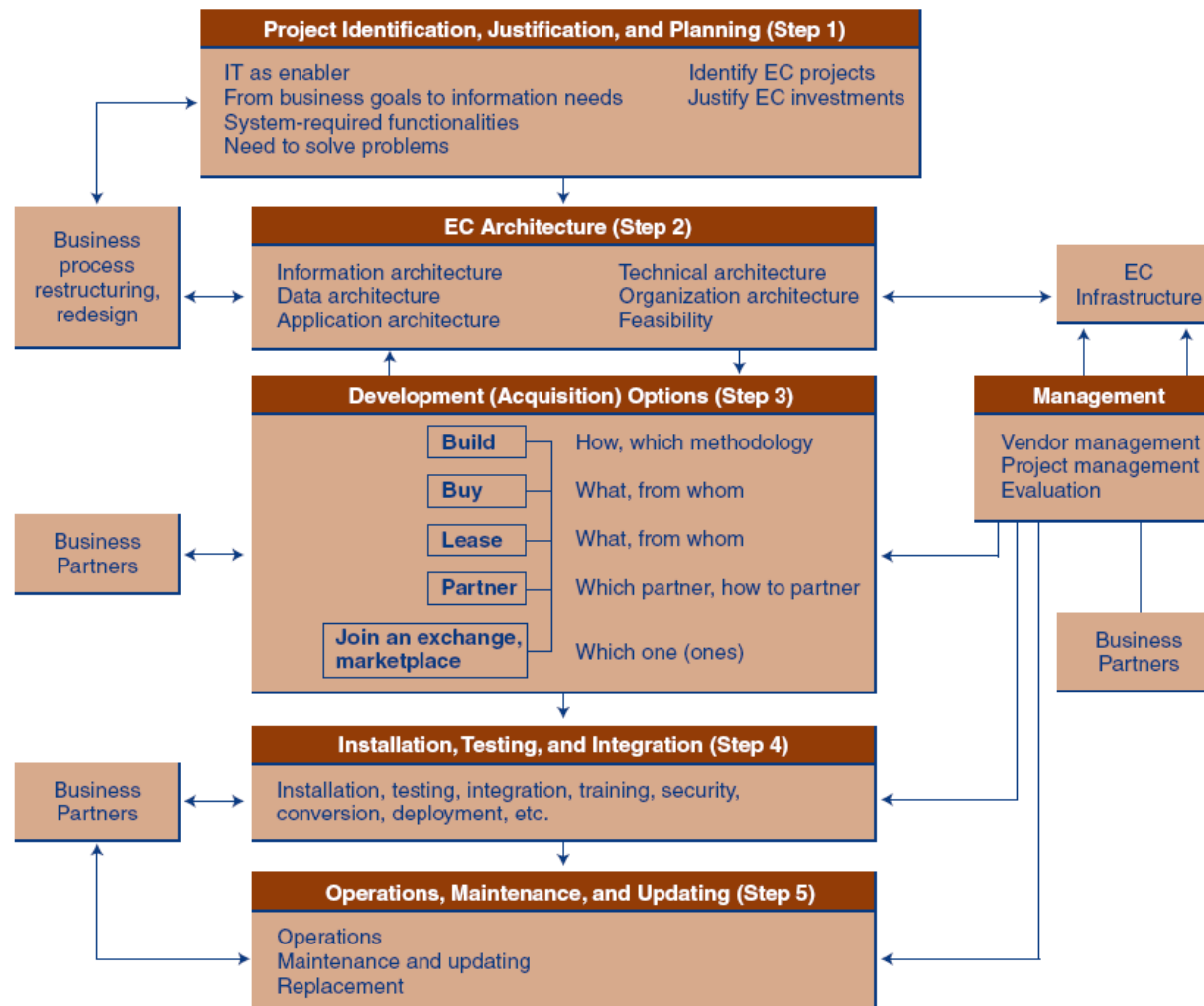
02. Five-Step to E-Commerce Landscape

- The EC Applications Development Process
 - 1) Identifying, justifying and planning EC systems
 - 2) Creating an EC architecture
 - 3) Selecting a development option
 - 4) Installing, testing, integrating, and developing EC applications
 - 5) Operating, maintaining, and updating



02. Five-Step to E-Commerce Landscape

• The EC Applications Development Process



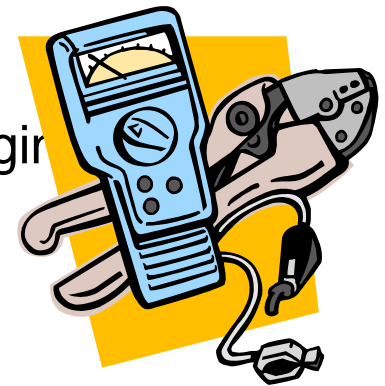
02. Five-Step to E-Commerce Landscape

- The EC Applications Development Process
 - 2) Creating an EC architecture
 - EC architecture
 - A plan for organizing the underlying infrastructure and applications of a site.



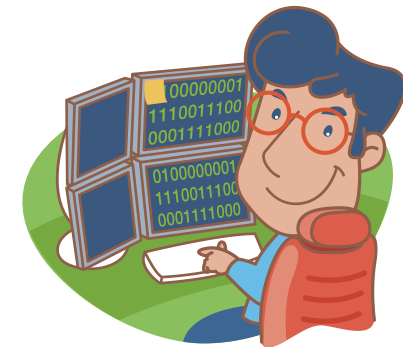
02. Five-Step to E-Commerce Landscape

- The EC Applications Development Process
 - 4) Installing, testing, integrating, and developing EC applications
 - Unit testing
 - Testing application software modules one at a time.
 - Integration testing
 - Testing the combination of application modules acting in concert.
 - Usability testing
 - Testing the quality of the user's experience when interacting with a Web site.
 - Acceptance testing
 - Determining whether a Web site meets the original business objectives and vision.



03. Development Options for EC Application

- In-House Development: Insourcing
 - Reusability
 - The likelihood a segment of source code can be used again to add new functionalities with slight or no modification.
 - Interoperability
 - Connecting people, data, and diverse systems. The term can be defined in a technical way or in a broad way, taking into account social, political, and organizational factors.
 - Development options
 - Build from scratch
 - Build from components
 - Enterprise application integration



03. Development Options for EC Application

- Buy the Applications
 - Turnkey approach
 - Ready to use without further assembly or testing; supplied in a state that is ready to turn on and operate.



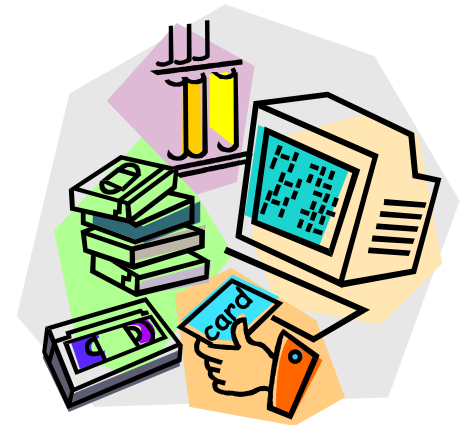
03. Development Options for EC Application

- Outsourcing EC Applications
 - A method of transferring the management and/or day-to-day execution of an entire business function to a third-party service provider.



03. Development Options for EC Application

- Leasing EC Applications
 - Leasing
 - Rental



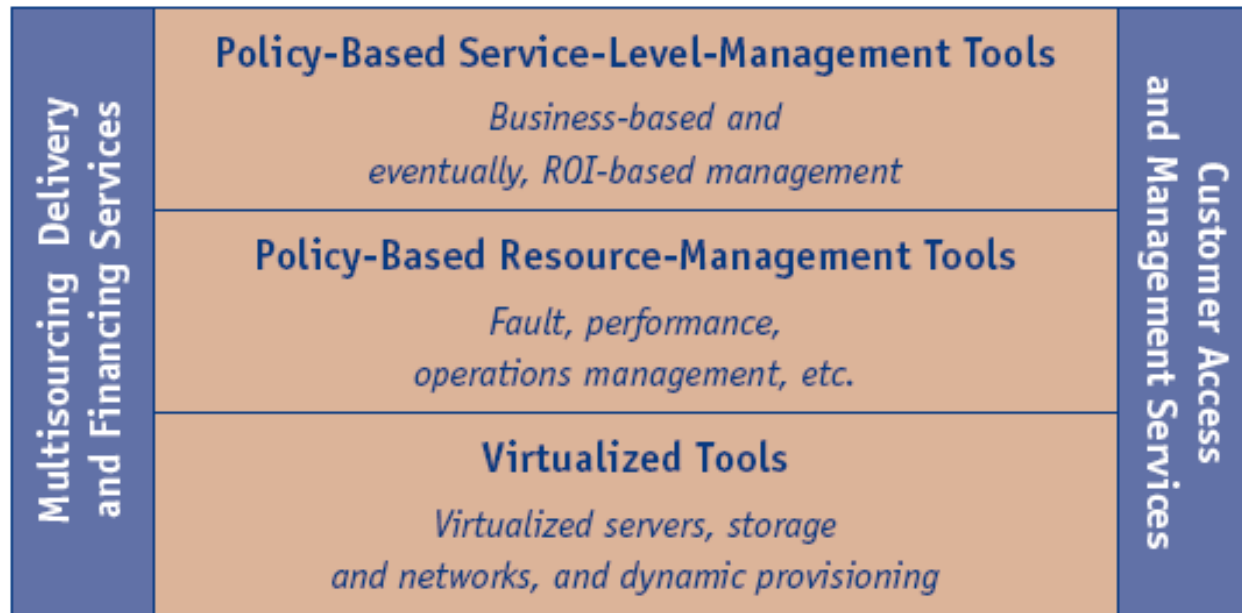
03. Development Options for EC Application

- Utility (On-Demand) Computing
 - Unlimited computing power and storage capacity that can be used and reallocated for any application and billed on a pay-per-use basis.
 - Policy-based service-level-management tools
 - Coordinate, monitor, and report on the ways in which multiple infrastructure components come together to deliver a business service.
 - Policy-based resource-management tools
 - Automate and standardize all types of IT management best practices, from initial configuration to ongoing fault management and asset tracking.



03. Development Options for EC Application

- Utility (On-Demand) Computing
 - The five elements of a successful utility-computing value proposition



03. Development Options for EC Application

- Application Service Provider (ASP)
 - A company that provides business applications to users for a small monthly fee.



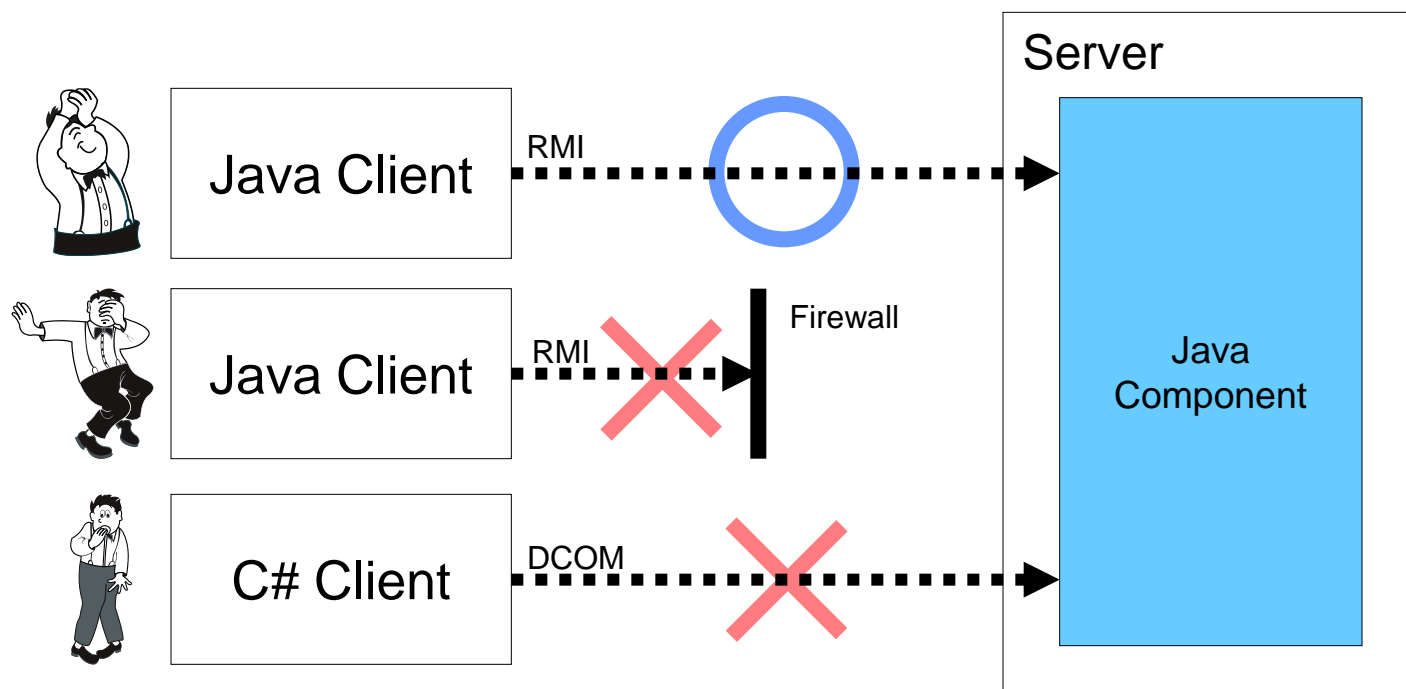
03. Development Options for EC Application

- Software as a Service (SaaS)
 - A model of software delivery where the software company provides maintenance, daily technical operation, and support for the software provided to their client. SaaS is a model of software delivery rather than a market segment.



03. Development Options for EC Application

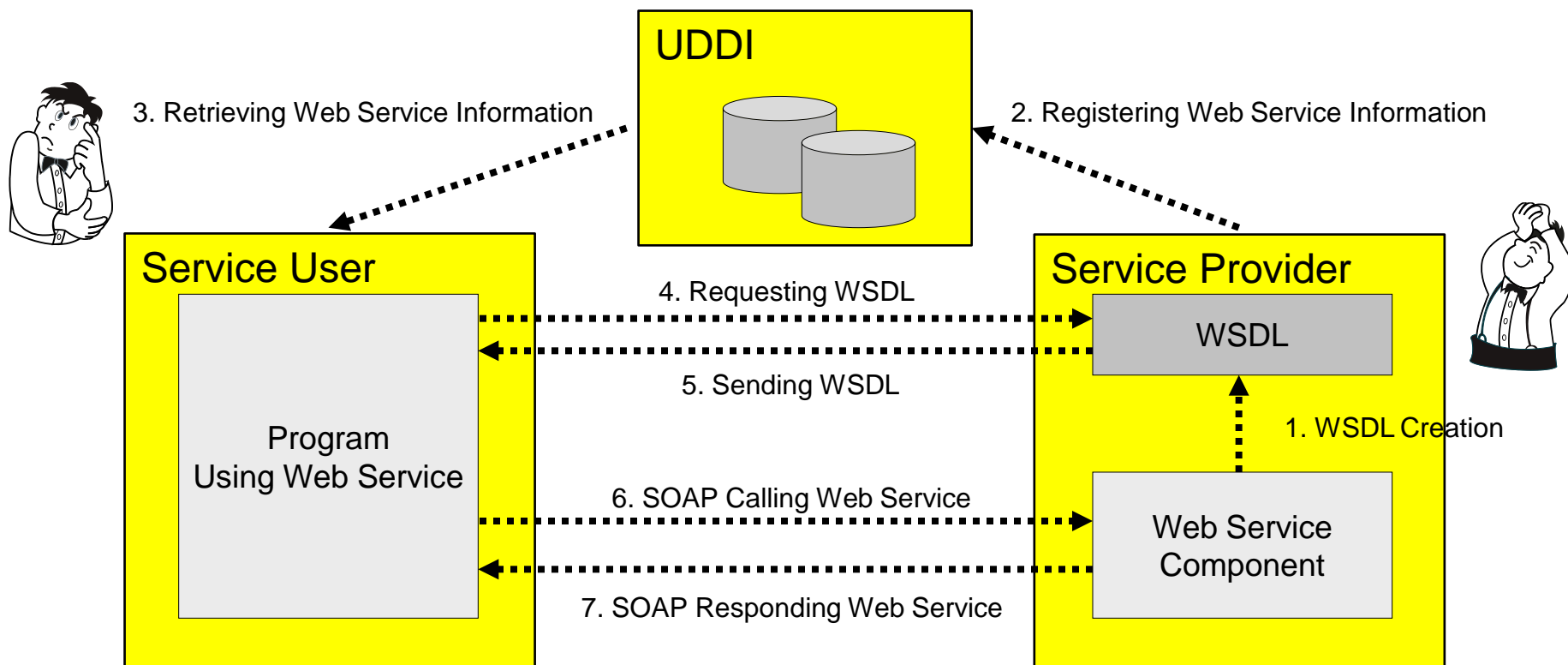
- Web Services
 - Existing technologies make integration a difficult task because of:
 - Platform-specific objects
 - Dynamic environment
 - Security barriers



03. Development Options for EC Application

- Web service

- A software system identified by a URI (uniform resource indicator), whose public interfaces and bindings are defined and described using XML

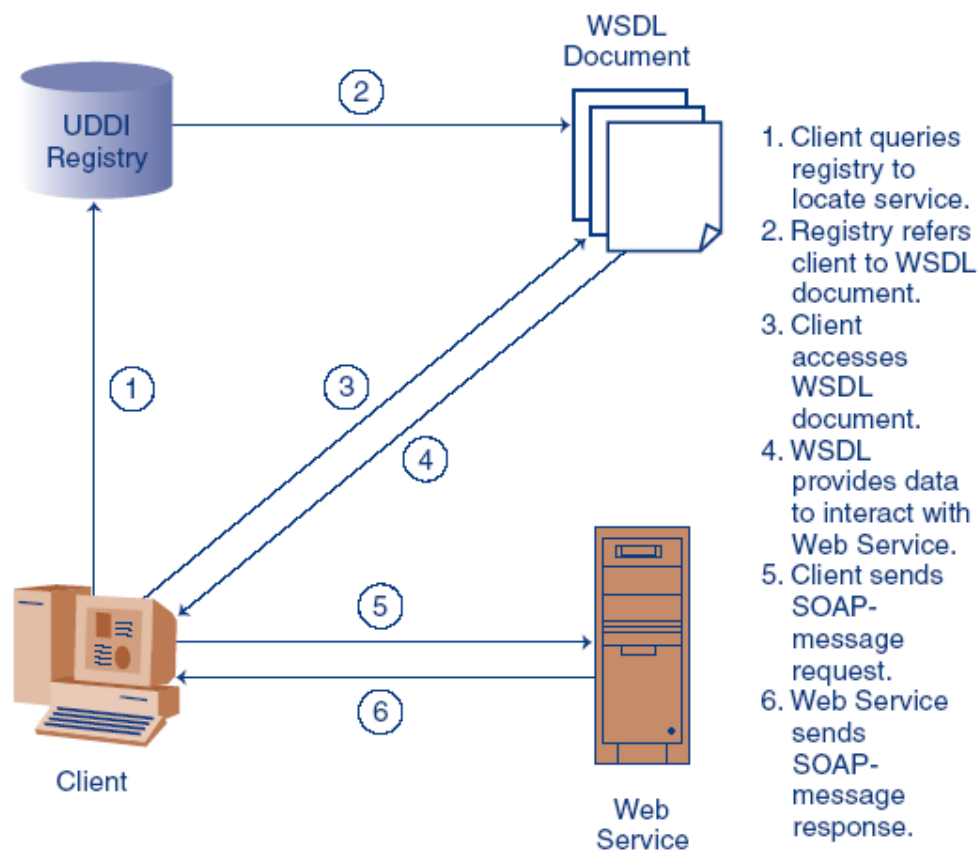


03. Development Options for EC Application

- Web Services
 - Key technologies in Web services
 - Simple object access protocol (SOAP)
 - Protocol or message framework for exchanging XML data across the Internet.
 - Web services description language (WSDL)
 - An XML document that defines the programmatic interface (operations, methods, and parameters) for Web Services.
 - Universal description, discovery, and integration (UDDI)
 - An XML framework for businesses to publish and find Web Services online.
 - Security protocol
 - A communication protocol that encrypts and decrypts a message for online transmission; security protocols generally provide authentication.

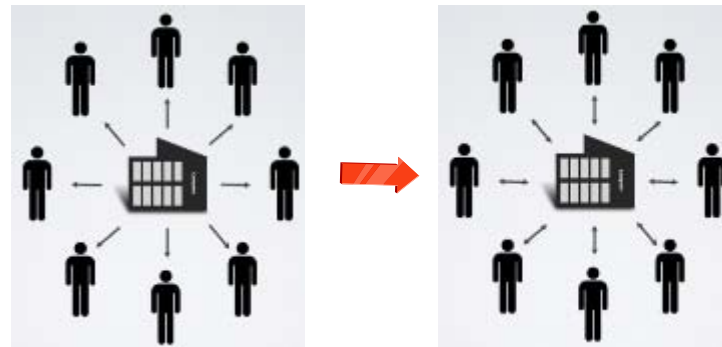
03. Development Options for EC Application

- Web Services
 - Key components of Web services



03. Development Options for EC Application

- Web Services
 - Second-generation Web services
 - Web 2.0
 - A second generation of Web Services that emphasizes online collaboration and information sharing among users.

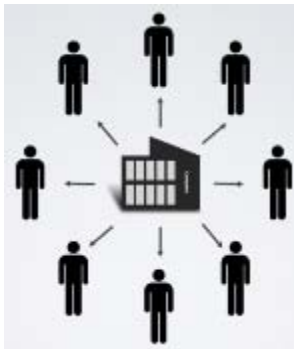


Web 1.0

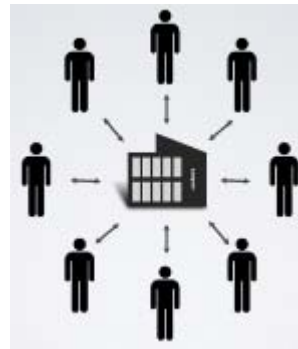
Web 2.0

03. Development Options for EC Application

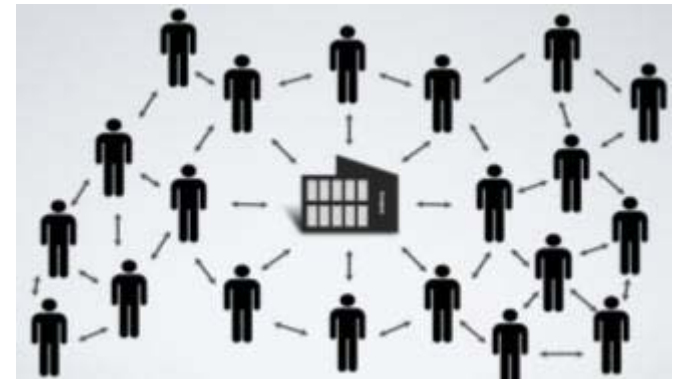
- Web Services
 - Second-generation Web services
 - Social network
 - A social network is a category of Internet applications that help connect friends, business partners, or other individuals together using a variety of tools.



Web 1.0



Web 2.0



Socially Network

03. Development Options for EC Application

- Web Services
 - Second-generation Web services
 - Ajax
 - A Web development technique for creating interactive Web applications.



03. Development Options for EC Application

- Web Services
 - Second-generation Web services
 - Really simple syndication (RSS)
 - A family of Web-feed formats used to publish frequently updated digital content.



03. Development Options for EC Application

- Web Services
 - Second-generation Web services
 - Viral video
 - Video clip that gains widespread popularity through the process of Internet sharing, typically through e-mail or IM messages, blogs, and other media-sharing Web sites.



03. Development Options for EC Application

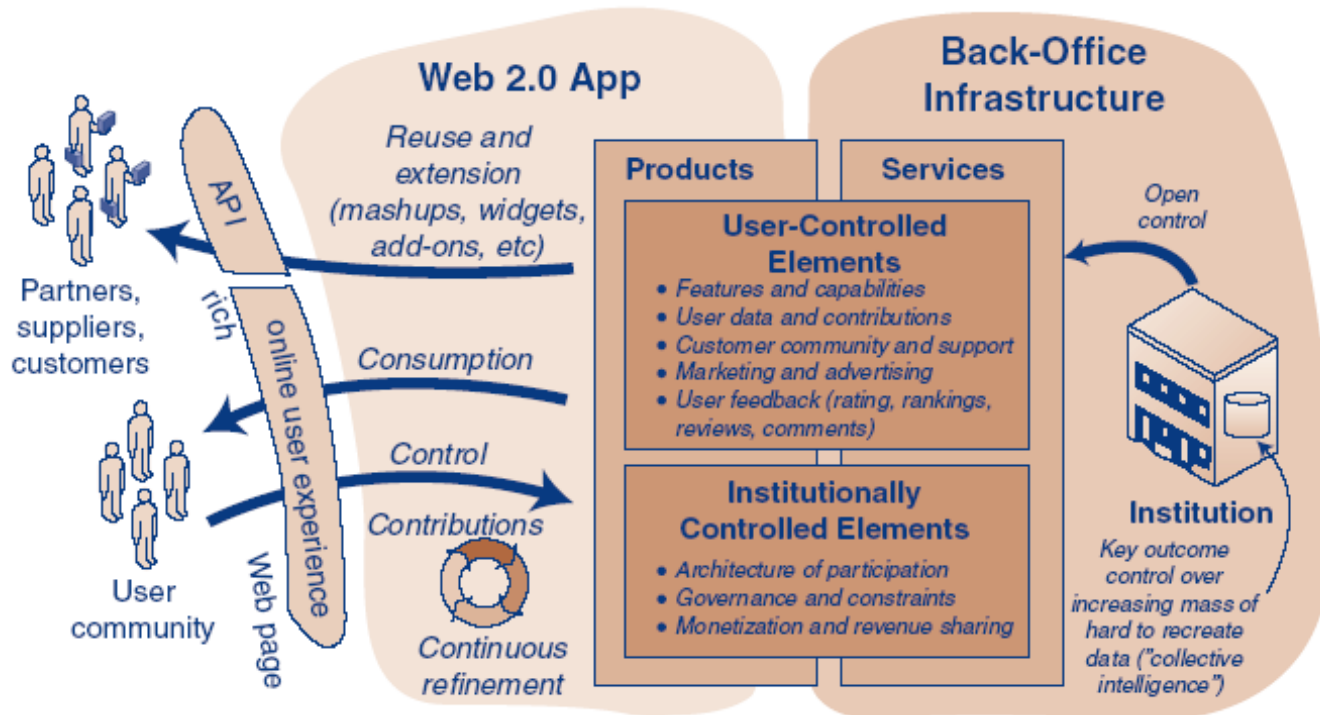
- Web Services
 - Second-generation Web services
 - Mashup
 - Combination of two or more Web sites into a single Web site that provides the content of both sites (whole or partial) to deliver a novel product to consumers.



Map + traffic information

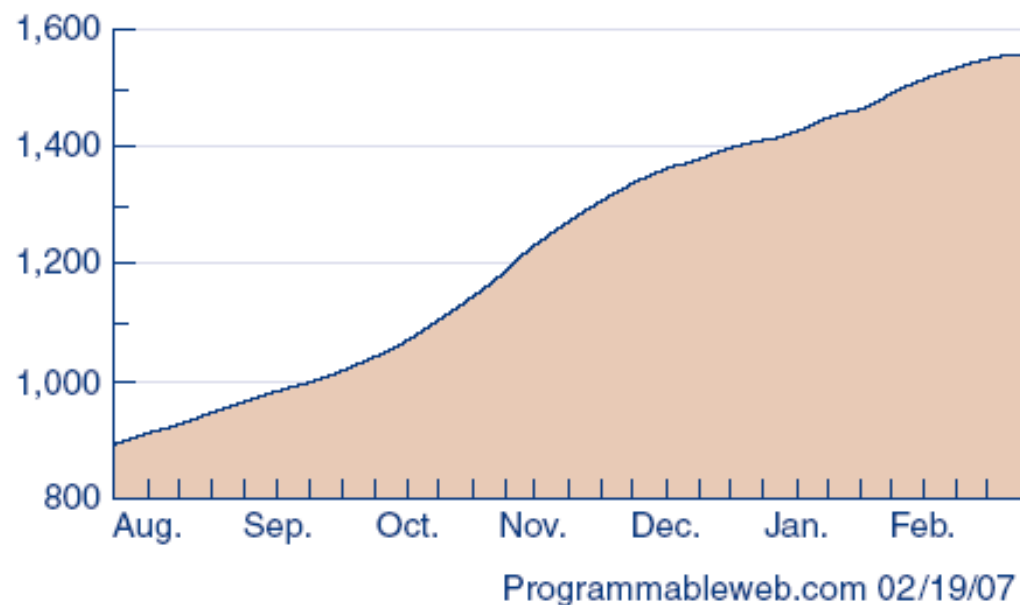
03. Development Options for EC Application

- Web Services
 - Second-generation Web services
 - Product development 2.0: using the web to put users in control and co-create better, richer products faster



03. Development Options for EC Application

- Web Services
 - Second-generation Web services
 - The rapid increase of mashups on the Web



03. Development Options for EC Application

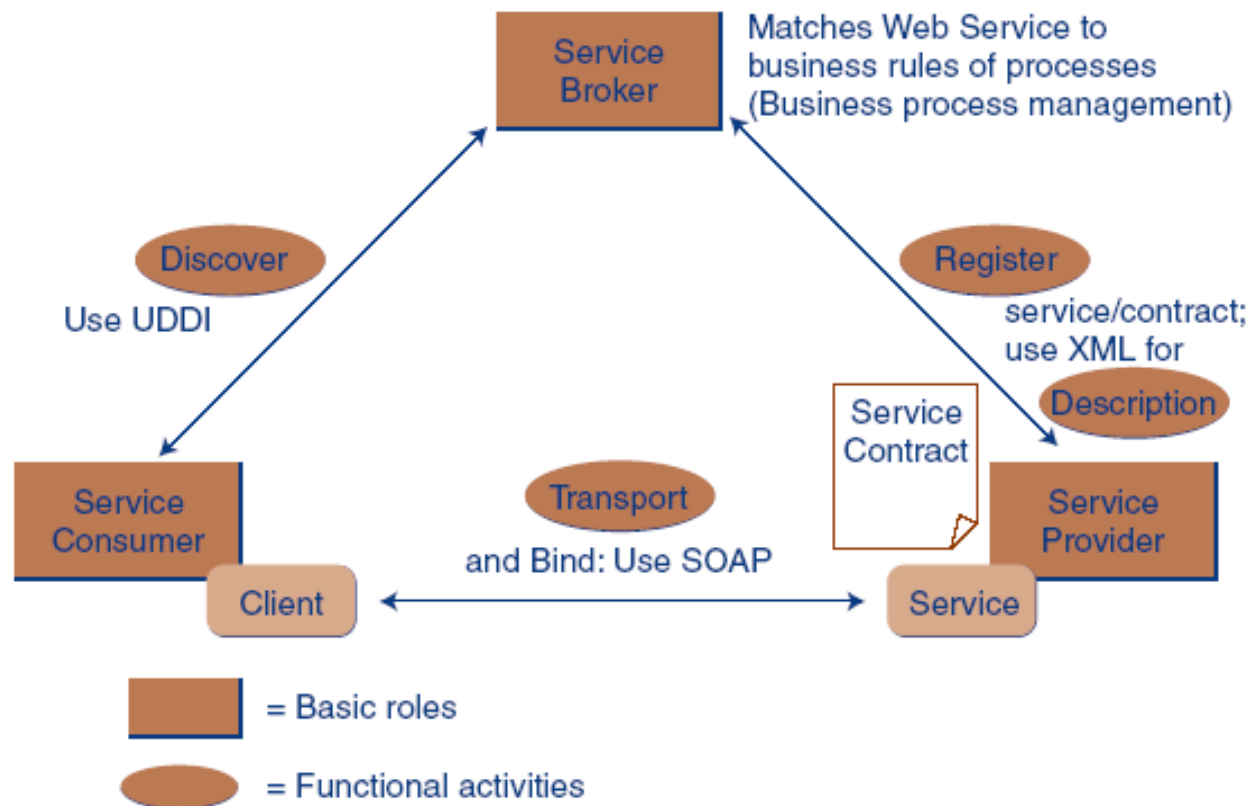
- Service-Oriented Architecture (SOA)
 - An application architecture in which executable components, such as Web Services, can be invoked and executed by client programs based on business rules.



The core components which make up an SOA implementation

03. Development Options for EC Application

- Service-Oriented Architecture (SOA)
 - The three conceptual roles and operations of a SOA



03. Development Options for EC Application

- Service-Oriented Architecture (SOA)
 - Web-oriented architecture (WOA)
 - A set of Web protocols (e.g., HTTP and plain XML) as the most dynamic, scalable, and interoperable Web Service approach.
 - Representational state transfer (REST)
 - Refers to a collection of architectural principles.



03. Development Options for EC Application

- Virtualization
 - A technique for hiding the physical characteristics of computing resources from the way in which other systems, applications, or end users interact with those resources.



03. Development Options for EC Application

- Other Development Options
 - Join an e-marketplace
 - Join an auction or reverse auction third-party site
 - Joint ventures
 - Join a consortium
 - Hybrid approach



04. Criteria for Development Approach

- Criteria for Selecting a Development Approach
 - Flexibility
 - Information requirements
 - User friendliness
 - Hardware and software resources
 - Installation
 - Maintenance services
 - Vendor quality and track record
 - Estimating costs
 - Personnel
 - Technological evolution
 - Sizing
 - Reliability
 - Security



04. Criteria for Development Approach

- Criteria for Selecting a Development Approach
 - Scaling
 - scalability
 - How big a system can grow in various dimensions to provide more service; measured by total number of users, number of simultaneous users, or transaction volume.



04. Criteria for Development Approach

- Criteria for Selecting a Development Approach
 - Performance
 - Latency
 - The time required to complete an operation, such as downloading a Web page.
 - Throughput
 - The number of operations completed in a given period of time; indicates the number of users that a system can handle.



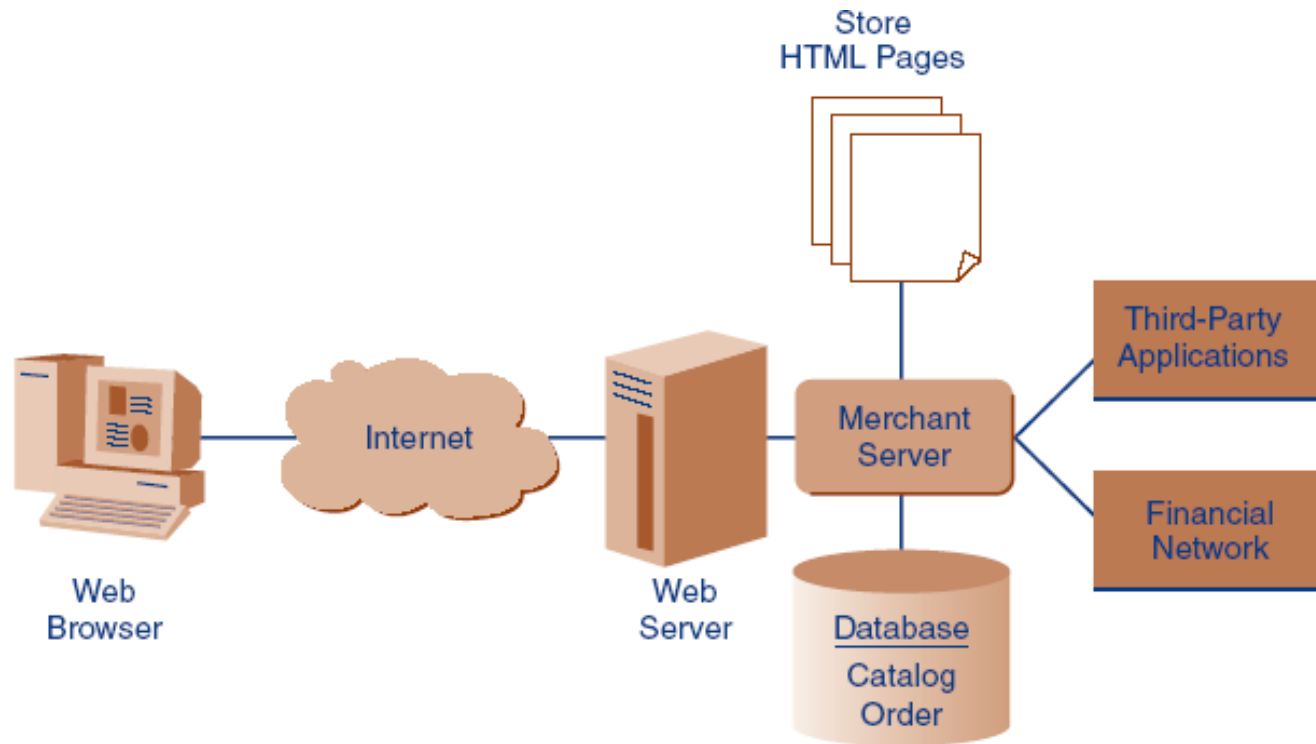
05. EC Software Packages and Suites

- Functional Software Packages
 - Electronic catalog
 - The virtual-world equivalent of a traditional product catalog; contains product descriptions and photos, along with information about various promotions, discounts, payment methods, and methods of delivery.
 - Merchant server software
 - Software for selling over the Internet that enables companies to establish selling sites relatively easily and inexpensively.



05. EC Software Packages and Suites

- Functional Software Packages
 - Merchant server architecture



05. EC Software Packages and Suites

- EC suite
 - A type of merchant server software that consists of an integrated collection of a large number of EC tools and components that work together for EC applications development.



05. EC Software Packages and Suites

- EC suites
 - Microsoft's commerce server 2007
 - IBM's websphere commerce suite
 - Oracle's EC products
 - LiteCommerce 2.2
 - Wireless E-com suite
 - ASPDotNetStoreFront
 - ATG commerce



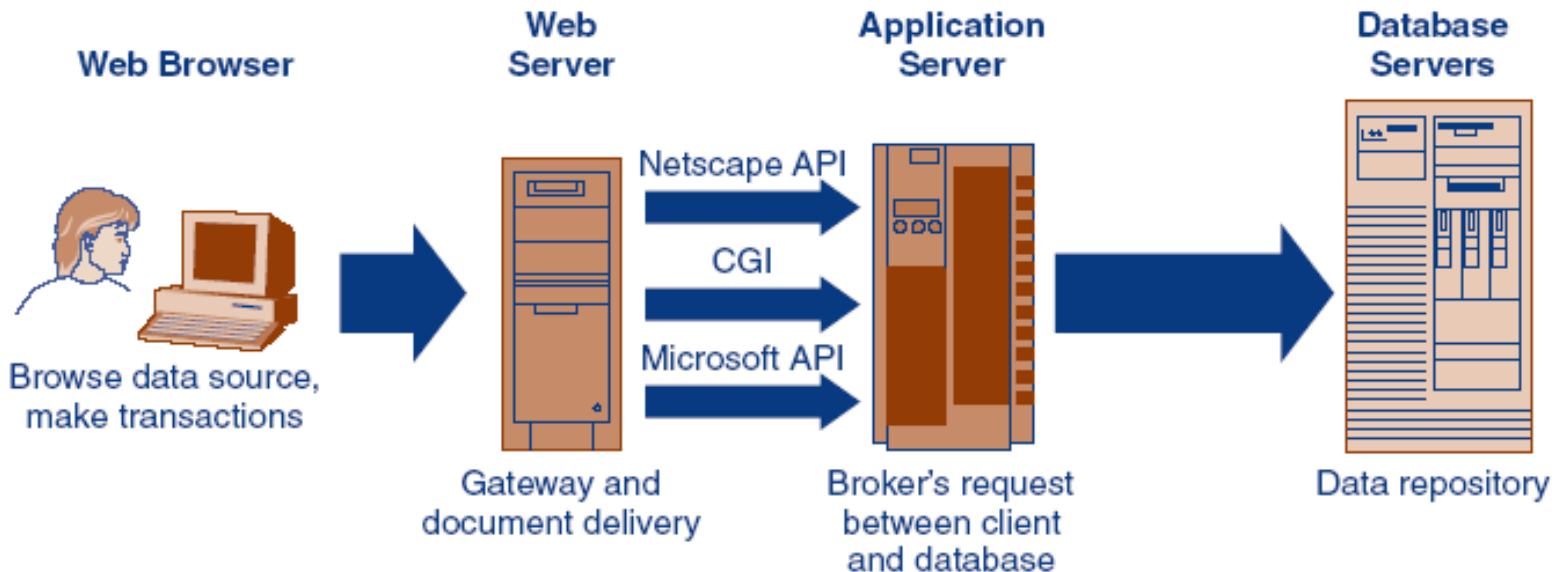
06. Connecting to Other Systems

- Connecting to Databases
 - Multitiered application architecture
 - EC architecture consisting of four tiers: Web browsers, Web servers, application servers, and database servers.



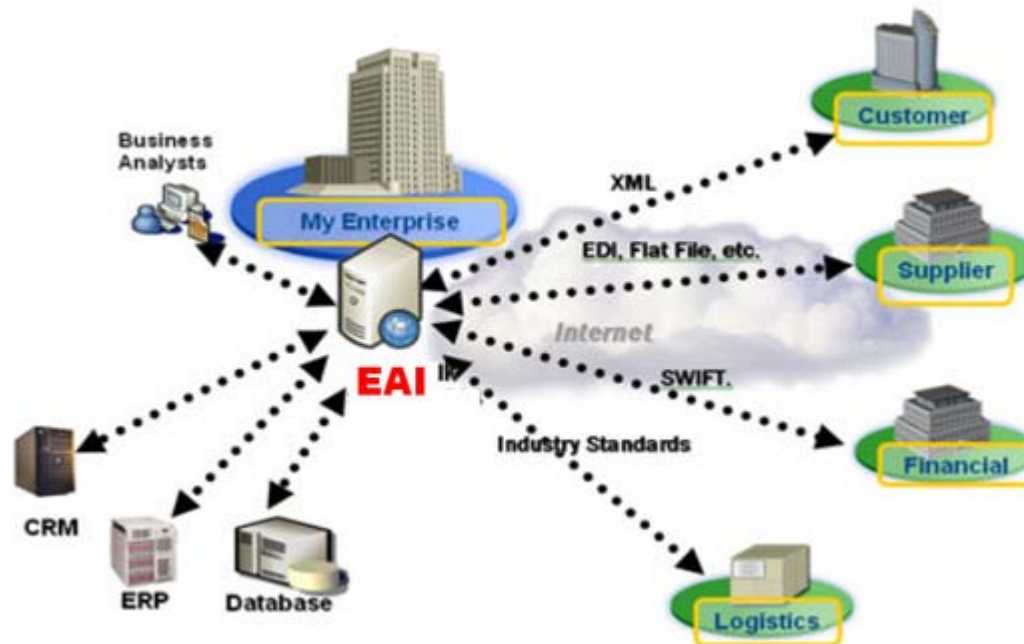
06. Connecting to Other Systems

- Connecting to Databases
 - Example of multitiered application architecture connected to a database



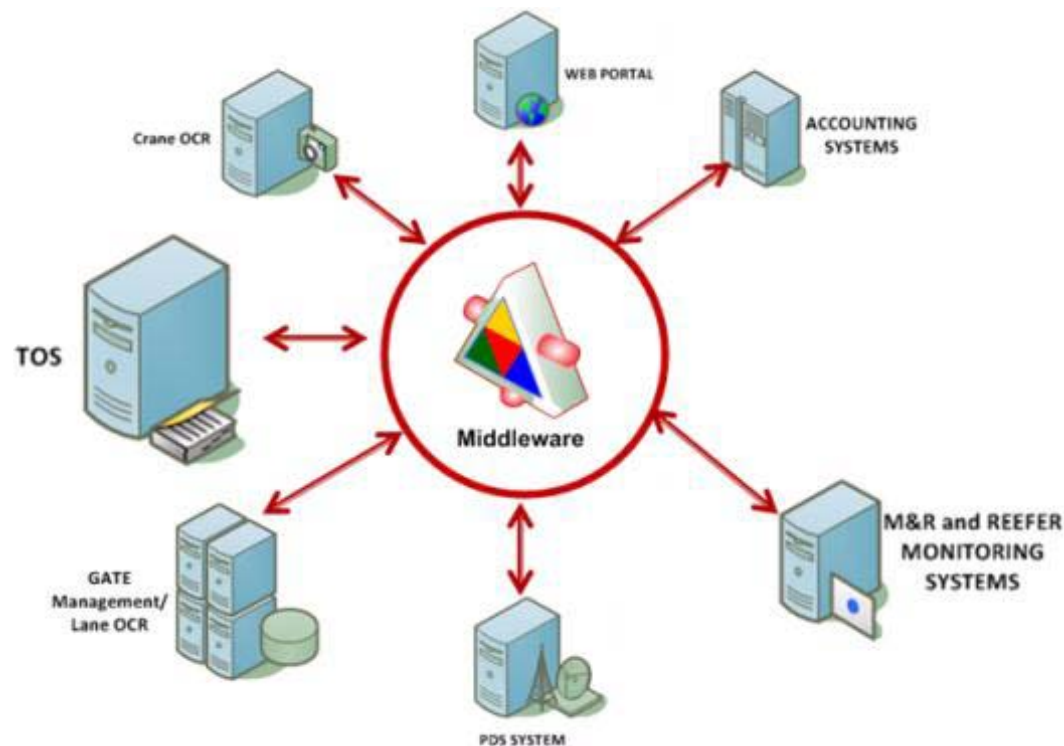
06. Connecting to Other Systems

- Integrating EC Applications and Back-End Systems
 - Enterprise application integration (EAI)
 - Class of software that integrates large systems.



06. Connecting to Other Systems

- Integrating EC Applications and Back-End Systems
 - Middleware
 - Separate products that serve as the glue between two applications; sometimes called plumbing because it connects two sides of an application and passes data between them.



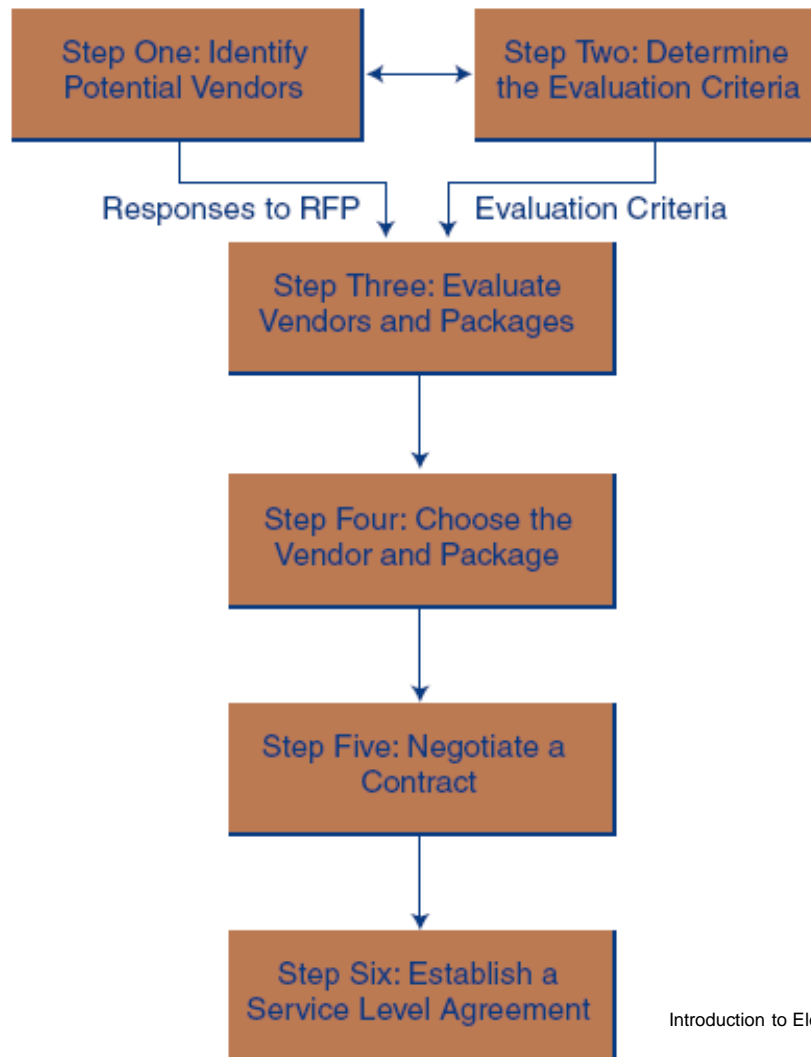
07. Vendor and Software Selection

- The Process of Selecting a Software Vendor and an EC Package
 - 1) Identify potential vendors
 - 2) Determine the evaluation criteria
 - 3) Evaluate vendors and packages
 - 4) Choose the vendor and package
 - 5) Negotiate a contract
 - 6) Establish a service level agreement



07. Vendor and Software Selection

- The Process of Selecting a Software Vendor and an EC Package



07. Vendor and Software Selection

- The Process of Selecting a Software Vendor and an EC Package
 - 2) Determine the evaluation criteria
 - Request for proposal (RFP)
 - Notice sent to potential vendors inviting them to submit a proposal describing their software package and how it would meet the company's needs.



07. Vendor and Software Selection

- The Process of Selecting a Software Vendor and an EC Package
 - 6) Establish a service level agreement
 - Service level agreement (SLA)
 - A formal agreement regarding the division of work between a company and a vendor.

Service Level Agreement Checklist

No	Procedures	Status	Notes
1	Are you using an independent expert to develop SLAs?		
2	Have you scoped the area to be covered by SLAs?		
3	Does the SLA consider BTOPP implications?		
4	Have the outputs for those areas been defined?		
5	Do they tie back to the business objectives?		
6	What is being measured?		
7	Why is it being measured?		
8	How will measurement be done?		
9	Has the current performance level been agreed?		
10	Has the current performance environment been documented?		
11	What are the new measures?		
12	Are the costs of achieving the new measures commensurate with the benefits?		
13	What changes are required to the environment to achieve these measures?		
14	What changes may take place that will alter these proposed measures?		
15	What changes may take place in the environment		

08. Usage Analysis and Site Management

- Log Files
 - Access log
 - A record kept by a Web server that shows when a user accesses the server; kept in a common log file format, each line of this text file details an individual access.

