E-Commerce Systems and Components

Course No.: CMPE296Z

E-Commerce System and Components

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E-Commerce Systems and Components

- Objectives, Requirements, Goals
- the Goals of Participants
- the Role of Standards
- System Users and Their Roles
- Business Functions & Capabilities
- System Architecture and Components
the Goals of Participants

Internet commerce involves different participants. Each has its own needs and goals.

There are five types of participants:

• Buyers (customers)
  • Retail customers
  • Business customers
• Sellers

• Financial processors- operates the part of the credit processing system that accepts transactions from merchants and forwards them to the merchant’s bank.

• Government
• Technologists
the Goals of Participants

Customers:

Needs of retail customers:

• Convenience
• Price
• Selection
• Privacy
• Service
• Security

Sellers:

- Reach new markets
- Create and strengthen customer relationships
- Cost effectiveness
- Security

Needs of business customers:

• Personalization
• Ease of use
• Security

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the Goals of Participants

Conflicts interests in sellers:
- MIS may be very reluctant to deploy an Internet commerce system because it is new and different
- Sales department may feel threatened by the ability of the Internet to collapse distribution channels.

Financial processors:
- Secured transactions
- Large transaction volume
- Cost structure
- Added services
- Minimize risk

Government:
- National security
- Legal controls
- Taxes
Roles of Standards

In information technology, a standard is a set of specifications that helps enable system built by different parties to inter-operate.

In Internet commerce, standards serve two primary functions:

• Standards are a way of transferring power from vendors to customers.
  • Reduce the cost of proprietary systems and technologies

• Standards are a way of assembling a complete system from multiple vendors.

The major problem with standards -->
  difficult to make them simple enough to be widely adopted,
  complex enough to be useful.

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Roles of Standards

Early versus Late Standardization:

Standards efforts tend to follow one of two paths: early or late standardization

Late Standardization:

- Various parties work together cooperatively to build the market, or competing technologies arise and the market decides on a leader.

- When a proprietary system acquires such dominant market share that it becomes a standard. This standard usually is more complex due to its origins.

Early Standardization:

Multiple parties get together and jointly agree on specifications.
- This can work out for the benefit of everyone.
- This may cause a complex standard covering too much.
Roles of Standards

Standards for Internet Commerce:

- Standards aid interoperability

- The best is the enemy of the good

There is a strong benefit to consistency and standardization that leads to ease of use.

- The good is the enemy of the best.

Standardization, and particularly premature standardization, restricts innovation.
Systems Users and Their Roles

E-Commerce systems have three types of users:

- Buyers of goods and services
- Sellers of goods and services
- System operation personnel

Each user group has:

- its operational function sets
- its distinct role sets
E-Systems Users and Their Roles

Customer Roles:

A buyer play as different roles in the process of buying goods and services. They are: customer, consumer, purchasing agent, and so on.

In some cases, the same person plays all of the roles. However, in the businesses, it is useful to consider the various roles:

- **Specifier** - this person selects what is to be purchased.
- **Approver** - this person approves a purchase recommended by the specifier.
- **Buyer** - this person negotiates the terms and conditions of a purchase and arranges for payment.
- **Recipient** - this person receives the delivered goods and services.
E-Systems Users and Their Roles

Business Roles:
A seller also play as different roles in the process of selling goods and services in an Internet commerce system.
Smaller businesses may have just a few people playing all the roles. However, for larger businesses, it is useful to distinct the following roles:

• Business manager - plays as a business manager for the Internet commerce.
  • Decide the business approach
  • Make the decisions on production selections, pricing, and services
  • Establish business relationships

• Commerce architect - a system analyst for an e-commerce system
  • Conduct the system design and software design for business needs

• Content designer - a designer who is responsible for the look and feel of
  • Internet commerce system, including catalog, and GUI design,...
E-Systems Users and Their Roles

System Operational Roles:

The operations team installs and operates the Internet commerce system, making sure that it is running and available for customers.

• Operations manager - manage all operational services of the Internet commerce system
• System supervisor - manage the system staff.
• System administrator - responsible for technical operations of the computer systems and networks.
• Security officer - implement and maintain the security measures of the system
• Fulfillment agent - Shipping and handling of goods or delivery of servers.
• Accountant - maintain business records, and handle accounting procedure.
E-Systems Users and Their Roles

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General Business Functions and Capabilities

Marketing and Sales:

- Create, update, maintain product catalog
- Create, update, distribute advertisement
- One-to-one marketing and sales
- Business-to-business marketing and sales
- Personalized Marketing and Sales
- Sales activities, demo, exhibits, live shows

Transaction Processing:

- Process purchasing orders
- Process payments
- Conduct authorization, verification, authentication
- Business record book keeping
General Business Functions and Capabilities

Customer Services:
- Pre-sale and post-sale services
- Delivery and shipping services
- Customer services
- Membership services

Security Functions:
- Authentication
- Authorization
- Certification
General Business Functions and Capabilities

Inventory management:
- warehouse management and book keeping
- product catalog integration
- transaction system integration

Accounting operation support:
- Sale tax processing
- Service tax processing
- Value-added tax
- Account book keeping

MIS and system administration:
- DB administration and management
- System maintenance
- System support
- Backup and recovery
Specific Business Functions and Capabilities

Business to consumers:

- order capture
  - easy to use, one-line ordering

- consumer-oriented payment (credit card or check)

- personalized content and merchandising

  - digital coupons
  - advertising and email

- support for small and medium merchants

  - smaller business use Internet hosting services
  - large business keep their catalog in-house
Specific Business Functions and Capabilities

Business to Business:

- Payment mechanisms
  - business-to-business version of credit cards
  - purchase orders and invoicing
  - check or electronic funds transfer
  - new protocol, such as OBI.

- Fulfillment through a Fulfillment API to legacy systems

- Custom catalog

  - digital tickets and digital queries (customer DB API)
  - customized part numbers, reserved inventory
  - display of contract and pricing…
  - real-time, complete and accurate product information
Specific Business Functions and Capabilities

Information commerce:

- Business models
  - buy-and-sale model
  - auction model
    offered products and offered customers
  - subscription model

- Payment models:
  - traditional styles, such as credit cards,…
  - micro-transactions, such as parking-meter prepay,
    taxi-meter post-pay styles

- Customer services:
  - pre-sale services
  - post-sale services
# Basic Components in E-Commerce Systems

<table>
<thead>
<tr>
<th>Purchasing Server</th>
<th>Account Server</th>
<th>Administration Servers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Server</td>
<td>Payment Server</td>
<td>Security Servers</td>
</tr>
<tr>
<td>Advertising Server</td>
<td>Customer Service Server</td>
<td>Shipping &amp; Delivery Server</td>
</tr>
</tbody>
</table>
Basic Functions of A Content Server

• Formatting
• Multimedia
• Presentation
• Publishing
• DB connector
• Authoring
• Maintain & Edit
• Archiving
• Custom Content
• Management Content

Topic: Components in E-Commerce Systems
**Functions of A Payment Server**

- Credit card payment processing
- Check payment processing
- Cash and Micro-payment processing
- Money order processing
- Coupons processing
- Smart card processing

- Consumer credit
- Immediate payment
- Insurance
- Financial clearing house
- Global service
- Record keeping
- Enable merchant trust
- Enable consumer trust

- Get a fixed discount
- Get a percentage discount
- Buy one, get one free
- Buy X get a discount on Y.
- After N purchases, the next one is free.

Portable storage
Secure storage
Trusted execution env.
Order Pipeline

Offer Creation

User profile

Digital Offers & Coupons

Incomplete Orders

Order Capture

Authentication

Merchandising

Approval

Order Completion

Tax

Shipping

Complete Orders

Payment Authorization

Invoices

Fulfillment

Digital Receipt

Digital Ticket

ERP System

E-mail

Fax

HTML

Other

Other

Settlement

Queries

Credit

Customer Service

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Order Pipeline

• Offer and coupon creation:
  • The seller creates commerce-enabled content using desktop publishing software web development tools. The content may be static or dynamic. The order items flow from the content system to Transact as digital offers and digital coupons.

• Order capture:
  • gather customer information, billing address, shipping address, payment method, quantities.

• Order completion:
  • order processing, including tax and shipping cost computation.

• Payment authorization:
  • conduct credit card authorization.

• Fulfillment:
  • is responsible for settlement operations, including invoices, and shipping.

• Payment settlement:
  • completes the financial transactions begun in the authorization.
Open Market Commerce Architecture

- Business Catalog Server
- SecureLink
- Transact
- Retail Content Server
- Information Content Server
- End User
- Merchant
- Transact Op
- fulfillment networks
- financial networks

Topic: Components in E-Commerce Systems

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Topic: Components in E-Commerce Systems

internet

Firewall 1

Front host

transaction server
tax server
subscription server
post code server

Firewall 2

Back host

log server
DB
fax server
settlement server
There are several logical servers:

• **Transaction server:**
  • Store information about users, such as buyers, sellers, and operators.

• **Subscription server:**
  • maintain an access control database. It performs periodic payment processing.

• **Tax server:**
  • calculates per-item U.S. sales taxes and other services taxes at other places.

• **Postcode server:**
  • maps addresses to GEO codes.

• **Log server:**
  • collects and records log and audit events from all the other servers.

• **Settlement server:**
  • is responsible for real-time authorization and batch settlement operations.

• **Fax server**
  • optional component which is used to deliver advice or order messages to sellers by fax.