eCommerce – Chapter 04

Web X.0

World Wide Web
Architecture for a very flexible and powerful provisioning of content and other functions in a world-wide distributed system

Web Standards

- Standard naming model: *Uniform Resource Locators*
- Content typing: *All content on the Web have a specific type*
- Standard content formats: *Markup languages (HTML) and scripting languages (JavaScript)*
- Standard protocols: *Networking protocols allow interworking between any web browser and any server (HTTP, TCP/IP)*

Web 1.0: The Web of Documents
World-wide network of interlinked static documents.

Web 2.0: The Web as a Platform
Deliver of rich content (audio, video and multimedia) and the democratization of the Web (Social Networks, Blogging, Tagging, Sharing, …).

Web 3.0: The Web of Data
Web made for machines and interlinking different data sources.

Markup Languages

Language that annotates text so that the computer can manipulate the text.

XML
Markup language that defines a set of rules for encoding documents in a format that human and machine can read it.

HTML
Predominant markup language for web pages.

HTML 5

- Supports the shift from the text/document-oriented Web towards the media-oriented Web.
- Move the web away from proprietary technologies
- Features: Media elements, Canvas, Geolocation API, Offline Web Applications

HTTP

- **GET:** Use to retrieve resources from the server.
- **POST**: Data from the POST method is sent as part of the request body.

Cascading Style Sheets (CSS)
Way to define the visual appearance of different HTML elements. Facilitates having a standard design throughout the website.

Client Side Programming

Dynamic Web Pages
Web page that …

- is based on data submitted by the user.
- derived from data that changes frequently.
- uses information from databases or another server-side source.

Script files are sent upon request to the user's browser, which executes the script, then displays the document, including any visible output from the script

Limitations:

- Download time
- Browser compatibility
- Possible security hazards for the client computer
- Visible code

Typical uses:

- Navigation
- Visual effects animations
- Form validation
- User interface tools e.g. calculators, calendars

Script Languages
Programming languages that do not need to be compiled before execution (*interpreted languages*)

- *Interpreter*: Software that reads it

JavaScript
Scripting language supported by nearly all Web browsers in use today.

AJAX (Asynchronous JavaScript and XML)
Instead of loading entire Web pages, applications can send data to and receive data from a server asynchronously and display the result immediately to the user.
Not a single technology (*CSS, DOM, XML, JSON, JavaScript*)

Document Object Model (DOM)
Cross-platform and language-independent convention for representing and interacting with objects in HTML and XML.

Server-side Programming

Application Programs
Data is passed using the HTTP protocol from an HTML form in a Web page to external program on a Web server.

Server Pages
Instead of using external programs, they use the concept of server pages (HTML pages with embedded code). The code is executed before the page is delivered to the client.

PHP
General purpose scripting language originally designed for Web development for producing dynamic content.

Servlets
Java classes that run on a server and do the dynamic Web pages of a Web application.

Java Server Pages (JSPs)
Consist of Java code that is embedded within HTML code.

Basic Backend Architecture

1. Application program or Server page
    - Responsible for handling request and responses, execution of business logic, persistent storage and presentation.
2. Database connector for persistent data storage
    - Offers methods to map request and responses between the application program and the query language used by the database

Not recommended for complex applications because:
- Server pages would become cluttered with many scripts.
- Code would be difficult to maintain.
- Application logic would have to handle many different aspects.

Model-View-Controller
Pattern commonly used to structure web applications that have significant processing requirements.

eCommerce Customer Journey

1. Attracting Customers

Features that make it easy to create a search engine friendly website and increases the likelihood of bringing the right customer to the site.

- Search Engine Optimization (SEO)
- Custom URLs
- Meta data

- Sitemaps
- Analytics

2. Engaging Customers

Deals with the creation of a customized, engaging eCommerce site.
Encourages customers to spend more time exploring the eCommerce site and gives them tools to make it easy to make it easy to find what they want faster.

- Content Management System
- Design & Theme
- Multiple sites, stores & views
- Multiple devices
- Shopping tools
- Search filters

3. Increasing Average Order Value (AOV)

Tailoring the sopping experience, and encouraging the customer to put more items in their shopping carts and spend more money.

- Promotions
- Coupons
- Product suggestions

4. Moment of Purchase

Fast and easy way to check out, including automatic calculation of shipping cost and taxes and integration of multiple paying methods on a single page.

- Order processing
- Shipping labels
- Multiple shipping options
- Taxes
- Assisted shopping
- Security

5. Customer Retention

Repetition of business and building brand loyalty by creating and revising goodies like rewards programs, custom coupons and, automated emails/newsletters.

6. Loyalty & Advocacy

Measures that give customers a direct connection to a brand.

- Dashboard snapshots
- Customer accounts
- Multiple payment methods
- Advocacy
- Reviews & ratings