

Web Engineering: A Practitioner's Approach

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Chapter 1: *Web-Based Systems*

- In the early days of the Web, we built systems using **informality, urgency, intuition, and art**
 - *Informality* leads to an easy work environment—one in which you can do your own thing.
 - *Urgency* leads to action and rapid decision making.
 - *Intuition* is an intangible quality that enables you to “feel” your way through complex situations.
 - *Art* leads to aesthetic form and function—to something that pleases those who encounter it.
- Problem is—**this approach can and often does lead to problems**

But Why?

- As WebApps become larger and more complex,
 - Informality remains, but some degree of *requirements gathering and planning* are necessary
 - Urgency remains, but it must be tempered by a recognition that *decisions may have broad consequences*
 - Intuition remains, but it must be augmented by *proven management and technical patterns*
 - Art remains, but it must be *complemented with solid design*
- Bottom line—we must adapt the old-school approach to the realities of a Web 2.0 world

And What' s the Response?

Web Engineering

The Web

- An indispensable technology
 - In virtually every aspect of modern living
- A transformative technology
 - Changes the way we do things
 - Changes the way we acquire and disseminate information
- An evolving technology
- Bottom line—high impact on everyone in the modern world

- Therefore, need a delivery “vehicle” that:
 1. Takes raw information associated with an area of interest;
 2. Structures it in a meaningful way;
 3. Builds a packaged presentation that is organised, aesthetic, ergonomic, and interactive (where required);
 4. Delivers it in a Web browser in a manner that initiates a *conversation*.

WebApps

- The term *Web application* (WebApp) encompasses:
 - everything from a *simple Web page*, that might help a consumer compute an automobile lease payment, to a *comprehensive website*, that provides complete travel services for business people and vacationers.

Included within this category are complete websites, specialized functionality within websites, and information-processing applications that reside on the Internet or on an Intranet or Extranet.

Characteristics of WebApps - I

- **Network intensiveness.** A WebApp resides on a network and must serve the needs of a diverse community of clients.
- **Concurrency.** A large number of users may access the WebApp at one time.
- **Unpredictable load.** The number of users of the WebApp may vary by orders of magnitude from day to day.
- **Performance.** If a WebApp user must wait too long (for access, for server-side processing, for client-side formatting and display), he or she may decide to go elsewhere.
- **Availability.** Although expectation of 100 percent availability is unreasonable, users of popular WebApps often demand access on a “24/7/365” basis.

Characteristics of WebApps - II

- **Data driven.** The primary function of many WebApps is to use hypermedia to present text, graphics, audio, and video content to the end-user.
- **Content sensitive.** The quality and aesthetic nature of content remains an important determinant of the quality of a WebApp.
- **Continuous evolution.** Unlike conventional application software that evolves over a series of planned, chronologically-spaced releases, Web applications evolve continuously.
- **Immediacy.** Although *immediacy*—the compelling need to get software to market quickly—is a characteristic of many application domains, WebApps often exhibit a time to market that can be a matter of a few days or weeks.
- **Security.** Because WebApps are available via network access, it is difficult, if not impossible, to limit the population of end-users who may access the application.
- **Aesthetics.** An undeniable part of the appeal of a WebApp is its look and feel.

WebApp Types

- Informational
- Download
- Customizable
- Interaction
- User input
- Transaction-oriented
- Service-oriented
- Portals
- Database access
- Data warehousing