B345 Internet Science and Technology

Week 5 lecture 1

Today's Lecture Learning Objective

- Understand the foundations of the new "agile" software development methodologies.

Programming by undergraduates

- Code and Fix
- Not scalable

Software Development Methodologies

- To handle complexity
- Usually *at least* cover stages of
    - Requirements gathering
    - Analysis
    - Design
    - Implementation
    - Testing
    - Deployment

Common complaint

- Spend more time following process than developing software.

Agile Methodologies

- Light-weight
- Find the most appropriate and the optimal level of process to adopt.

Adaptive and People-Oriented

- Adaptive vs Predictive methods
- People vs Process oriented

Design vs Construction

- Separate design from construction.
- Want the design to be at a stage where construction (code writing) is a trivial process.

Unpredictable Requirements

- Is it poor requirements engineering?
- Features of software: can't tell until tested.
- Unpredictability of customers, users, developers, environments.

Appropriateness of Methodology

- Boundary conditions of methodology.
- Assumption of predictability.

Iterative Development

- Feedback for unpredictability.
- Documents can always hide flaws, but not a working system.
- Expose not only flaws in design and implementation, but also in requirements.

Adaptive Customer

- Include customer in process.
- Fix budget, but not price-time-scope.
    - Adapt with customer involvement.
- Benefits
    - Software closer to customer needs
    - No hiding project status

People over Process

- Adaptive methods completely depends on the specific individuals.
    - Contradicts process-oriented approach: predictable roles filled by predictable individuals.
- Responsibilities back to the developers.

Process and Management

- Trust in developers.
- Management and technology change.
- The trouble with measurement.
- Mutual dependence - close communication.

Adapting Process

- Changing environment.
- Reviews of process.
    - People decide.
- Is there a "methodology"?