Information Systems Concepts

Software Development Processes

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Based on Chapters 3 and 21 of Bennett, McRobb and Farmer: 
Outline

- Process, Method and Methodology
  - Section 3.4 (p. 77)
  - Section 21.2 (pp. 611 – 614)
Building a Doghouse

- Drive to the DIY store and buy some timber and nails
- ......
- By the end of the afternoon, you'll have a new house for Fido
- Oops, you forgot to provide for a door (or made some other mistakes)
Building a Doghouse

- Well, it’s not a big problem. You can fix it or even start over from the beginning.
- All you've wasted is part of an afternoon
- This loose approach is appropriate for small software projects too. If you use the wrong design for 1000 lines of code, you can change or start over completely without losing much.
Now you want a new home for yourself.

Draw outline on the ground. Order some timber, nails, plumbing and cables. Get tools. Start putting together wooden boards. Run plumbing and cables through the house.

......

Oops, you suddenly realize that a wall is not in the right place. So you rip out the wall and move it to six inches away.
No! That's not the way to build a house.
  - You will waste a lot of money and a lot of time.
  - The house will probably collapse.

Clearly you have to go further than just tools and techniques.
  - A fool with a tool ...

You need something broader: a methodology (an overall philosophical and systematic approach to the problem)
Process

- When building a house or software, certain steps should be taken:
  - Careful planning (to avoid collapsing buildings/failed software projects)
  - Systematic approach (reasonable sequence of steps)
  - Getting the right people (different areas of expertise)
  - Financing the project
  - and so on
Process, Method and Methodology

- Often confused, as if they were all the same thing, but actually these terms differ
- Some authors use *method* to mean *methodology*
- Some authors use *process* for both!
Process, Method and Methodology

- **Process/Method** = a step-by-step description of the steps involved in doing a particular job. Since no two projects are ever identical, any method is specific to one project.
  - Applying methods is like cooking by strictly following a recipe

- **Methodology** = a set of general principles that guide the choice of a method suited to a specific task or project.
  - Applying methodologies is knowing about why certain steps are taken while preparing a meal

*UML itself contains nothing that helps to make this decision*
Mixing Drinks: A Real-World Example

- **Tools:** cocktail shaker, jigger, juicer, measuring spoons, knife, . . .
- **Techniques:** stirring, shaking, blending, pouring, . . .
- **Process/Method:** following a strict recipe while preparing a drink
- **Methodology:** knowing about the philosophy
  - Running out of an ingredient, what to substitute?
  - Guest wants non-alcoholic version, what to use?
What Is a Methodology?

- A collection of
  - Procedures
  - Techniques
  - Tools
  - Documentation Aids
- Organized within a lifecycle or structure
- An underlying philosophy that captures a particular view of the meaning and purpose of IS development

--- Avison and Fitzgerald (2002)
Why Use a Methodology?

- **Advantages:**
  - Helps produce better quality product
    - Documentation standards
    - Acceptability to users
    - Maintainability of software
    - Consistency of software
  - Helps ensure user requirements are met completely
  - Helps the project manager
    - Better control of project execution
    - Reduction in overall development costs
  - Promotes communication between project participants
  - Encourage the transmission of know-how throughout
Take Home Messages

- Processes, Method and Methodology
- What Is a Methodology?
- Why Use a Methodology?