

Intro. to Development Processes

- ◆ Necessary to make a project:
 - Manageable
 - Repeatable
 - Successful
- ◆ Based on “best practices” involving ...
 - Iterative,
 - Incremental,
 - Use case driven approach.

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Recommended Process & Models

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UML & Development Processes

- ◆ UML standardizes artifacts & notation
- ◆ Does not define a development process
 - increases the likelihood of widespread acceptance
 - There are significant differences of opinion on what constitutes an appropriate process.
- ◆ Many methodologies share the same features
 - although terminology differs between models

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Macro-level Steps

- ◆ Plan & Elaborate: feasibility, requirements, building prototypes, etc.
- ◆ Build: system construction
- ◆ Deploy: implementation of system by users

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Iterative & Incremental Develop.

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Rapid Application Development

- ◆ Shortens time between development cycles
- ◆ Forces each iteration to take on only a few new features/requirements
- ◆ Forces feedback to be generated early in the development process
 - Hopefully, lessons will be learned early & big mistakes avoided later on in the project!
- ◆ Manages risk by attacking most risky issues first

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Time-boxing a Develop. Cycle

- One cycle should take about one month
- Anything less means nothing significant can be accomplished
- Anything more means added complexity

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Use Cases & Develop. Cycles

- Each development cycle is driven by use case requirements
 - each develop. cycle is assigned to implement one or more use cases
 - This avoids the rush to development before requirements are fully specified
 - Early use cases may focus on non-evident requirements, like persistence, security, etc.
 - Ex. Java applets and file I/O

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Ranking Use Cases

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Plan & Elaborate Phase

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Build Phase - Develop. Cycles

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Build Phase - Develop. Cycles

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Order of Artifact Creation

- ◆ Creation of artifacts not done in sequential order (several done in parallel)
 - Create Conceptual Model & Glossary in parallel
 - Create Interaction Diagrams & Design Class Diagrams in parallel
- ◆ Conceptual Model created during Plan & Elaborate phase (but not too detailed!)

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Expanded Use Cases

- ◆ High-level use cases are very brief
 - 2 or 3 sentence descriptions of a process
- ◆ Expanded use cases are long narratives
 - may contain hundreds of sentences!
- ◆ Create all high-level use cases during Plan & Elaborate phase
 - only expand the most critical use cases
 - defer rest until dev. cycle in which they appear

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Models and Artifacts

- ◆ Illustrate the dependent relationship between the artifacts within the model
- ◆ Real-world systems are overwhelmingly complex
 - decompose system into manageable "chunks"
 - "models" are used to represent the "chunks"
 - "artifacts" describe aspects of the "models"
 - diagrams & documents are examples of artifacts

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Models & Artifacts

- ◆ The UML specifies several diagrams
 - use case diagram, interaction diagram, etc.
- ◆ Models are visualized through "views"
 - use case view, logical view, component view
- ◆ "Static" models describe structural properties
- ◆ "Dynamic" models describe behavioral properties of the system

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Sample Models

- ◆ Analysis Model - related to investigation of the domain, but not the solution
- ◆ Design Model - models related to the logical solution

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Relationship between Artifacts

-In the Plan & Elaborate phase

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