



8. Software Engineering I

Process And Tools For Design & Development



CSE 498, Collaborative Design

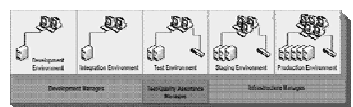
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S Overview

- Overview of a lifecycle or development process
- Tools used in each phase
 - Design
 - Development
 - Test/Stabilization
 - Deployment

S Why have a process?

- PRO: Methodology tells you how to do something
 - Seems like a good idea...
 - Carries lessons learned forward so we don't repeat mistakes
 - Makes sure we're thoroughly understanding the problem
- CON: Most people do not have the experience to know which parts of the method help get them to the goal
 - Methodology can lead to "analysis paralysis"
 - Methodology cannot solve fundamental people issues like communication
- What's your methodology? How do you do team projects?



S Lots of processes exist...

- Mil-Std 2167A, 10000 series...
- Capability Maturity Model (SEI)
- PMBOK (IEEE)
- Extreme programming (XP), agile methods
- "Corporate custom"
 - I'll use Microsoft Solutions Framework terminology
 - Most methods have similar steps but often call them by different names

S Process Model for Application Development

S Milestone-Driven Process

- Milestones are review and synchronization points, not freeze points
- Milestones enable the team to assess progress and make mid-course corrections
- The process model uses two sorts of milestones
 - Major milestones
 - Interim milestones
- Achieving a major milestone represents team and customer agreement to proceed
- Deliverables are physical evidence that the team has reached a milestone

Project Plan Approved Milestone

S →

Signals agreement on

- Project trade-off strategy
- Project risks
- What will be built
- When it will be built
- How it will be built
- Who will build it

Deliverables for Project Plan Approved

S →

Deliverable	Purpose	Owner
Functional specification	Describes what will be built	Program management
Master project plan	Describes how it will be built	Program management
Master project schedule	Describes when it will be built	Program management
Master risk assessment document	Describes any issues in building it	Program management

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Scope Complete Milestone

S →

Signals agreement on

- The planned feature set
- Whether the planned feature set has been developed
- Baselined materials to support user performance
- The stabilization process, including betas and testing

Team Focus During Developing

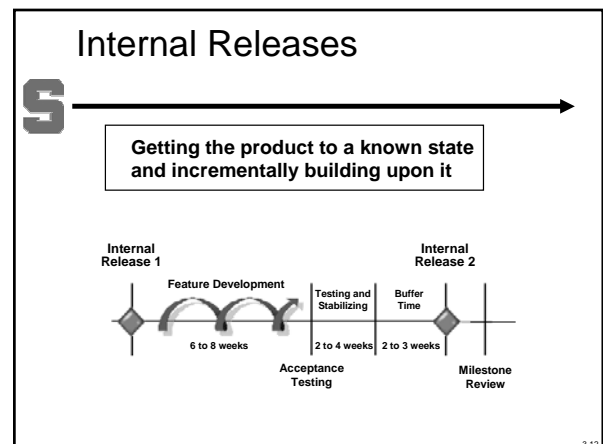
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Role	Focus
Product management	Customer expectations management; communication plan execution; beta planning
Program management	Project tracking; team communication and coordination; beta planning
Development	Feature development; testing
User education	User performance support development and testing; beta planning; product usability testing
Testing	Test specifications, cases, and scripts development; testing
Logistics management	Operational support documentation; beta planning; internal team support

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Suggested Interim Milestones

S →



S Guidelines for Internal Releases

- Treat internal releases within a single project like versioned releases of a product
- Address high-priority and high-risk features in the earliest possible release
- Define a quality bar to determine when the product has met the standards for internal release
- Make each release as cohesive and yet independent as possible
- Conduct postmortem reviews of each internal release

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S Code Reviews



Assessing code to improve its quality and to improve the capabilities of the development team

Some ways to conduct code reviews

- A comprehensive, formal review
- A more casual, peer-based review
- An independent, third-party review

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S Daily Build

Building the product in an executable form on a daily basis



A public daily build is

- A strong indicator that a team is functional
- A way to make the product and its progress visible
- The heartbeat of the development process

Video

3-15

MICHIGAN STATE
UNIVERSITY

Tools we use....



S Design tools

- Word, Excel (noun analysis, contracts)
- Visio (UML and ORM), Erwin, Rational XDE
- MS Project (schedule)
- Team portal and bug tracker set up
 - SharePoint, raw HTML, FrontPage
 - TaskVision

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S Development tools

- (your compiler ☺)
- NAnt, Ant, Kinook (builds)
- FxCop (code reviews)
- Visual SourceSafe, PVCS, Clearcase (code mgmt)
- NDoc, HTMLHelp, Robohelp (documentation)

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S Let's see some tools...

- Time to demo
 - Walkthrough a simple application lifecycle



Demo

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