



University of Southern California
Center for Software Engineering

Preparing for Software Transition and Support

CS 577

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Outline

- **What happens when a software product enters use?**
 - Sources of change
 - Change-related activities
- **What are the resulting software evolution phenomena?**
 - Evolution patterns
 - Evolution economics
- **What are the implications for transition and support preparation?**
 - Support planning
 - Transition planning



What Happens When Your Software Enters Use? -Sources of Change I

TBD



What Happens When Your Software Enters Use?

-Sources of Change I

- **Users find problems (corrective maintenance)**
 - Defects in requirements, design, code, documentation
 - Proliferation of devices, COTS software versions, telecom services, ...
- **Users need or want new capabilities (product upgrades)**
 - Second-order usage effects (trend analysis, exception reports)
 - Environment changes (legal, corporate, competition, technology)
 - New classes of users emerge (corporate sectors, market sectors, international users)
 - New systems must interoperate



What Happens When Your Software Enters Use?

- Sources of Change II

- **The product environment changes (adaptive maintenance)**
 - New hardware, COTS products, COTS releases, interoperating systems, shared components, shared databases
- **Maintainers suggest improvements (perfective maintenance)**
 - Improved performance, dependability, evolvability



What Happens When Your Software Enters Use? - Change-Related Activities I

TBD



What Happens When Your Software Enters Use?

- Change-Related Activities I

- **User/others notify someone (who?)**
- **Problem/suggestion is recorded and acknowledged**
- **Maintainers try to reproduce, diagnose problem**
 - And perhaps look for related problems
- **Maintainers explore and evaluate fix options**
- **Stakeholders meet to prioritize, select options**
 - More study; workaround; quick fix; lasting upgrade; mix of options



What Happens When Your Software Enters Use?

-Change-Related Activities II

- **Maintainers plan, specify, design, code, verify/validate fixes**
 - Analysis tools, peer reviews, levels of test
 - Unit, integration, regression, alpha/beta users
 - Management monitoring and control
- **Maintainers rebaseline code, documentation, databases, operational procedures, training material**
 - Success-critical users are retained
- **Problem/suggestion closeout is recorded**
 - Originators notified of results
 - Experience base analyzed for process/product improvement