Does Code Decay? Assessing the Evidence from Change Management Data

Presenter: Tao Xia
Sep 21, 2006
How does code decay?

- If a software system does not change, does it decay?
- Yes, because the hardware and software environment surrounding it do change.
- And the requirements of the software system may change also.
What is code decay?

Three factors to estimate code decay

- Cost, the resources spend on the change
- Interval, the time requires to complete the change
- Quality of the changed software
Cause of code decay

- Inappropriate architecture
- Violations of the original design principles
- Imprecise requirements
- Time pressure
- Inadequate programming tools
- Organizational environment
- Programmer variability
- Inadequate change processes
Symptoms of code decay

- Excessively complex
- Frequent changes – unstable code
- History of faults
- Widely dispersed changes
- Kludges
- Numerous interfaces (?)
Risk factors for code decay

- Size of a module
- Age of the code
- Inherent complexity
- Organizational churn
- Ported or reused code
- Requirements load
- Inexperienced developers
Evidence of code decay (1)

- The span of changes increases over time.
- Modularity decreases
Evidence of code decay (2)

- The number of changes to the module, the dates of these changes, and the size of changes have a clear contribution to the fault rate.
- Model the effort of a change from the span and size of the changes.
Discussion

- The authors claim: the number of developers touching a module had no effect on its fault potential.