What is a development project?

CSE 403, Winter 2003
Software Engineering

http://www.cs.washington.edu/education/courses/403/03wi/
Readings and References

• Reference
  » *Rapid Development*, Steve McConnell
    • Chapter 2, Rapid-development strategy
    • Chapter 5, Risk management
What is it?

• What is a development project?
  » *Take a risk and make an investment in order to get a positive payoff*

• Risk is an essential element
  » if there's no risk at all, then there's no change

• Investment is an essential element
  » "If wishes were horses, then beggars would ride"

• Positive payoff
  » Many possible forms
LittleApp investments

• What's the investment?
  » developer time
    • learning - new domain, new API, new tools
    • doing - requirements, development, test, delivery
  » time of friends or acquaintances
    • defining the project
    • testing the product
  » new whiz-bang hardware and software
    • money from parents, department, significant other, ...
LittleApp risks

• What are the risks?
  » It was a bad idea and nothing was completed
    • Waste of time and money with nothing to show for it
  » Loss of credibility with your friends or colleagues
    • Will they make the investment next time you ask?
  » Opportunity cost
    • You didn't work on some other project because you worked on this one. Consequently, you didn't learn about some other domain because you learned about this domain.
LittleApp payoffs

• What are the payoffs?
  » enjoyable project - creating things is fun!
  » useful product for you and other users
  » credibility with friends and colleagues
    • development credibility
    • project completion credibility
  » increased skills and knowledge
  » personal confidence that your ideas have value
BigApp investments

• What's the investment?
  » Money and time
  » Labor hours (expense)
    • project management and support
    • requirements definition, testing, acceptance, training
    • developer learning and doing
  » Hardware and facilities (capital)
    • development tools, prototypes
    • space for developers and their equipment
  » Calendar time
BigApp risks

• What are the risks?
  » Doesn't work, works but not useful, works but value not obvious, works and valuable but not wanted
    • BIG waste of time and money
  » Loss of credibility inside and outside the company
    • The management that authorized the project loses points
    • The management that ran the project loses points
    • The customer groups that bought the pitch are ticked off
    • Will anyone make the investment next time?
  » Opportunity cost
    • Something else would have been a better choice and the company missed the chance to do it
BigApp payoffs

• What are the payoffs?
  » Money, directly or indirectly
    • external product - sales, continued business relationship
    • internal product - improved productivity, cost avoidance, faster cycle time, …
  » market share
    • they buy your product, they don't buy a competing product
    • your product becomes the standard around which other development takes place - network effect
BigApp payoffs

• What are the payoffs?
  » credibility
    • success justifies the risk that the customers took selecting the product
    • success justifies the risk that management took authorizing the expenditure to develop the product
    • success may earn the company/group/team the right to do another project, probably with higher risk and bigger investment
  » capability
    • project management and successful delivery
    • technical knowledge
Will the project idea be approved?

- The money is there to fund *any* size project
  - There are many more people with money than there are people with good ideas and the ability to bring difficult projects to successful completion
- The trick is to convince yourself and others:
  - that the risk can be managed
  - that you will deliver a large positive payoff
- Success is defined differently by all the players
  - the project must succeed on many levels at once
Will the project idea be approved?

• A task that management should fund because "I think it would be fun to work on."

• A task that our group should be funded to do because we've always done that kind of project
  » "That's my job, not yours. I've got a memo."

• A task that is "clearly better technically than the brain-dead solution proposed by those mush-for-brains marketing people who talked to the idiot managers we have around here."
Risk Management

• The goal
  » successful project completion

• The job
  » identify the risks
  » address the risks with specific actions
  » avoid or resolve the risks before they become real threats to the project

• Remember this:
  » Mistakes are made on every project. The goal is to get to successful project completion even though mistakes were made.
Levels of risk management

• Crisis management
  » fire fighting. Address it only after it's a problem.

• Fix on failure
  » Detect and react. "Exception handler" style.

• Risk mitigation
  » include slack in the plan for time lost to problems

• Prevention
  » Execute a plan to identify risks and prevent problems

• Eliminate root causes
  » Identify and eliminate factors that cause risks
Four Dimensions

• Projects operate along four dimensions
  » People
    • development is a social activity, not a machine
  » Process
    • good processes are enablers for good work
  » Product
    • what the heck are we building, anyway
  » Technology
    • good quality development tools appropriate to the job
Risk identification

• Avoid the classic mistakes
  » we have good reasons for the decisions we make
  » we are all led astray by the same bad solutions

• Implement the development basics
  » Management fundamentals
  » Technical fundamentals
  » Quality assurance fundamentals

• Actively manage risks that exist
Most common schedule risks

- Feature creep
- Requirements or developer gold-plating
- Shortchanged quality assurance
- Overly optimistic schedules
- Inadequate design
- Silver-bullet syndrome
- Research-oriented development
- Weak personnel
- Contractor failure
- Friction between developers and customers