

Agile Process and XP

- the Waterfall model and formal process
 - goals, strengths, and weaknesses
- the Agile Process Rebellion
 - motivations and principles
 - eXtreme Programming
- Comparative Religion (agile vs. prescriptive)
 - similarities, differences, complementarities

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The Wisdom of the Waterfall

- Basic Premise of the Waterfall Model
 1. understand the requirements
 2. develop a plan to satisfy them
 3. execute and manage against the plan
- Goals and Advantages
 - predictable functionality
 - predictable schedule and cost
 - minimal waste and minimal surprises

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On Planning

The general who wins a battle makes many calculations in his temple ere the battle is fought. The general who loses a battle makes but few calculations beforehand.

Sun Tzu

No battle plan ever survived contact with the enemy.

Dwight Eisenhower

There is no great art to devising a good plan of operations. The entire difficulty lies in this: To remain faithful in action to the principles we have laid down for ourselves.

Carl von Clausewitz

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Fallacy of the Waterfall Model

- Assumptions
 - we are executing a well crafted plan
 - plan is designed to satisfy correct requirements
- Good requirements may be unattainable
 - in which case the plan is wrong
 - it will deliver the wrong functionality
- Even an incremental model may fail
 - because each incremental release is a waterfall

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Formal Process - the good news

- it institutionalizes best practices
 - techniques to avoid common mistakes
- it enables more effective management
 - better planning and measurement
 - clear responsibilities and milestones
- it is necessary for process improvement
 - following a defined process
 - capturing permanent records of what we did
 - enables process evaluation and evolution

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Formal Process - the bad news

- it *can* place form over substance
 - people are goaled on process deliverables
 - real goals are customer satisfaction, R.O.I
- one size may not really fit all
 - bureaucracy may greatly burden small projects
 - it makes assumptions that may not be true
- it is a lowest-common-denominator solution
 - it can improve the work of weak teams
 - it can greatly limit strong contributors

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The Agile Process Rebellion

- Don't put too much faith in paper process!
 - our only deliverables are working software
 - our key goal is customer satisfaction
- Prescribed processes are, per force, flawed!
 - continuous change is a given – deal with it!
 - the best process is collaboration
 - all stake-holders communicate regularly
 - frequent, small, updates and good feedback ☺☺
- Overemphasis on task definition is myopic!
 - people, not processes, solve problems

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People v.s. Process

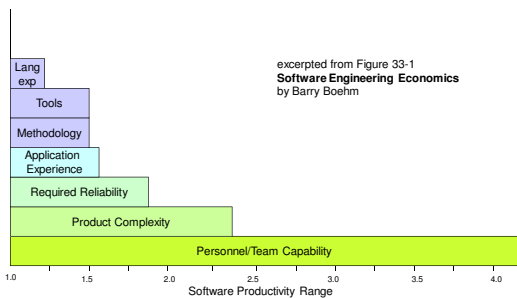
- Focus on creating good teams
 - ensure they have the right skill/perspective mix
 - ensure all the stake-holders are involved
 - ensure they are dedicated to the project
 - ensure they will work well **as a team**
- Then, let them do their job
 - don't tell them how to organize themselves
 - don't tell them how to best solve the problem
- Good teams beat good process, every time ☺

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The High Order Bits



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Agile methods ...

- address people and teamwork issues ☺
- which are far too important to be ignored
- focus more directly on real goals ☺
- which is always a good thing
- put principles & methodology over process ☺
- which is almost surely right
- still enumerate required process activities
- but avoid over-specifying tasks/deliverables
- good for simple or poorly understood projects

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eXtreme Programming

- an agile development philosophy
 - embracing change, short feedback-driven cycles, high stake-holder involvement, communication intensive
- a set of techno-moralistic principles
 - personal courage, mutual respect, responsible behavior, sustainable pace, minimalism, incrementality, continuous integration
- a collection of development practices
 - requirements gathering, design, coding, testing

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eXtreme Programming Practices

- Planning Game ☺
 - functional scenarios that fit on a 3x5 card
 - these are prioritized and mapped into tasks
- Pair Programming
 - two people working on a single task
 - one coding, one thinking, reviewing, planning
- Small, Frequent Releases
 - regular updates of incremental functionality
 - features as a measure of content & velocity

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eXtreme Programming Practices

- Test Driven Development
 - implement features as they become testable
 - tests and features developed in parallel
- Continuous Integration
 - integrate code to product daily
 - get feedback and discover problems ASAP
- Design for Today and Refactoring
 - if you won't run the code today, don't write it
 - redesign code as problems are discovered

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Comparative Religion - similarities

- They all follow the same basic process
 - understand the problem
 - start w/concept, gather & prioritize requirements
 - plan the solution
 - move from high level to more detailed design
 - prototype to reduce risk
 - execute the plan
 - implementing and testing proceed in tandem
 - monitor progress, look for problems, re-plan
- Agile approaches are intrinsically iterative

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Comparative Religion - differences

	Planned approaches	Agile approaches
Stable Requirements	A <i>sine qua non</i> for a successful project	Somewhere between a myth and a <i>canard</i> .
Predictable Budget and/or Schedule	A primary goal	Get real!
User Satisfaction	Should be achieved if the requirements are right and we correctly implement them	<u>The</u> primary goal
Progress Measurement	Process related - project milestones	Customer related - delivered story cards

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Complementary Religions

- There are different types of projects
 - with different goals and constraints
 - some require definition and control
 - others require investigation and iteration
- They are not mutually exclusive
 - agile processes can benefit from best practices
 - XP practices can be used in waterfall projects
 - traditional models ignored crucial team factors
 - getting it right from the start isn't always wrong

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What We Take Away

- Agile Development is a "reformation"
 - pointing out the evils of over-process-ism
 - reminding us of our real goals
- Agile Development takes a broader view
 - addressing key principles and people issues
- Agile Development may be the other pole
 - small/large, user/infrastructure, adapt/plan
- We don't have to choose between extremes
 - Hegel's Dialectic: thesis, antithesis, synthesis

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For the next lecture

- McConnel
 - 21.2 introductory comments on pair programming
 - 28.1 encouraging good programming
 - 28.5 care and feeding of programmers
 - 33 characteristics of programmers
- Wikipedia: XP practices
- Cockburn & Williams: Pair Programming
- Rosenberg: Problems w/Pair Programming
- CACM: Global S/W development

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