

# Agile Software Development

*The pursuit of success in an uncertain world*

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## A few words about me

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- Self-confessed people person and a passionate advocate of agile processes, software craftsmanship, and Extreme Programming
- Professional software developer for over 10 years “from Switzerland to Slough”
  - Still writing code in Python, dotNet and Java today
- I work for ThoughtWorks, which is pioneering the agile execution of large and difficult projects
  - Chief Scientist is Martin Fowler

## What I will mostly be talking about

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- Different points of view
- The problem with waterfalls
- Some agile methodologies
- The manifesto for agile software development
- None of this is new
- Themes and common ground

## Different viewpoints: Agile is...

- A rejection of software engineering discipline and common practice?
- A solution to the problems that beset late, cancelled, and under-functional software systems?
- A sociological model of software development in a team environment?
- A catalyst for unleashing the creativity and productivity of people working in software development?
- A cohesive system of checks and balances that allow for continuous improvement from any starting point?

## The problem with waterfall development

- Progress was tracked against the plan
- Phases of the plan separated the activities of analysis, design, coding and testing
- Each phase started only after the prior one ended
- Phases often reflected contractual milestones
- There was an implicit “command and control” hierarchy from the Project Manager down to the lowly tester or developer
- What if the plan was incorrect or incomplete?
- What if these activities are complementary and overlapping?
- How can you tell if a phase is complete?
- Creating political pressure for / against ‘completing’ a phase
- Do commands really travel “down the food chain”? Is control just an illusion? Is the tester or developer really so lowly?

## The new methodologies

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- Very approximate timeline
  - 1994 - Dynamic Systems Development Method (DSDM)
  - 1995 - Scrum
  - 1996 - Extreme Programming (XP)
  - 1998 - Feature Driven Development (FDD)
  - 1999 - Crystal, Adaptive Systems Development (ASD)
  - 2000 (ish) - Lean development
- A few words about each follows...

## DSDM

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- Who: DSDM consortium, paid up members include BA, BT, Royal Bank of Scotland, Lloyds TSB
- Where: <http://www.dsdm.org/>
- What:
  - A process born out of dissatisfaction with RAD
  - Very iterative - everything is cyclical
  - High customer involvement is mandatory
  - MoSCoW rules for requirements
- Dissidence: says more about prototypes and benefit studies than how to actually develop software?

## Scrum

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- Who: Ken Schwaber, Jeff Sutherland
- Where: <http://controlchaos.com/>
- What:
  - Pattern language for software development
  - Customer funnels requirements into a sprint
  - Uncompleted requirements form a backlog
  - 30 day sprint covers analysis, design, code, test
  - Brief daily scrum meetings maintain project heartbeat
  - Scrum leader removes obstacles to progress
  - Scrums within scrums facilitate scaling
- Dissidence: no more than an organisational blueprint?

## XP

- Who: Kent Beck, Ron Jeffries, Don Wells, Chet Henderson, Ken Auer, Martin Fowler, Bob Martin
- Where: <http://www.extremeprogramming.org/>,  
<http://www.xprogramming.com/>
- What:
  - Disciplined application of concrete practices (e.g. pairing, test first, planning game, refactoring, continuous integration)
  - Bound together with holistic values (communication, feedback, simplicity, courage)
  - Stresses ability to respond to change
  - Clear separation of customer and developer decisions
- Dissidence: a naïve hacker's charter?

## FDD

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- Who: Jeff De Luca, Peter Coad
- Where: <http://featuredrivendevelopment.com/>
- What:
  - Project management philosophy for OO development
  - Uses feature lists for iterative planning and coding
  - Features drive mapping from domain to code
  - Emphasises importance of OO modelling
  - Defines team players' roles and responsibilities
  - Developers are owners: of components, packages, classes...
- Dissidence: scaleable but regimented - command and control in disguise?

## Crystal

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- Who: Alistair Cockburn
- Where: <http://alistair.cockburn.us/crystal>
- What:
  - Not one methodology but a family of “human-centred” methodologies
  - Not all projects are the same - size, domain, technology, ...
  - People are not the same either - no “plug compatible units”
  - Interactivity and communication affect productivity
- Dissidence: the observations of a ‘methodology archaeologist’ are very interesting but are they helpful?

## ASD

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- Who: Jim Highsmith
- Where: <http://www.adaptivesd.com>
- What:
  - Process improvement through adaptation not optimisation
  - Chaordic - on the cusp between order and chaos
  - Evolutionary - incorporating self regulating feedback loops
  - Innovative - only the best ideas survive
  - Emergent - complex behaviour arises from many simple interactions
- Dissidence: too buzzword heavy to be practically applicable?

## Lean Development

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- Who: Mary Poppendieck, Bob Charette
- Where: <http://poppendieck.com>
- What:
  - Applying lean manufacturing ideas to software development, e.g. Taiichi Ohno's 'Toyota Production System'
  - Minimise waste, value options, preserve choice
  - Remove capacity and cycle time constraints
  - Push decisions down to the level where their effects are felt
  - Continual improvement through 'Kaizen'
- Dissidence: too much of a culture shift from mainstream American / European attitudes?

## Manifesto for Agile Software Development, 2001

- We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:
  - *Individuals and interactions over processes and tools*
  - *Working software over comprehensive documentation*
  - *Customer collaboration over contract negotiation*
  - *Responding to change over following a plan*
- That is, while there is value in the items on the right, we value the items on the left more.
- Kent Beck, Mike Beedle, Arie van Bennekum, Alistair Cockburn, Ward Cunningham, Martin Fowler, James Grenning, Jim Highsmith, Andrew Hunt, Ron Jeffries, Jon Kern, Brian Marick, Robert C. Martin, Steve Mellor, Ken Schwaber, Jeff Sutherland, Dave Thomas

## The essence of agile - in ten words or less...

- Do. Observe. Reflect. Adjust. (Repeat as needed.)
- All of us are smarter than any of us
- Programmers, managers and customers are all people
- What is the most important thing to do today?
- The act of planning is more important than the plan
- Who do I need to talk to about that?
- Software teams are not “sausage machines”

## None of this should be news

- Gerald Weinberg, “Psychology of Computer Programming” (1971)
  - Describes programming as a human and social activity
  - How can we learn from our mistakes? Why don't we?
- Fred Brooks, “The Mythical Man Month” (1975)
  - The productivity of different individuals and teams varies
  - No ‘Silver Bullet’ exists to make all projects more productive
  - Communication matters – both as overhead and as an enabler
- Tom de Marco, “Peopleware” (1979)
  - Teams suffer from people problems, not technical problems
  - Gelled teams make projects productive - not processes
  - Management matters – both as a help and a hindrance

## Search for the common ground

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- Software themes
  - Rely less on tools, test early and often, satisfy the (business) problem that the software addresses
- People themes
  - Communication, facilitation, collaboration, trust
- No two Agile projects are the same
  - One size does not fit all
  - Try a methodology out “of the box” first – then think about how to tailor it to your team / organisation
- Agile teams require Agile organisations
  - Is Agile a way of being, more than a way of doing?

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## Questions?

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- There are plenty of books and websites that provide more detail on individual methodologies
- The Agile Alliance is a good starting point on the web  
<http://www.agilealliance.org/>