[2012 IBM 開發者大會]

大型主機開發新世紀 拋下傳統 邁向敏捷

Agile Transformation

Nigel Hopper
IBM CICS Managed Platform Focus Team Leader
Quality Software Engineering Development Top Gun

Next NOW!

Agenda

- Who am I?
- Introduction
- The journey up to 2011 – a revolutionary change
- Looking at what has happened in the last year
  - Impact of adopting RDz/RTC for development
  - Further adoption of Agile practices
  - Request for Enhancement – Customer requirements
  - Portfolio Planning
  - Jazz Architecture for the future
  - An artifact overview
  - Identified some process issues
- Summary
- Questions!

Who am I?

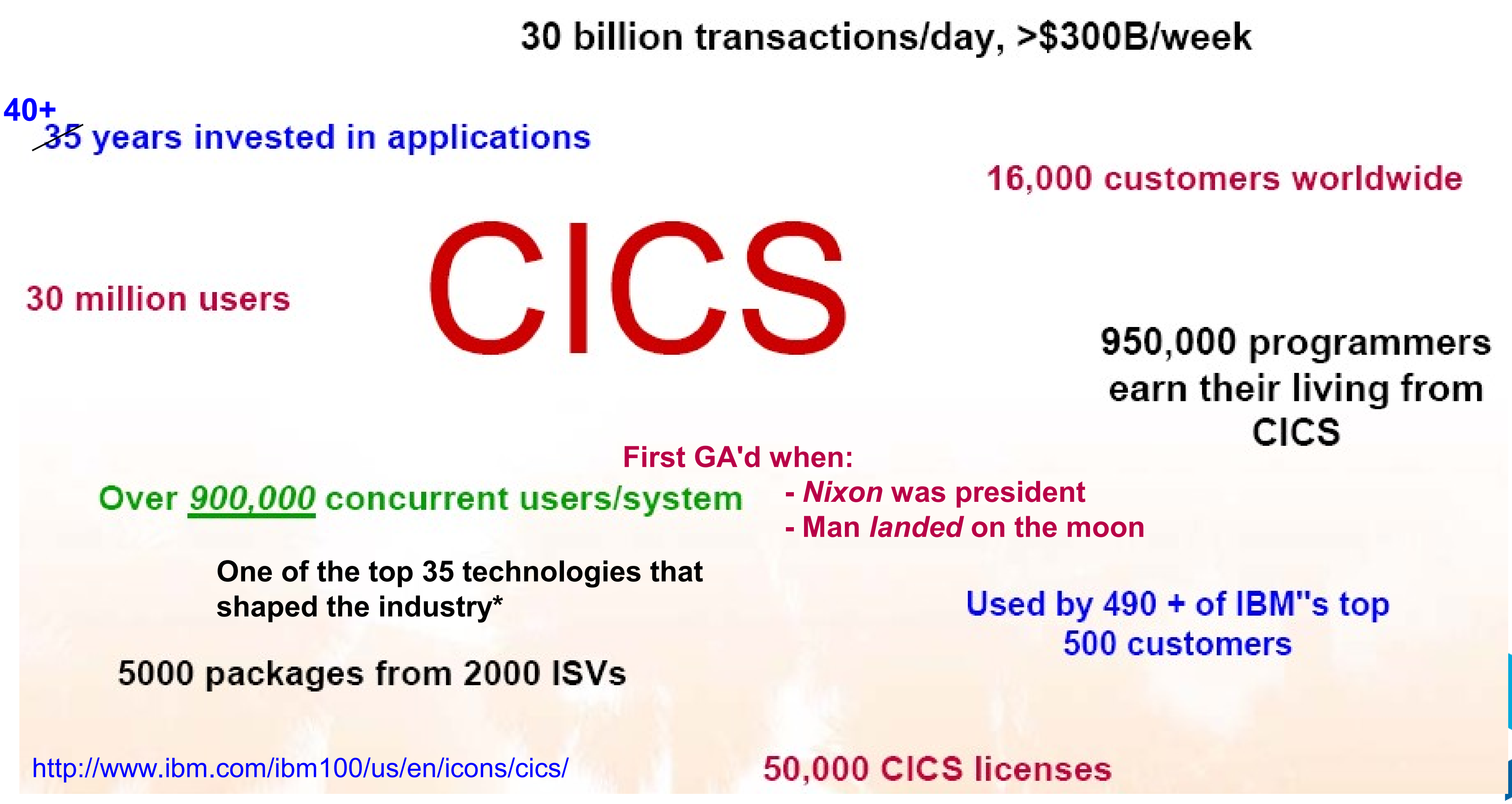
- CICS TS for z/OS Team Leader
- Quality Software Engineering Development Top Gun
  - QSE Rational Tools Adoption Team

- Lead the migration of process and project management to RTC
  - Responsible for maintaining Jazz and implementing further adoption of tooling
- Leading member of the Hursley Jazz User Group

Introduction

- Adoption of Agile principles is worth it for enterprise products
  - It is not easy – plan for enterprise adoption to take time and to stage it
  - 42% of companies have had Agile adoption fail in one way or another
- CICS is fortunate – we're getting there
  - Continuously evolving on this journey since 2005
  - Adoption of Agile principles
  - Adoption of much better integrated tooling
  - Some times evolutionary
  - Some times revolutionary
- Would I have done things differently?
  - Absolutely!
  - But it is only in looking back can we see this

CICS



30 billion transactions/day, >$300B/week

40+ ~~35~~ years invested in applications

16,000 customers worldwide

30 million users

CICS

950,000 programmers earn their living from CICS

First GA'd when:

- *Nixon* was president
- Man *landed* on the moon

Over *900,000* concurrent users/system

One of the top 35 technologies that shaped the industry*

Used by 490 + of IBM"s top 500 customers

5000 packages from 2000 ISVs

http://www.ibm.com/ibm100/us/en/icons/cics/

50,000 CICS licenses

*According to Computerworld magazine

CICS Transaction Server code *is* complex!

- Started out over 40 years ago as a loose collection of programs
- Primarily written in assembler, PL/X and some COBOL
  - Now has Java, XML and more!
- Developed on the mainframe for the mainframe – z/OS!
- Eventually converted to domains
  - Currently in the region of 70 domains. Grouped in areas such as Application Services, Business Logic Applications, Base Runtime, CPSM
  - 3 APIs
  - Multiple tools such as CICS Explorer, CICS Deployment Assistant

The CICS process until 2005

- 2 year release cycle
- Upfront commitment for the release
- Waterfall oriented to a cycle of:
  - Design
  - Development
  - Functional Test
  - System/Integration Test
  - Quality
  - Translation/Packaging/Deliver

Pre-2005 process issues

- Up front commitment can be very inflexible
- Work sized at – 'what will hopefully fit'
- Large overheads in project management and managing change
- Coordination and scheduling of cross team work – different priorities
- Typical late in release integration test and beta issues
- Defect backlog would hit a peak of 600+ defects
- A lot of post release tidy up – Finishing function, improving quality

Why Agile?

- IBM were sufficiently confident of it to make it the corporate direction for developing software
- “If CICS can do it, anyone can” message
  - Little skills or knowledge
  - Still a 2 year release cycle
  - Who's benefit is this for?
- In 2005 our CICS release became iterative
  - Still a 2 year release cycle
  - With 4 month iterations
- The intention was:
  - Work to be broken down into smaller 'chunks'
  - All development, functional testing and defects done in iteration
  - System/Integration testing done in following iteration
  - Beta every 4 months

Initial Agile adoption - Reality

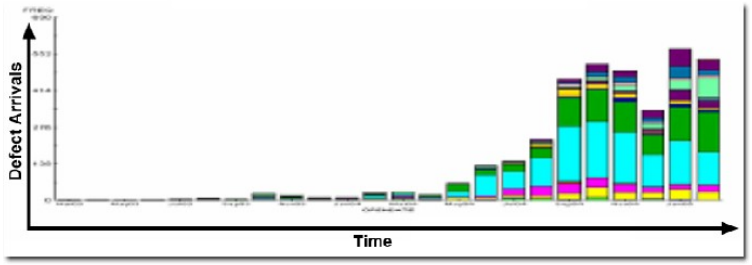
- Still 2 year upfront commitment
- Difficult cultural change
- Difficult to contain work to 4 months
- Tooling fragmented and not Agile 'friendly'
  - 10+ day code 'freeze' prior to beta shipping!
  - No way of integrating and prioritizing. For example:
    - Defects in one tool
    - Project tracking several others
- While the Agile term was used, reality was mini-waterfalls

Initial Agile adoption – benefits

- Beta shipped every 4 months
- System/integration testing done much earlier
- Defects found and handled much earlier – Peaked at 450
- Changed people's perception of what was possible – Still much skepticism
- Feedback on quality in the release has been high

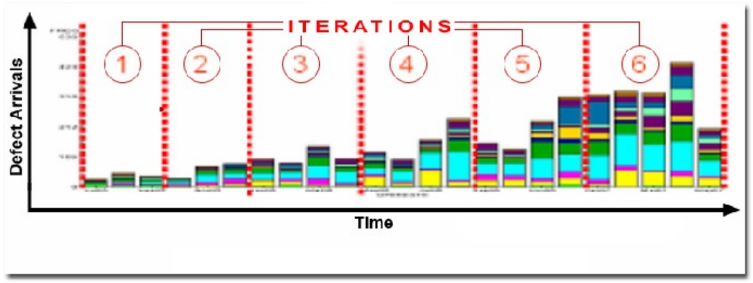
Waterfall Profile
Defects found later when they are more expensive to fix

CICS TS for zOS Last waterfall delivery



Agile Profile
defects found early when they are cheaper to fix

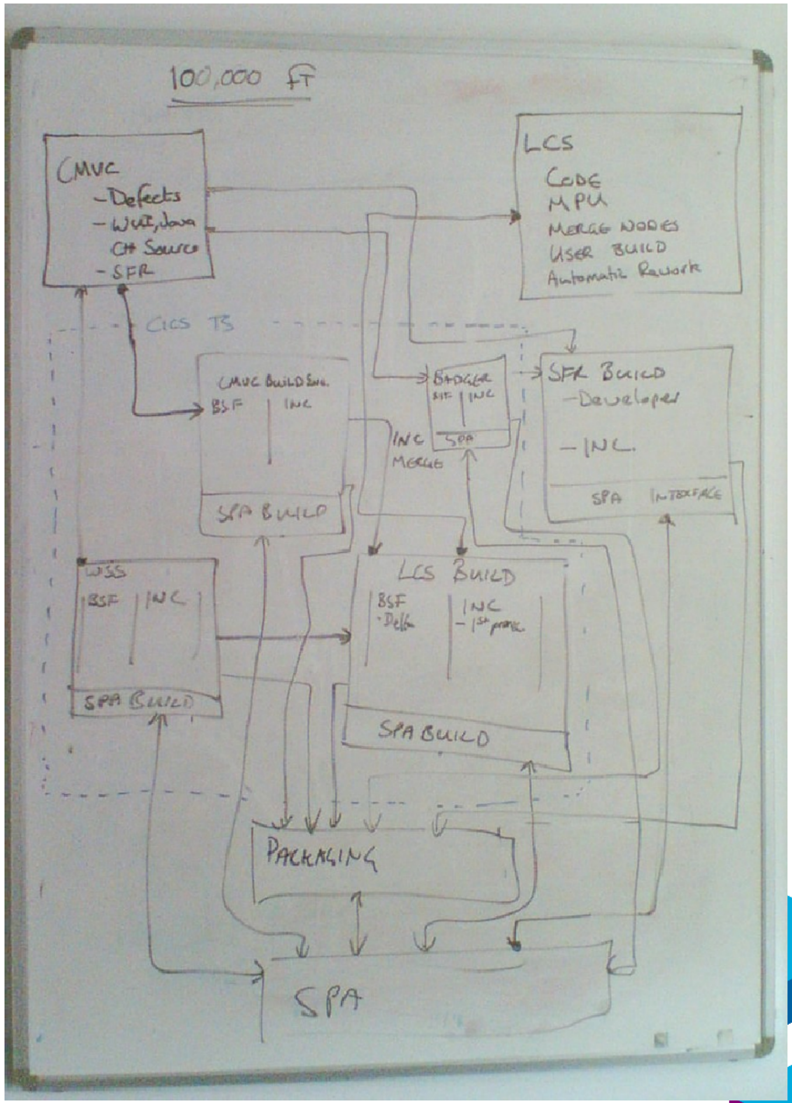
CICS TS for zOS First 'Agile' delivery



Defect Raise Rate

2008/2009 Internal review

- A review of tools and processes was undertaken
- Using a wide variety of tools to manage project, for example:
  - 3 source code management systems
    - Completely alien to each other
    - Separate builds for two of the SCMs
    - Highly integrated build into main SCM
  - External database for customer requirements
  - Lotus Notes databases/documents for:
    - Internal requirements
    - Actions
    - Risks
- Large disparity in the way many things were done and tracked
- High learning curve for new starters



Mid-2009

- Still a 2 year release cycle
- Still upfront commitment
- 4 month iterations
- 4 month betas
- Multiple tools for project management tracking, designs etc
- Multiple Source Code Management systems with integrated build
- No such things as Epics and stories – LIDs and DCRs
- No Scrums
- Silo'd teams working in different ways
- Diverse complex tooling
- Customer was a through several layers of people
- Very intricate process to follow

The Vision

Single non-proprietary environment

for the delivery and service of future releases of

CICS Transaction Server for zOS

Where everyone (business, marketing, development, test, service, build, etc) can focus and collaborate via one single tool

If we are really to adopt Agile principles, the tooling had to improve

Why RTC?

- A little luck was involved!
- Early trials showed great promise
- Hursley just started centrally hosting Jazz servers
- Highly configurable
  - We were in control!
- Provided great audit tracking
- Allowed for an end to end integrated development environment
  - Requirements, Approvals, Defects, Code, Tracking, Build and so on!
- Clearly a tool designed for Agile development

RTC Adoption: Making it happen

- First thing – in June 2009 new release started, 2 month iterations, 4 month betas
- Initial focus on work items, project planning and tracking
  - Epics, Stories, Tasks, Defects, Risks, Actions, etc.
  - I had a number of key goals
    - Use RTC 'out of the box'
    - Use industry standard Agile methods/terms
    - Use a minimum number of roles – trust people
    - Use RTC to implement RTC
    - Big bang approach would not work
- Long term focus on migrating source code and service delivery
  - Rewrite the build
  - Migrate from existing SCM
  - Develop and Service product through RTC
- Education – Combination of workshops, mentoring, wiki help

RTC Adoption: Work item and process time line

- Work item / process migration
  - July 2009 - Created RTC server
    - Infrastructure project, plus Main and Sandpit projects
  - August – October 2009 – Reviewed processes and configured server – 80-90% right
  - Mid-2009 – migration of Epics (requirements) to RTC
  - October 2009 – migration of Defects from CMVC to RTC
  - November 2009 – migration of CMVC source code to RTC
  - End of 2009 using RTC for all work outside of propriety source/build environment

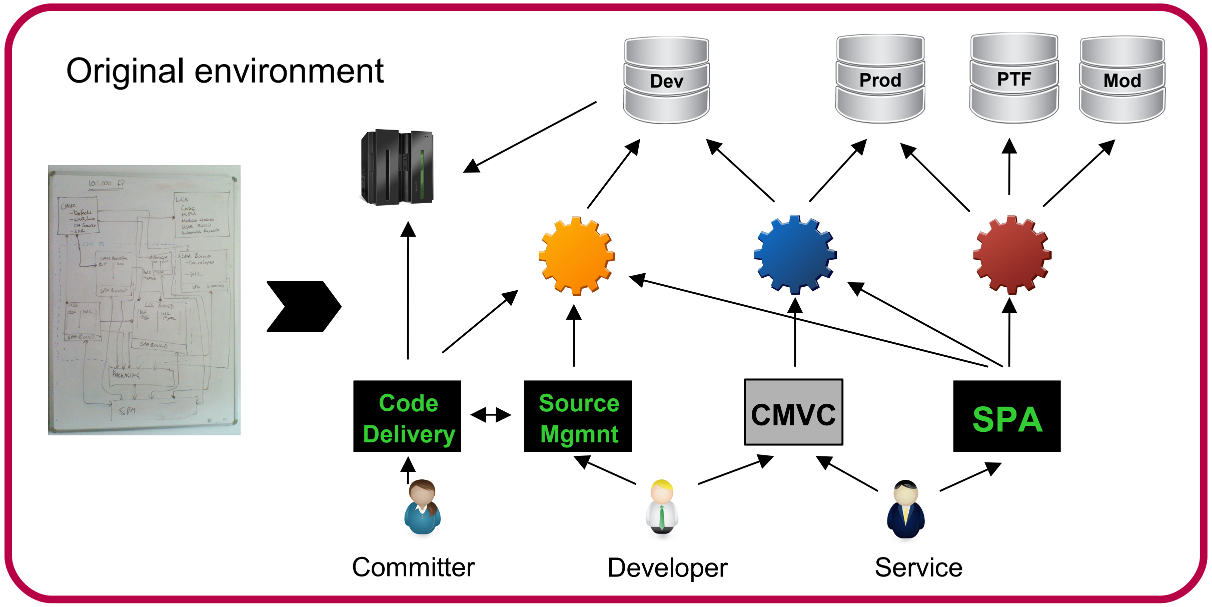
RTC Adoption: Build and development environment time line

- The build rewrite
  - Start of build rewrite – January 2010
  - First integration build – September 2010
  - First beta shipped from Antz build – October 2010 (limited release) / February 2011
  - RTC delivered CICS TS for zOS V4.2 - June 24, 2011
- DTS tooling
  - DTS started – June 2010
  - DTS ready – March 2011
- Development adoption
  - Developer environment ready – April 2011
  - Full Source Code Environment switched to RTC – June 2011
  - RTC/RDz development environment rolled out – June/July 2011

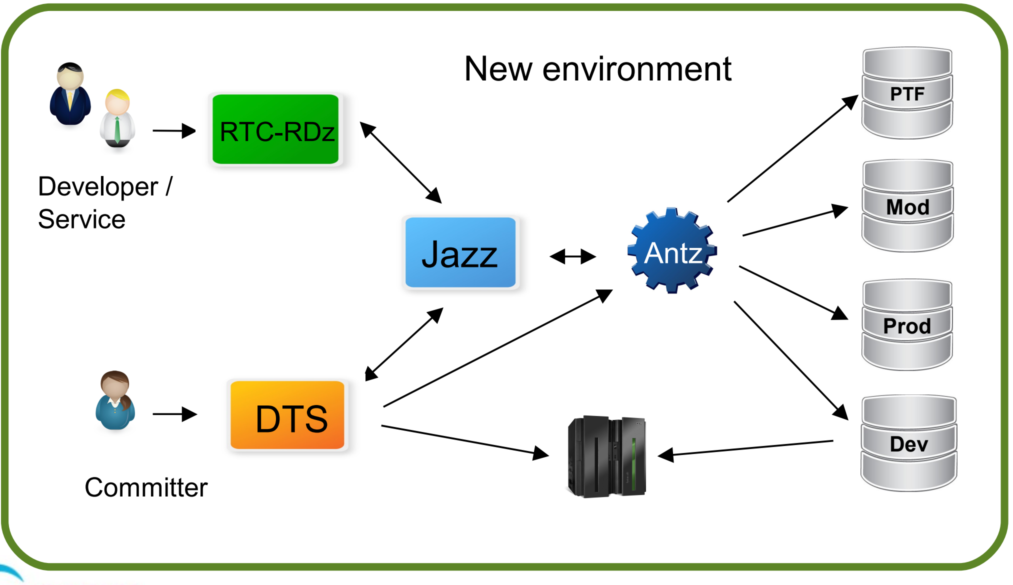
Environment Comparison

RTC/Jazz manages:

- Release/Iterations
- Work items
- Plans
- Source code
- Streams
- Change sets
- Lots more!



- Rational Team Concert v3
- Rational Developer for System Z v8
- Our Ant build technology is an Eclipse plug-in for build control
  - Hursley constructed build tool
  - Ant is an open source build tool
  - We added extensions to support zOS
- Antz has been shared with RTC and some aspects have been reused.



The issues...

- RTC was not the problem, does what it says on the box
  - There was a learning curve, but the basics were simple
  - We could not be where we are today without it.
- People issues
  - They do not want to change - Why change if it currently works?
  - Developers have used the same tool set for 20+ years
- Process issues
  - We had some serious holes in our process – still very waterfall
  - Need agreement of many senior people
  - An Agile process that is clearly defined – somewhat of a contradiction
  - Still learning the Agile way
- Understanding the existing build
  - 20+ years of integrating a build into a library system!
  - Any experience now retired!

The benefits...

- Integrated work item and reporting tools
  - Transparency of work items, dependencies and status
  - Ability to ignore what is green and focus on the issues
  - Far greater collaboration across teams
  - Far greater notification when things change
  - Risks/Actions integrated
- Responsiveness to business needs – aiming for greater value, earlier
  - Beta deliveries much earlier
  - Ability to adapt to change much easier
  - Current release – much more Agile in terms of requirements and prioritisation
- Dashboards – Instant status – Everyone has a much clearer view of project
- Weekly status (Scrum of Scrums) – Practically no prep, meeting time halved
- End of iteration quality checks – 2-4 hours prep to < 30 mins, meeting time halved

The benefits... (cont.)

- Mitigate against future development risks – greatly reduced proprietary development environment
- Common tool set and skills for development and service
- Ability to cut new streams. For Risky development and when beta required
- Build supported by two people. Previous build supported by three.
- Quality has improved
  - Defects in RTC – defects part of the backlog
  - Pre-2005 defects peaked at 600+ - Waterfall
  - 2005-2009 defects focused on much earlier (450 peak) – Agile/Iterative
  - 2009-2011 again lower levels of defects (350 peak) – Agile/Iterative+RTC
- Far greater ability to use Agile practices
- Much reduced learning curve for the development environment
- Far less post-release 'churn' – much more in control

Mid-2011

- Still a 2 year release cycle
- Still upfront commitment – but flexibility appearing
- 2 month iterations and 4 month betas
- Using Agile terminology - Epics and stories replaced LIDs and DCRs
- Common integrated tooling
  - Much easier to learn
  - Much better project control and prioritization
  - Integrated development environment
  - New build and code promotion tooling
- Teams adopt scrums if it suits them
- Teams working in a much more coordinated way
- Customer was still through several layers of people
- Process still a challenge

Over the last year...

- Further adoption of Agile practices
- New development environment issues and benefits
- New customer requirements solution
- Portfolio planning with RRC and CLM
- Elaboration using RRC – Still have:
  - Designs in a Wiki
  - High level test plans in attachments
  - Information designs in the information centre
- Process issues to address

Further adoption of Agile practices

- Moved to 1 month iterations for most teams – shock to the system!
  - Does need a mindset change – chunking work even smaller
- Betas released every 2 months – alternating ISV and Customer betas
- Development team reorganization
  - Aim to have a broader set of skills in each team
  - Less of a silo approach
  - Large learning curve for less well known areas
- Direct access to customer requirements
- Use case definitions (Actor, goal, value)
- Iteration planning now more priority based with team driven commitment

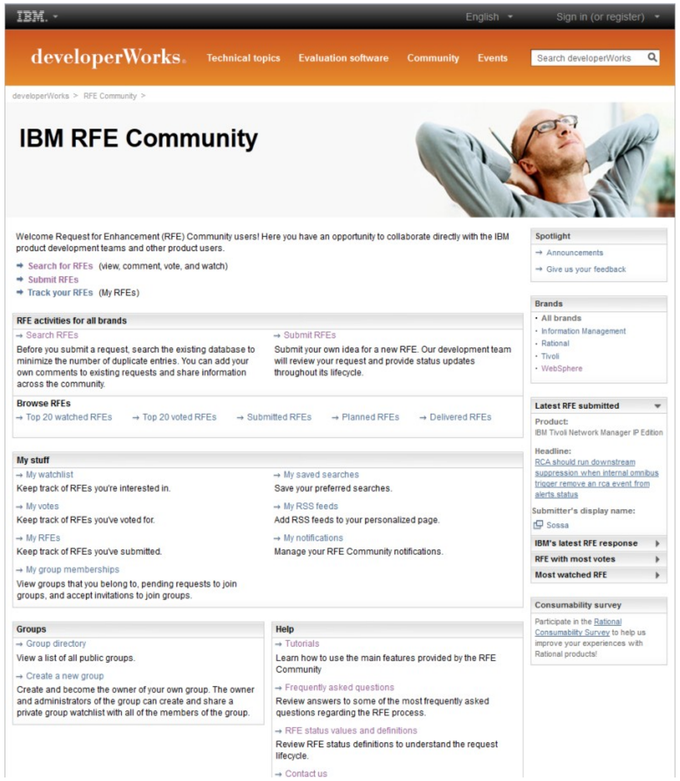
The new environment – issues and benefits

- Large number of issues in relation to the new developer build
  - Not related to RTC, but the new Antz build
  - Seen to be taking up to 5 hours to run – even for a small change
  - Some fixes and some education
  - Depending on the change can now run in minutes
- Learning curve for mature developers

- After 3 months of RTC/RDz – 90% working as well or better than VM
- New starters are up and running in a much shorter time
- All the development, research, build, delivery, MVS access (JCL etc.) can all be done in the same RDz/RTC Eclipse environment
- Much greater development and service assistance for each other

New customer requirements solution

- developerWorks Request For Enhancement (dW RFE)
  - http://www.ibm.com/developerworks/rfe/
- The customer raises the requirement
- Bridge code synchronizes the requirement into an RTC project on the CICS server
- The RFE is assessed by CICS
  - Only status changes and #publish comments are synchronized back to the RFE
- Company and justification are private in dW RFE
- IBM can make the complete dW RFE private
- Public dW RFEs can be searched and commented on
- Public dW RFEs can also be voted on by other users
- First time we have been able to directly connect customer requirements to the work being developed



IBM RFE Community

Welcome Request for Enhancement (RFE) Community users! Here you have an opportunity to collaborate directly with the IBM product development teams and other product users.

→ Search for RFEs (view, comment, vote, and watch)
→ Submit RFEs
→ Track your RFEs (My RFEs)

RFE activities for all brands

→ Search RFEs
Before you submit a request, search the existing database to minimize the number of duplicate entries. You can add your own comments to existing requests and share information across the community.

→ Submit RFEs
Submit your own idea for a new RFE. Our development team will review your request and provide status updates throughout its lifecycle.

Browse RFEs
→ Top 20 watched RFEs → Top 20 voted RFEs → Submitted RFEs → Planned RFEs → Delivered RFEs

My stuff

→ My watchlist
Keep track of RFEs you're interested in.

→ My saved searches
Save your preferred searches.

→ My votes
Keep track of RFEs you've voted for.

→ My RSS feeds
Add RSS feeds to your personalized page.

→ My RFEs
Keep track of RFEs you've submitted.

→ My notifications
Manage your RFE Community notifications.

→ My group memberships
View groups that you belong to, pending requests to join groups, and accept invitations to join groups.

Groups

→ Group directory
View a list of all public groups.

→ Create a new group
Create and become the owner of your own group. The owner and administrators of the group can create and share a private group watchlist with all of the members of the group.

Help

→ Tutorials
Learn how to use the main features provided by the RFE Community

→ Frequently asked questions
Review answers to some of the most frequently asked questions regarding the RFE process.

→ RFE status values and definitions
Review RFE status definitions to understand the request lifecycle.

→ Contact us

Spotlight
→ Announcements
→ Give us your feedback

Brands
- All brands
- Information Management
- Rational
- Tivoli
- WebSphere

Latest RFE submitted
Product:
IBM Tivoli Network Manager IP Edition
Headline:
RCA should run downstream suppression when internal omnibus trigger remove an rca event from alerts status
Submitter's display name:
Sossa

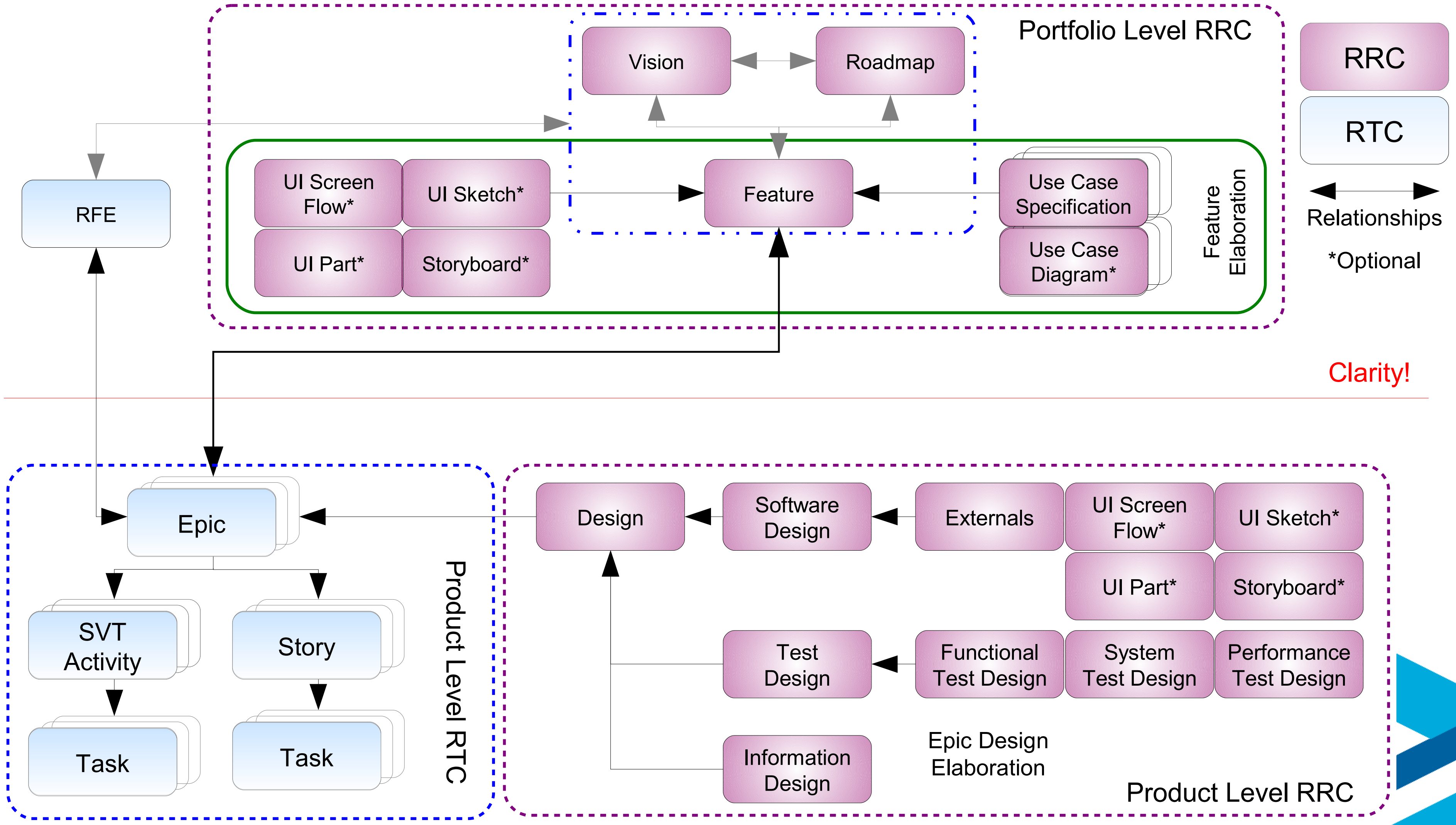
IBM's latest RFE response
RFE with most votes
Most watched RFE

Consumability survey
Participate in the Rational Consumability Survey to help us improve your experiences with Rational products!

Portfolio planning using RRC and CLM

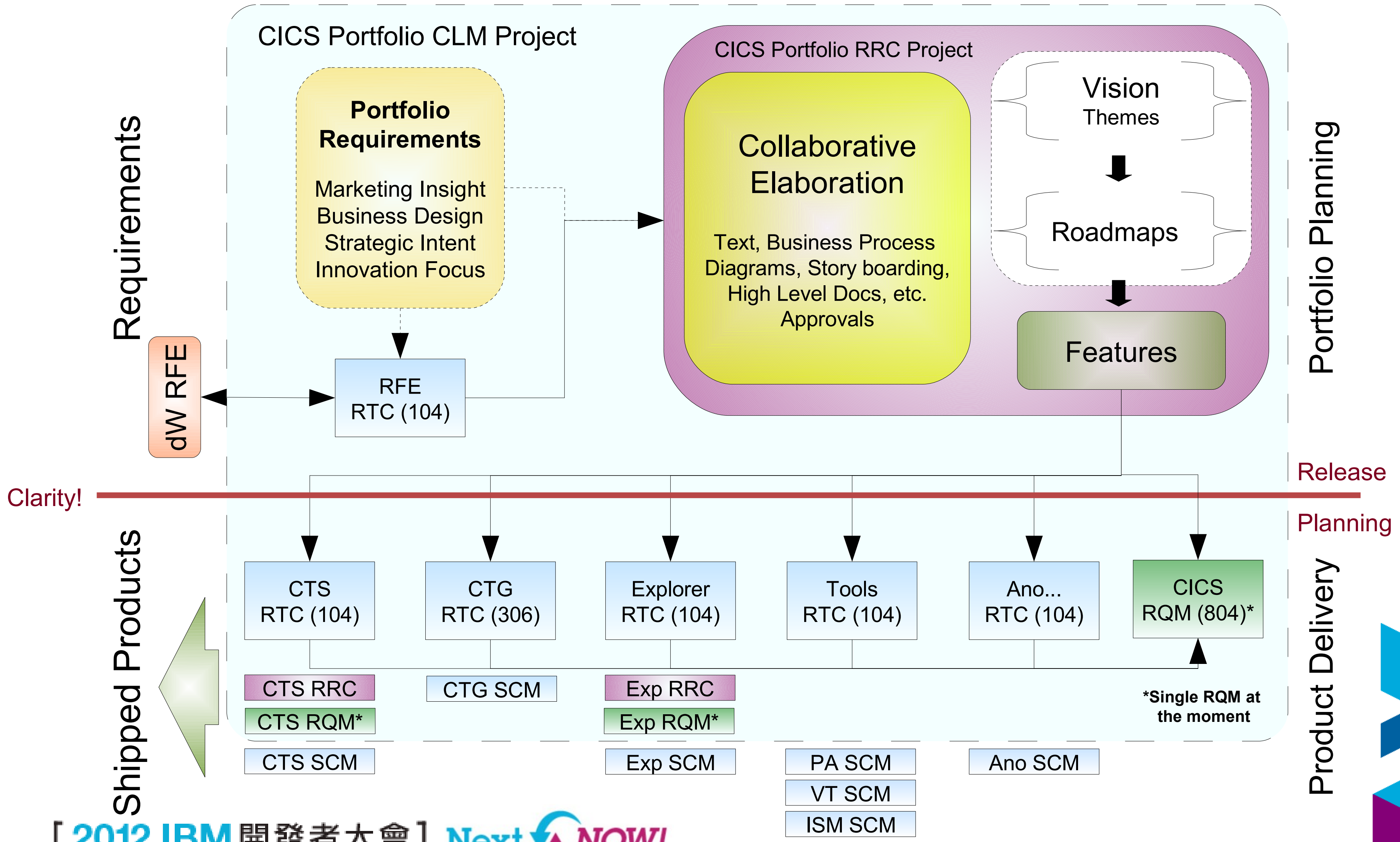
- Rational Requirements Composer appears to give us the ability to have an overview project for all the CICS products
  - A place where the visions and themes that were to be developed could be elaborated
  - An anchor where all the work for the portfolio would feed from and to
- Brought together a cross section of the CICS team
  - Strategy and Planning, Development, Management, Project Management, etc.
  - Created a project based on one of the templates
  - After a month removed artifact types we were clearly not using
- Adoption of RRC will be staged in a similar manner as RTC was
  - March 2012 Strategy and planning writing Visions, Roadmaps and Features
  - Most of the adoption will be as we transition from the current release to the next release
- Migrating all of our designs from Wikis, Word documents, Lotus Notes databases, etc. to it
  - Team pulled together to work on this for the next release

RRC / RTC Object Relationships



Work in Progress!

CICS Portfolio Jazz Architecture



RRC artifact types and RTC Work item types

- RRC
  - Vision
  - Roadmap
  - Feature
  - Text Document
  - Use Case Specification and Diagram
  - UI Screen Flow, Storyboard, Sketch and Part
  - Simple Flow Diagram
  - Meeting
  - Term (For glossary)

- RTC
  - Epic
  - Story
  - SVT Activity
  - Dependency
  - Task
  - Defect
  - Risk
  - Action
  - Externals Change Request
  - Non-project Defect
  - Non-project Enhancement

Process issues highlighted

- Design clarity – need to revisit some of the key Agile principles
  - Agile does not mean ignoring design!
  - Not defining use cases prior to some of the development
  - Some development started prior to deciding what was needed
    - Portfolio planning exercise will help
- Leaner - 1 month iterations a real challenge
  - Many more smaller Epics and Stories
  - Many more reviews
  - Need to turn work around much more quickly
  - Fine balance required
    - Identified we need to streamline some of our process
    - Still need to maintain control – reasons of audit
  - Harder to control technical debt

Summary

- Moving from Waterfall to Agile development is possible
  - It doesn't have to be just 'new projects'
  - Does not have to be for all aspects e.g. SCM
  - Be careful of falling back into old habits
- Adopting any of the Agile tooling will provide a catalyst for change
  - Necessity for some aspects of Agile adoption
  - Evangelists and the support of senior management are key
  - Re-examines processes in a new way
    - Helps to identified holes and errors in team processes
- Be agile in adopting Agile and your tooling products
  - Possible to have a staged adoption of both Agile and your tooling
  - Expect teething problems – generally not difficult to fix
  - Plan ahead - Think ahead to the architectural design and configuration

Important... if there is one thing to remember

- ***Learn from what has gone before!***

To quote from the book “Disciplined Agile Delivery” by Scott Ambler and Mark Lines:

"Although people are the primary determinant of success for IT projects, in most situations it isn’t effective to simply put together a good team of people and let them loose on the problem at hand. If you do this the teams run several risks, including investing significant time in developing their own processes and practices, in identifying the wrong processes and practices, in not identifying the right processes and practices, and in tailoring those processes and practices ineffectively. In other words, people are not the only determinant of success. The DAD process framework provides coherent, proven advice that agile teams can leverage and thereby avoid or at least minimise the risks described above. "

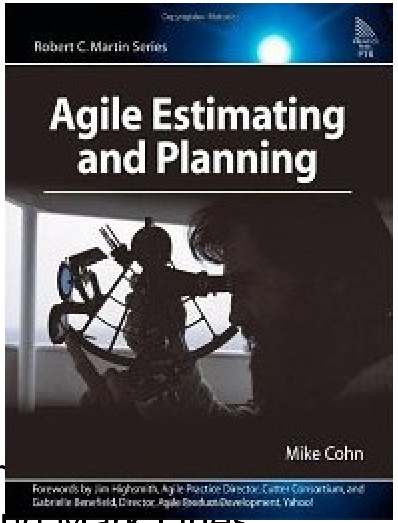
QUESTIONS

Backup Slides

Important…

- Learn from what has gone before
- Do NOT reinvent the wheel
- Adopt and configure what works for you

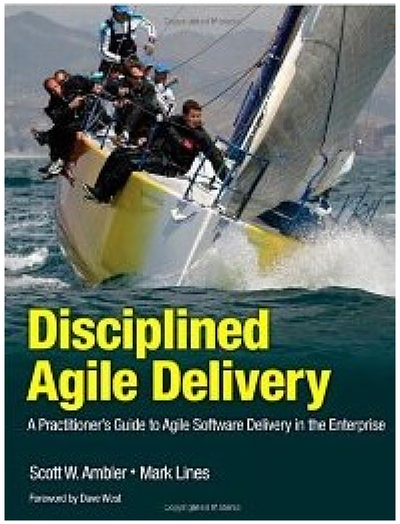
- Books to consider
  - Agile Estimating and Planning by Mike Cohn
  - Disciplined Agile Delivery by Scott Ambler and Mark Lines
  - Scaling Software Agility by Dean Leffingwell


Robert C. Martin Series

Agile Estimating and Planning

Mike Cohn

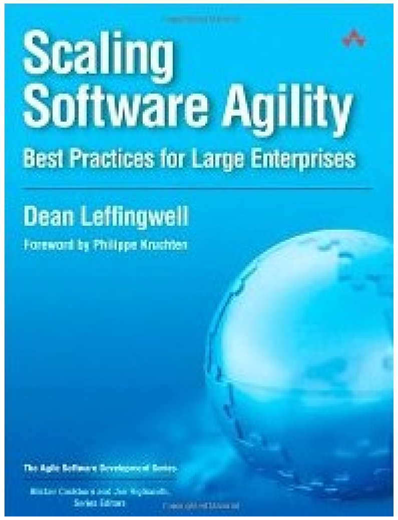
Forewords by Jim Highsmith, Agile Practice Director, Cutter Consortium, and Gabrielle Benefield, Director, Agile Product Development, Yahoo!


Disciplined Agile Delivery

A Practitioner's Guide to Agile Software Delivery in the Enterprise

Scott W. Ambler • Mark Lines

Foreword by Dave West


Scaling Software Agility

Best Practices for Large Enterprises

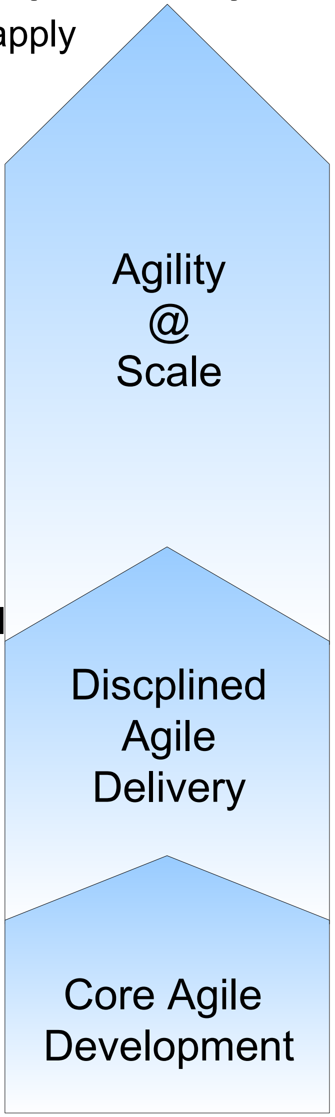
Dean Leffingwell

Foreword by Philippe Kruchten

The Agile Software Development Series

The Agile Scaling Model (ASM)

- Disciplined Agile Delivery (DAD) when one or more scaling factors apply
  - Large team size
  - Geographic distribution
  - Regulatory compliance
  - Domain complexity
  - Organization distribution
  - Technical complexity
  - Organizational complexity
  - Enterprise discipline
- Basic Disciplined Agile Delivery for the Enterprise
  - Risk + Value Driven Lifecycle
  - Self organisation within appropriate governance framework
  - Full delivery lifecycle
- Agile Development. For example, Scrum, Lean, XP and Agile Model
  - Value driven lifecycle
  - Self organising teams
  - Focus on construction



The Agile Manifesto

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*

The 12 Principles behind the Agile Manifesto

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale
4. Business people and developers must work together daily throughout the project
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation
7. Working software is the primary measure of progress
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely
9. Continuous attention to technical excellence and good design enhances agility
10. Simplicity--the art of maximizing the amount of work not done--is essential
11. The best architectures, requirements, and designs emerge from self-organizing teams
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

THANK YOU