An Introduction to Scrum

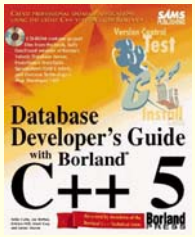
Presented at SQuAD
April 8, 2003
By Mike Cohn

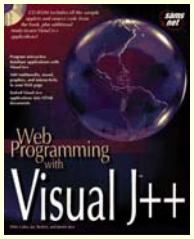
Presenter background

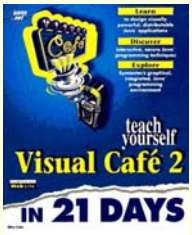
- Using Scrum since 1995
- One of eight certified “Scrum Masters”
- Spent much of the last 15 years consulting and running contract development projects:
  - Viacom, Procter & Gamble, NBC, United Nations, Citibank, other smaller companies
- Have periodically taken full-time positions:
  - Genomica, McKesson, Arthur Andersen
- Diverse background across:
  - Internal software vs. Shrinkwrap products
  - Web vs. Client-server
  - Java vs. Microsoft languages
- Master’s degrees in CS and Economics

Background, cont.

- Been managing projects since 1987 but remain a programmer at heart
- Author or lead author of three books on Java and one on C++ database programming, articles in STQE and CUJ.
- Currently working on a book on “user stories.”







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Scrum

- “The New New Product Development Game” in *Harvard Business Review*, 1986.
  - “The… ‘relay race’ approach to product development…may conflict with the goals of maximum speed and flexibility. Instead a holistic or ‘rugby’ approach—where a team tries to go the distance as a unit, passing the ball back and forth—may better serve today’s competitive requirements.”
- *Wicked Problems, Righteous Solutions* by DeGrace and Stahl, 1990.
  - First mention of Scrum in a software context

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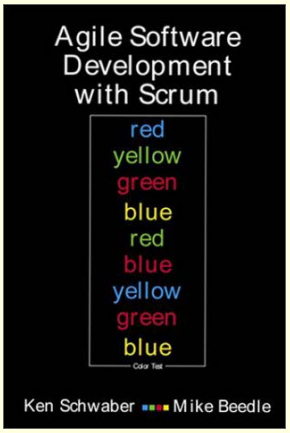
Scrum origins

Scrum

- Jeff Sutherland
  - Initial Scrums at Easel Corp in 1993
  - IDX and nearly 600 people doing Scrum
  - Not just for trivial projects
    - FDA-approved, life-critical software for x-rays and MRIs
- Ken Schwaber
  - ADM
  - Initial definitions of Scrum at OOPSLA 96 with Sutherland
- Mike Beedle
  - Scrum patterns in PLOPD4



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Scrum has been used in…

Scrum

- Independent Software Vendors (ISVs)
- Fortune 100 companies
- Small startups
- Internal development
- Contract development

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Scrum

Scrum has been used for…

- FDA-approved, life-critical software for x-rays and MRIs
- Enterprise workflow systems
- Financial payment applications
- Biotech
- Call center systems
- Tunable laser subsystems for fiber optic networks
- Application development environments
- 24x7 with 99.99999% uptime requirements
- Multi-terabyte database applications
- Media-neutral magazine products
- Web news products

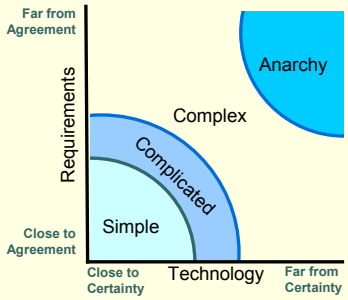
Scrum

Characteristics

- One of the “agile processes”
- Self-organizing teams
- Product progresses in a series of month-long “sprints”
- Requirements are captured as items in a list of “product backlog”
- No specific engineering practices prescribed
- Uses generative rules to create an agile environment for delivering projects

Scrum

Project Noise Level



Source: *Strategic Management and Organizational Dynamics* by Ralph Stacey in *Agile Software Development with Scrum* by Ken Schwaber and Mike Beedle.

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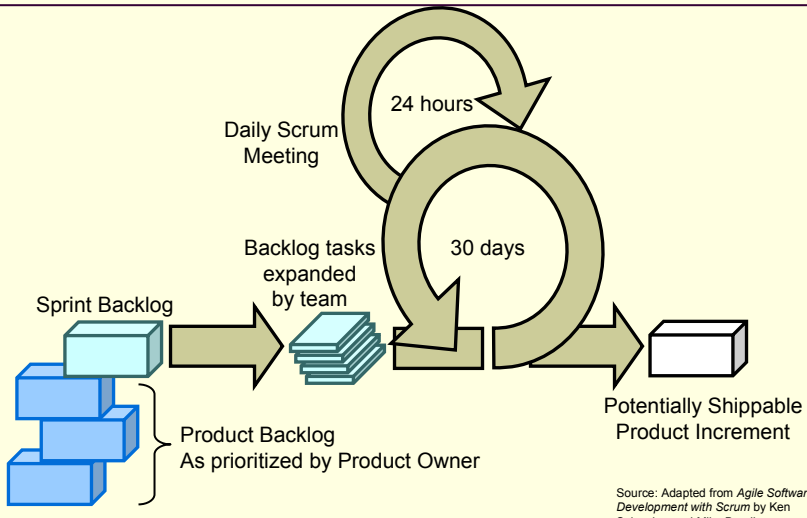
Scrum

Overview



Source: Adapted from *Agile Software Development with Scrum* by Ken Schwaber and Mike Beedle.

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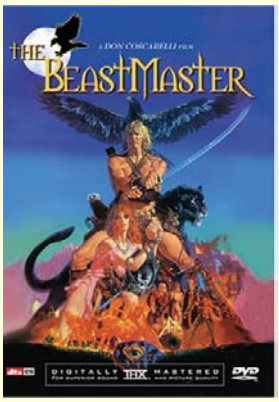
The Scrum Master

- Represents management to the project
- Typically filled by a Project Manager or Team Leader
- Responsible for enacting Scrum values and practices
- Main job is to remove impediments



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The Scrum Team

- Typically 5-10 people
- Cross-functional
  - QA, Programmers, UI Designers, etc.
- Members should be full-time
  - May be exceptions (e.g., System Admin, etc.)
- Teams are self-organizing
  - What to do if a team self-organizes someone off the team??
  - Ideally, no titles but rarely a possibility
- Membership can change only between sprints

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Sprints

- Scrum projects make progress in a series of "sprints"
  - Analogous to XP iterations
- Target duration is one month
  - +/- a week or two
    - But, a constant duration leads to a better rhythm
- Product is designed, coded, and tested during the sprint

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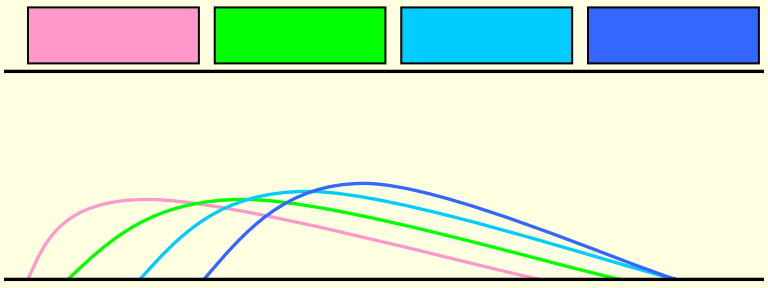
Sequential vs. Overlapping Development



Source: "The New New Product Development Game", Hirotaka Takeuchi and Ikujiro Nonaka, *Harvard Business Review*, January 1986.

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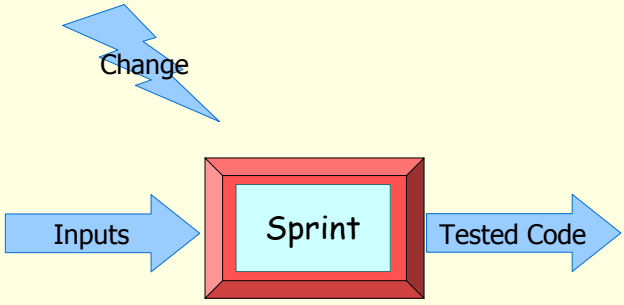
No changes during the sprint



- Plan sprint durations around how long you can commit to keeping change out of the sprint

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Product Backlog

- A list of all desired work on the project
  - Usually a combination of
    - story-based work (“let user search and replace”)
    - task-based work (“improve exception handling”)
- List is prioritized by the Product Owner
  - Typically a Product Manager, Marketing, Internal Customer, etc.

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Sample Product Backlog

	Item #	Description	Est	By
Very High				
	1	**Finish database versioning**	16	KH
	2	**Get rid of unneeded shared Java in database**	8	KH
	-	**Add licensing**	-	-
	3	Concurrent user licensing	16	TG
	4	Demo / Eval licensing	16	TG
		Analysis Manager		
	5	File formats we support are out of date	160	TG
	6	Round-trip Analyses	250	MC
High				
	-	**Enforce unique names**	-	-
	7	In main application	24	KH
	8	In import	24	AM
	-	**Admin Program**	-	-
	9	Delete users	4	JM
	-	**Analysis Manager**	-	-
	10	When items are removed from an analysis, they should show up again in the pick list in lower 1/2 of the analysis tab	8	TG
	-	**Query**	-	-
	11	Support for wildcards when searching	16	T&A
	12	Sorting of number attributes to handle negative numbers	16	T&A
	13	Horizontal scrolling	12	T&A
	-	**Population Genetics**	-	-
	14	Frequency Manager	400	T&M
	15	Query Tool	400	T&M
	16	Additional Editors (which ones)	240	T&M
	17	Study Variable Manager	240	T&M
	18	Haplotypes	320	T&M
	19	**Add icons for v1.1 or 2.0**	-	-
	-	**Pedigree Manager**	-	-
	20	Validate Derived kindred	4	KH
Medium				
	-	**Explorer**	-	-
	21	Launch tab synchronization (only show queries/analyses for logged in users)	8	T&A
	22	Delete settings (?)	4	T&A

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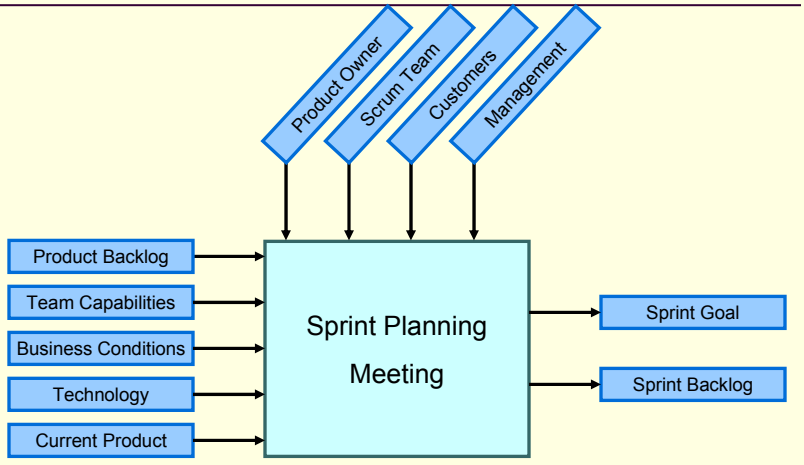
Sprint Planning Meeting



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The Sprint Goal

Scrum

- A short “theme” for the sprint:

Life Sciences

“Support features necessary for population genetics studies.”

Database Application

“Make the application run on SQL Server in addition to Oracle.”

Financial Services

“Support more technical indicators than company ABC with real-time, streaming data.”

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From Sprint Goal to Sprint Backlog

Scrum

- Scrum team takes the Sprint Goal and decides what tasks are necessary
- Team self-organizes around how they’ll meet the Sprint Goal
  - Manager doesn’t assign tasks to individuals
- Managers don’t make decisions for the team
- Sprint Backlog is created

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Sample Sprint Backlog

		Days Left in Sprint	15	13	10	8	
Who	Description		7/22/2002	7/24/2002	7/26/2002	7/31/2002	
		Total Estimated Hours:	554	458	362	270	0
-	**User's Guide**		-	-	-	-	-
SM	Start on Study Variable chapter first draft		16	16	16	16	
SM	Import chapter first draft		40	24	6	6	
SM	Export chapter first draft		24	24	24	6	
	Misc. Small Bugs						
JM	Fix connection leak		40				
JM	Delete queries		8	8			
JM	Delete analysis		8	8			
TG	Fix tear-off messaging bug		8	8			
JM	View pedigree for kindred column in a result set		2	2	2	2	
AM	Derived kindred validation		8				
	Environment						
TG	Install CVS		16	16			
TBD	Move code into CVS		40	40	40	40	
TBD	Move to JDK 1.4		8	8	8	8	
	Database						
KH	Killing Oracle sessions		8	8	8	8	
KH	Finish 2.206 database patch		8	2			
KH	Make a 2.207 database patch		8	8	8	8	
KH	Figure out why 461 indexes are created		4				

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Sprint Backlog during the Sprint

- Changes
  - Team adds new tasks whenever they need to in order to meet the Sprint Goal
  - Team can remove unnecessary tasks
  - But: Sprint Backlog can only be updated by the team
- Estimates are updated whenever there's new information

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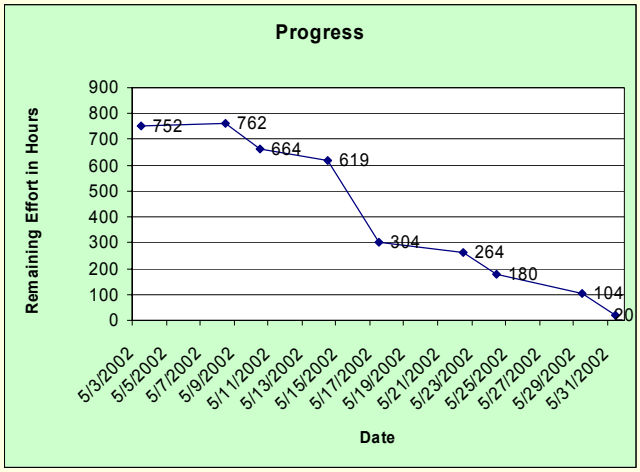
Sprint Burndown Chart

Scrum



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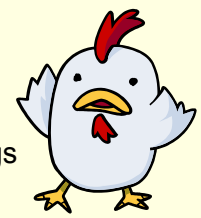
Daily Scrum meetings

Scrum

- Parameters
  - Daily
  - 15-minutes
  - Stand-up
  - Not for problem solving
- Three questions:
  1. What did you do yesterday
  2. What will you do today?
  3. What obstacles are in your way?
- Chickens and pigs are invited
  - Help avoid other unnecessary meetings
- Only pigs can talk



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Questions about Scrum meetings?

Scrum

- Why daily?
  - "How does a project get to be a year late?"
    - "One day at a time."
      - Fred Brooks, *The Mythical Man-Month.*
- Can Scrum meetings be replaced by emailed status reports?
  - No
    - Entire team sees the whole picture every day
    - Create peer pressure to do what you say you'll do

Constraints

Scrum

- A complete list of constraints put on the team during a Sprint:
- </end of list>

Sprint Review Meeting

Scrum

- Team presents what it accomplished during the sprint
- Typically takes the form of a demo of new features or underlying architecture
- Informal
  - 2-hour prep time rule
- Participants
  - Customers
  - Management
  - Product Owner
  - Other engineers

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SQA

Scrum

- No defined or mandatory quality practices
  - Just like there are no defined or mandatory engineering practices
- Compatible with best practices in
  - Quality planning and tracking
  - Configuration management
  - Etc.
- Mark Paulk looked at Scrum and considered it CMM Level 3 (“Defined”)

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Testing & Scrum

Scrum

- Scrum doesn't specify any specific engineering practices
- However, each sprint is required to produce ready-to-use code
  - Heavy in-sprint testing is usually applied
  - Some teams have dedicated testers
    - Others have programmers test everything
- Other engineering practices are up to you
  - Automation, code inspection, pair programming, static analysis tools, etc.

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Stabilization Sprints

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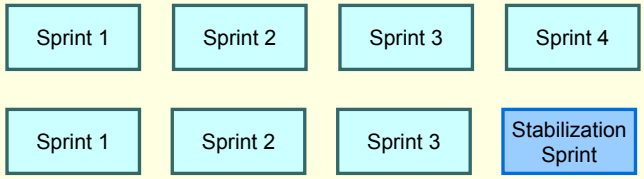

- Team focuses entirely on defects
  - Prepares a product for release
  - Useful during
    - active beta periods
    - when transitioning a team to Scrum
    - if quality isn't quite where it should be on an initial release
- Not a part of standard Scrum, just something I've found useful

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Scalability of Scrum

Scrum

- Typical Scrum team is 5-10 people
- Sutherland used Scrum in groups of 600+
- I've used in groups 100+

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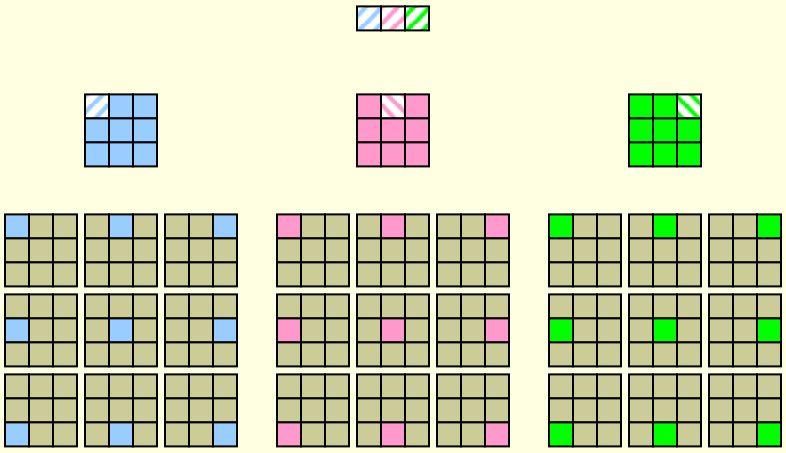
Scrum of Scrums / Meta-Scrum

Scrum



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Further Sources

Where to go next?

- Scrum
  - www.mountaingoatsoftware.com/scrum
  - www.controlchaos.com
  - scrumdevelopment@yahoogroups.com
  - *Agile Software Development with Scrum*
    - Ken Schwaber and Mike Beedle
- User Stories
  - www.userstories.com
- General information
  - www.agilealliance.com

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Contact Information

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