Scrum II:
Better, Faster, Cooler!

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Microsoft Business Framework Advisory Council

Jeff Sutherland background
jeffsutherland.com/scrum

- Agile Systems Architect since 1986
  - CTO/VP Engineering for 9 software companies
  - Prototyped Scrum in 4 companies
  - Conceived and executed first Scrum at Easel Corp. in 1993
  - Rolled out Scrum in 5 companies
- Signatory of Agile Manifesto and founder of Agile Alliance
- Certified ScrumMaster Training
  - Recent clients include Microsoft, Yahoo, Ariba, Cadence, Adobe, GE Healthcare, BellSouth, m3 Media Services

Agile Alliance founders

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Waterfall Method: A Colossal Blunder

- **1994 – DOD must manage programs using iterative development**
  - Report of the Defense Science Board Task Force on Acquiring Defense Software Commercially. June 1994.
- **1996 – Larman meets with principal author of DD-STD-2167**
  - David Maibor expressed regret for the creation of the waterfall-based standard. He had not learned of incremental development at the time and based his advice on textbooks and consultants advocating the waterfall method. With the hindsight of iterative experience, he would recommend IID.
- **1999 – Publication of extensive DOD failures**
  - Out of a total cost of $37B for the sample set, 75% of projects failed or were never used, and only 2% were used without extensive modification. *Jarzombek. The 5th Annual JAWS S3 Proceedings, 1999.*
- **2001 – Thomas reports on 1027 IT projects in the U.K.**
  - 87% failed
  - Primary reason: attempting waterfall practices

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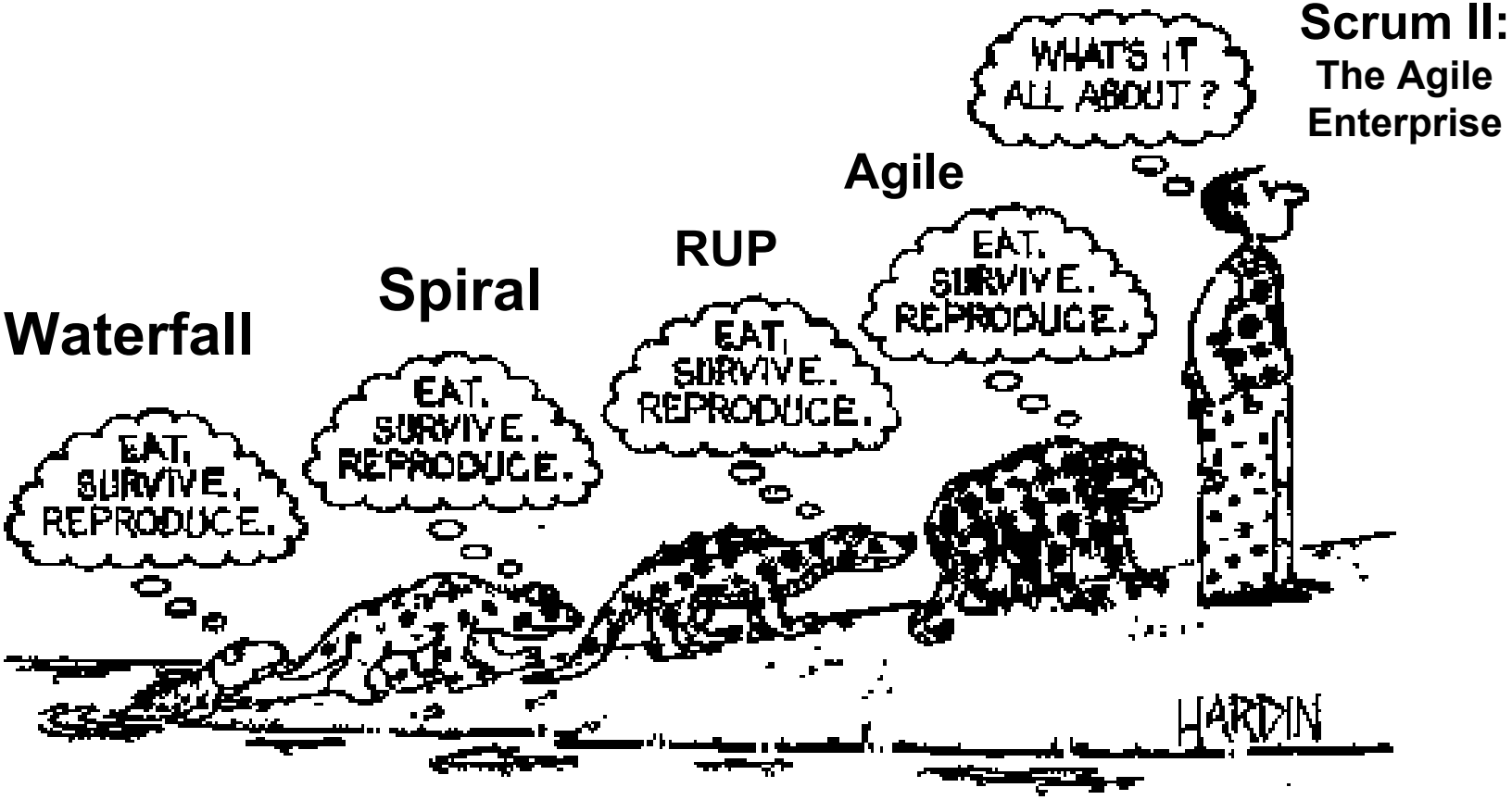
Climbing out of the tar pit ...



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Advanced Scrum

- Scrum II highlights in 20 minutes
- Scrum II is recommended for experienced ScrumMasters and experienced Scrum developers.
- Scrum II is designed to turn the whole company into a Scrum company

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Faster is *cheaper* and *generates revenue*!

Table 1-1: Any project work doing is worth doing fast. (*Dollars in thousands.*)

			Year							
Case	Item	Total	1	2	3	4	5	6	7	8
Fast	*Investment*	$4,000	$2,000	$2,000						
	Return	$12,000			$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
	ROI	3								
Slow	*Investment*	$4,000	$1,000	$1,000	$1,000	$1,000				
	Return	$8,000					$2,000	$2,000	$2,000	$2,000
	ROI	2								

Leach, Lawrence. Eight Secrets to Supercharge Project Performance. Advanced Project, Inc. 2005.

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Faster is also *better*
more functionality, better quality

	SCRUM	Waterfall
People	4.5	60
Months	12	9
Lines of Java	50,803	54000

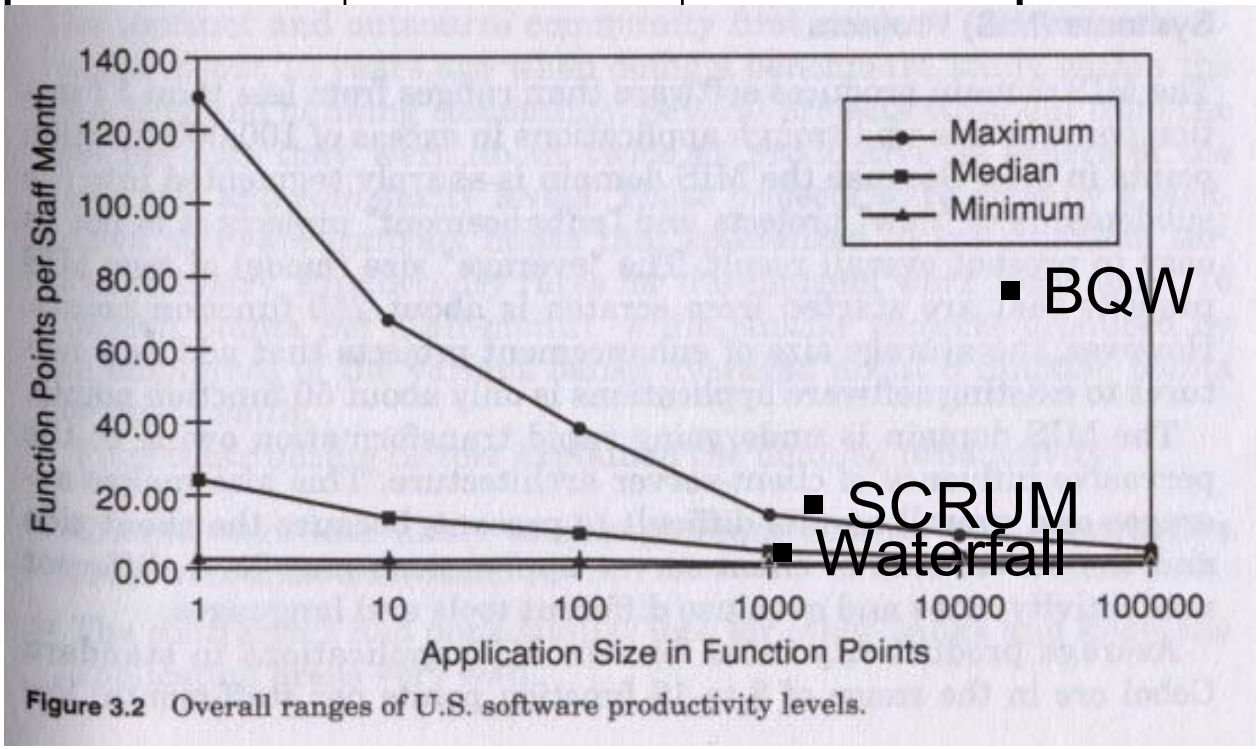

Figure 3.2 Overall ranges of U.S. software productivity levels.

Agility adds
- Focus
- Clarity
- Energy

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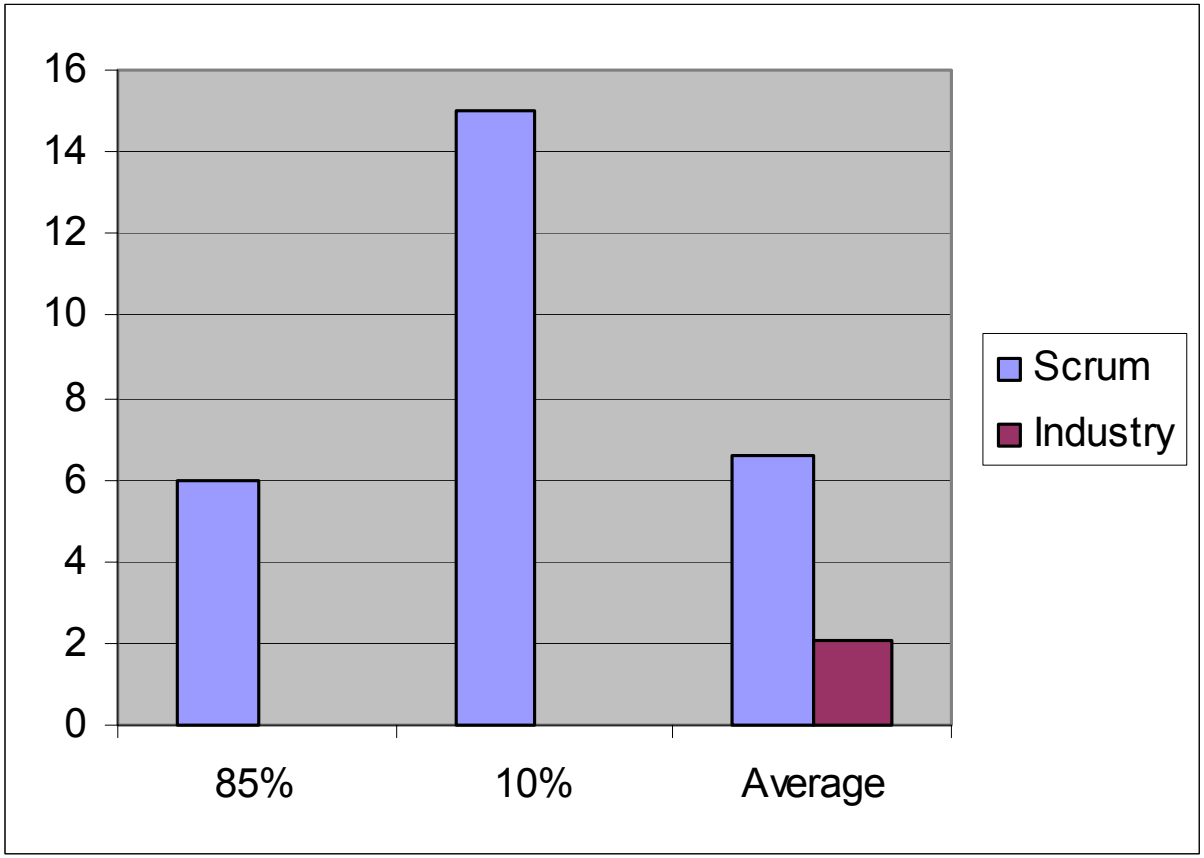
Best Practices: ROI

Scrum vs. Traditional Development: 220% Improvement



Assumptions: Industry failure rate = 31%
Scrum failure rate = 5%
Source: IDX

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Best Business Practices: Scrum Software Development

Can Faster win big in the marketplace?

- Continuous Quality Improvement – average bugs produced per $100,000 invested
- Increasing Velocity – product backlog requirements completed per 100,000 investment

Months since Type B Scrum implemented	3	12	24
Productivity	4.5	9.0	12.2
Quality	100+	100	5

Source: Primavera

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Theory: Complex Adaptive Systems

Faster, better, cheaper good

What does it take to win?

- What if agility could turn an enterprise into a "***competitive monster***"?
  - What if market could be flooded with functionality to overwhelm competitors
  - What if outsourcing became a loosing strategy?
- Enterprise processes are examples of complex adaptive systems.
  - Codifying processes renders parts of the system in concrete.
  - Modification time is on the order of months or years, roughly time required to change processes. What is you could do it in a week?
- A new approach is needed to keep pace with rapidly changing business environments.
  - *Prospective, anticipatory, predictive adaptation of systems*
  - *Accurate real-time data, root cause analysis, rapid development and implementation of process improvement initiatives*
  - *Automated monitoring and analysis of outcomes*

Sutherland, Jeff and van den Heuvel, Willem-Jan (2002) Developing and integrating enterprise components and services: Enterprise application integration and complex adaptive systems. ***Communications of the ACM 45:10:59-64.***

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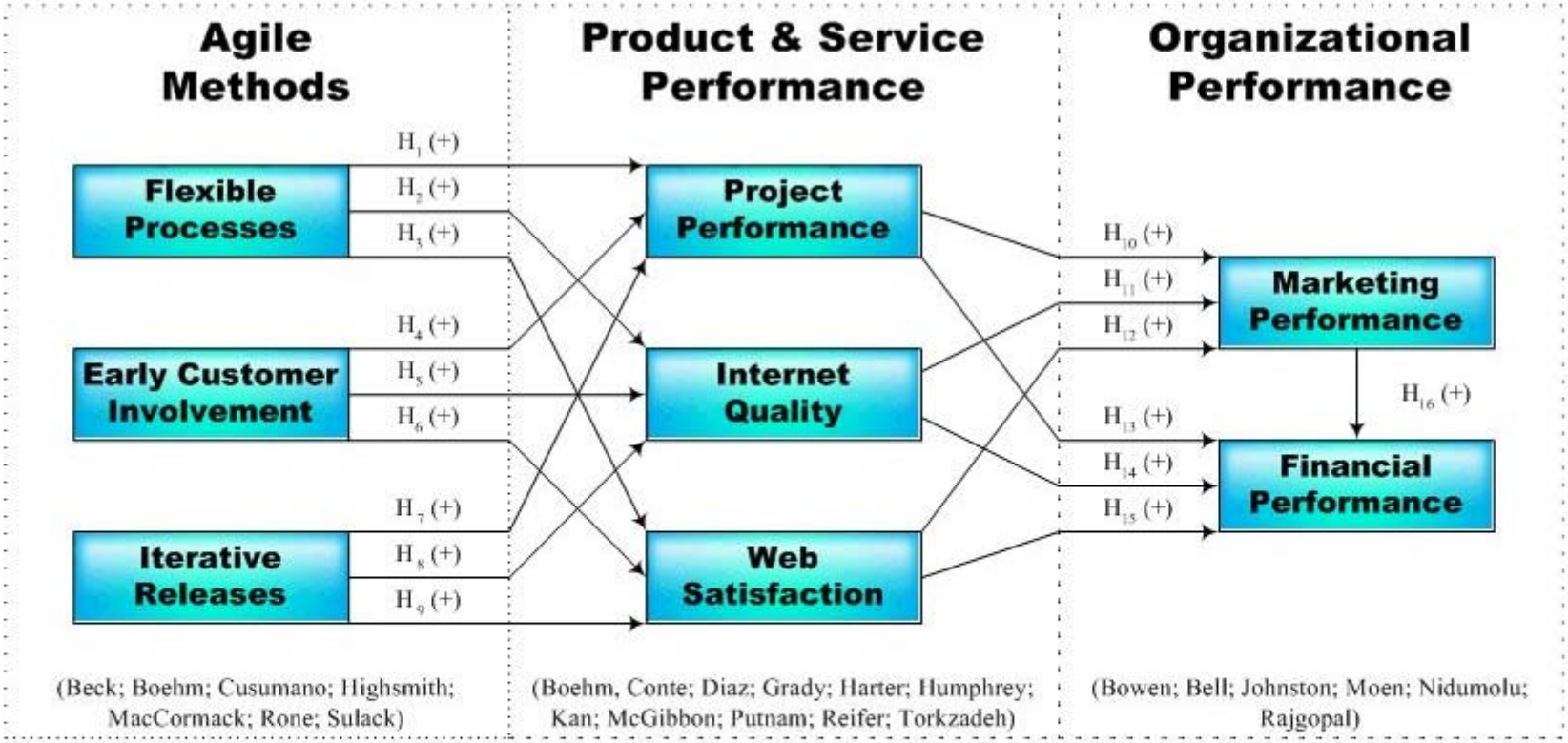
Salient Agile Features Survey

David Rico PhD Thesis



Country	U.S.	**Size**	250
Industry	Software	**Response**	75
Target	Managers		
Items	32	**Rate**	30%

Control Variables		
Firm Size	Turnover	Tools
Industry	Experience	Technology
Type of Firm	Education	Training

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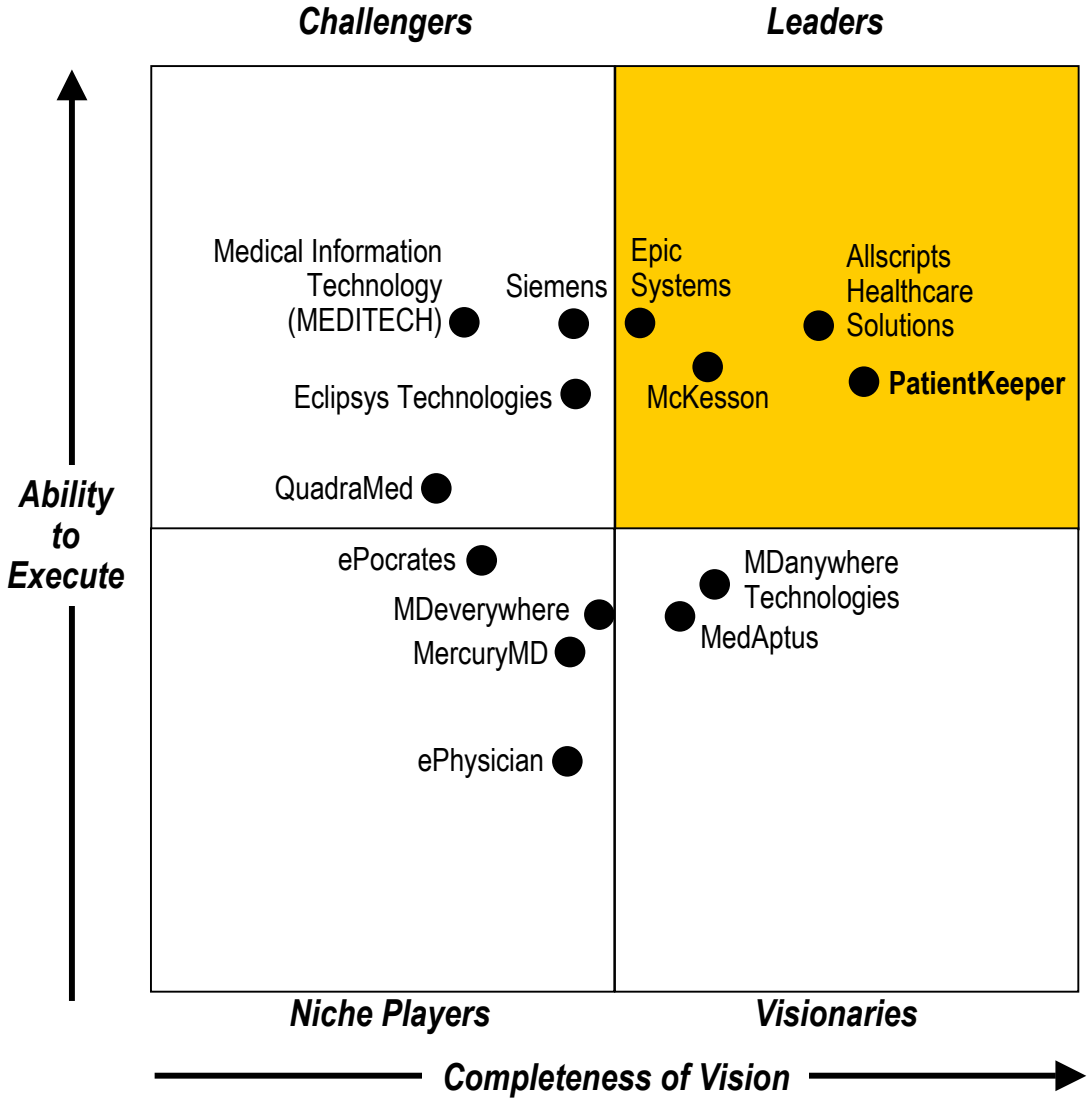
Practice: Agility
Using Advanced Scrum to Capture Industry Leadership



Gartner Magic Quadrant

"PatientKeeper is one of the best-funded and strongest vendors in the mobile/wireless healthcare market. It is one of the few to market itself as providing a mobile computing infrastructure and development environment for which it, and other vendors, system integrators and users, can develop their own mobile applications. It supports both the Palm and Pocket PC platforms."

— Ken Kleinberg, Gartner Research

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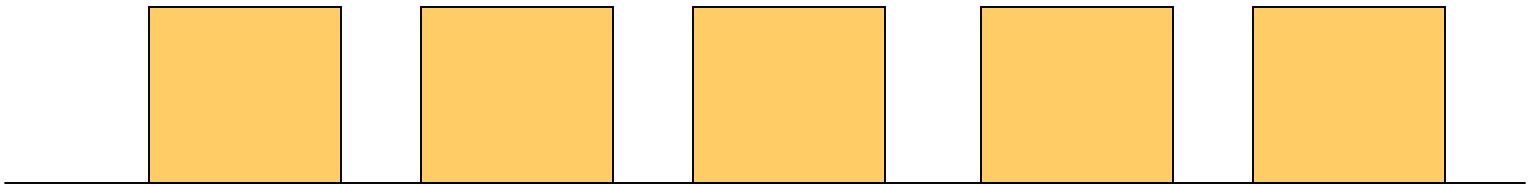
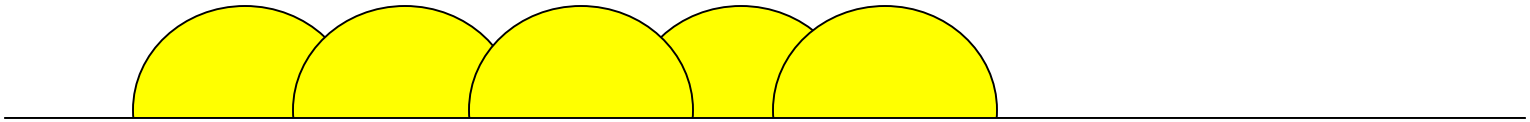
Theory: Scrum Evolution

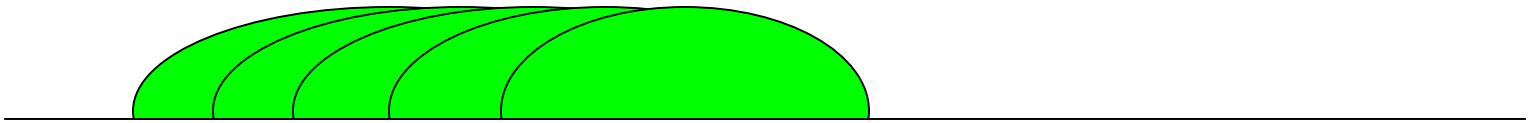
Type A, B, C Sprints



Type A – Isolated cycles of work



Type B – Overlapping iterations



Type C – All at once

The overlapping of phases does away with traditional notions about division of labor. Takeuchi and Nonaka (1986)

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Using Scrum to produce an Agile enterprise

- MetaScrum for release planning
- Variable length Sprints
- Overlapping Sprints for a single team
- Pre-staging Product Backlog
- Daily Scrum of Scrums
- Integration of Product Backlog with Sprint Backlog
- Paperless project management with real-time reporting
- Administrative overhead less than 60 seconds a day per developer and less than 10 minutes a day for a ScrumMaster.

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MetaScrum – Creating a Scrum Company

- Weekly meeting of all stakeholders
  - Includes senior management and sales, marketing, development, services, and support leadership
- Led by Product Owner
  - What did teams accomplished last week?
  - What will they accomplish this week?
  - What are impediments?
- All product decisions made here
  - All releases started, stopped, or modified here
  - All decisions communicated to entire company same day
  - Damage control plan for customers and partners executed on same day by senior management

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ITERATIONS – every sprint generates a product release to multiple large enterprises

- Three month major releases
  - New products generate new revenue streams
  - Expand product portfolio to capture market space
  - Eliminate all bugs necessary to meet product portfolio requirements
- One month sprint for new customer upgrades
  - New functionality enables set of new customers to go live
  - Flood market space with new product features
  - Eliminate high priority bugs
- One week sprint for critical issues
  - Get enterprise customers live and resolve go-live issues
  - Eliminate critical bugs

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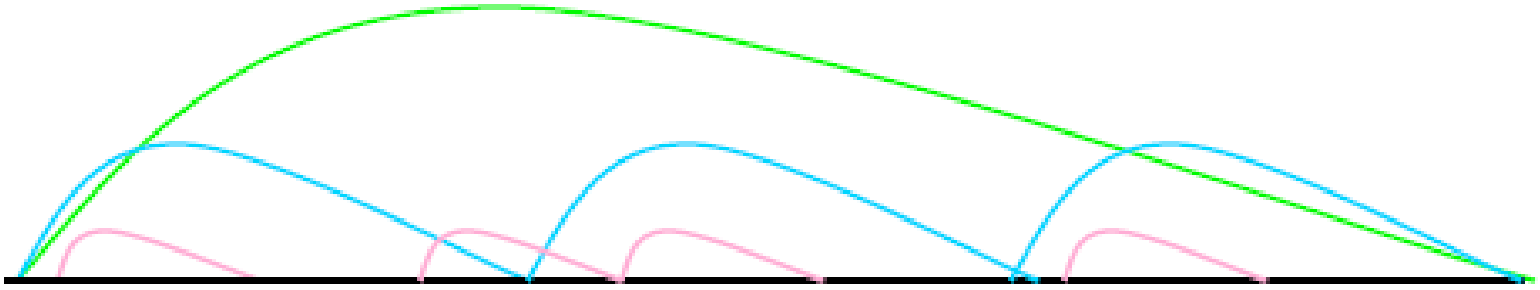
Simultaneous Overlapping Sprints



Red - weekly
Blue - monthly
Green - quarterly

PatientKeeper delivered 45 production releases of quality code to large healthcare systems in 2004.

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Prestaging Product Backlog

- Sprints overlap and are continuous without breaks
- Only product backlog that is *ready* goes into a sprint
- Ready means that:
  - Product Owner has specified the user experience sufficiently so that design and coding can begin without impediment
  - Prototype of application feature has been tested against a user group and user acceptance has been confirmed
  - Product owner has agreement of the development team that backlog items are ready
- Implications:
  - Development teams must set aside time to prototype for Product Owner at least one sprint before implementation
  - Can double throughput in a sprint

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Prioritizing Sprints

- Constraint theory shows that maximum throughput occurs only with sufficient slack time
- Slack time is used to optimize multiple overlapping sprints simultaneously
- Sprint backlog is totally automated and each developer has a workflow task list:
  - Top priority is tasks that must ship this week
  - Second priority is tasks for monthly customer release
  - Third priority is tasks for quarterly new product release
- Developers focus on one task at a time

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Sprint Backlog - embrace change!

- All Sprints result in a product release to a set of customers
- Customer satisfaction is top priority. Customers will not go live without certain features
- If customers change during sprint, Sprint Backlog must change in real time
- Product Owner and ScrumMaster are joined at the hip
- Changes are reviewed retrospectively in MetaScrum – act first and ask permission later!
- ScrumMaster and Product Owner must agree that any changes to Sprint Backlog are achievable
- If change is too large, Sprint is stopped and new one initiated (on same day)

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Automation of Backlog

- Administration overhead requirement was less than 60 seconds a day for a development and less than 10 minutes a day for ScrumMaster
- Had to use bug tracking system to meet this time goal
- Eliminated distinction between product enhancements, new product, and bugs
- Captured only two things from the developer
  - For tasks touched today, how much time is invested in each task
  - What percent done for each task
- This is sufficient data to automate all development, product management, and senior management reporting

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High velocity forces daily Scrum of Scrums

- Advanced Scrum assumes that basic engineering practices are in place
  - Totally integrated product with multiple builds a day
  - Completely automated build process with ability to recreate any historic release on demand
  - Developers always working off the tip of the codebase
- Keeping multiple Scrums in sync with concurrent engineering (multiple teams working off same changing codebase) forces daily Scrum of Scrums

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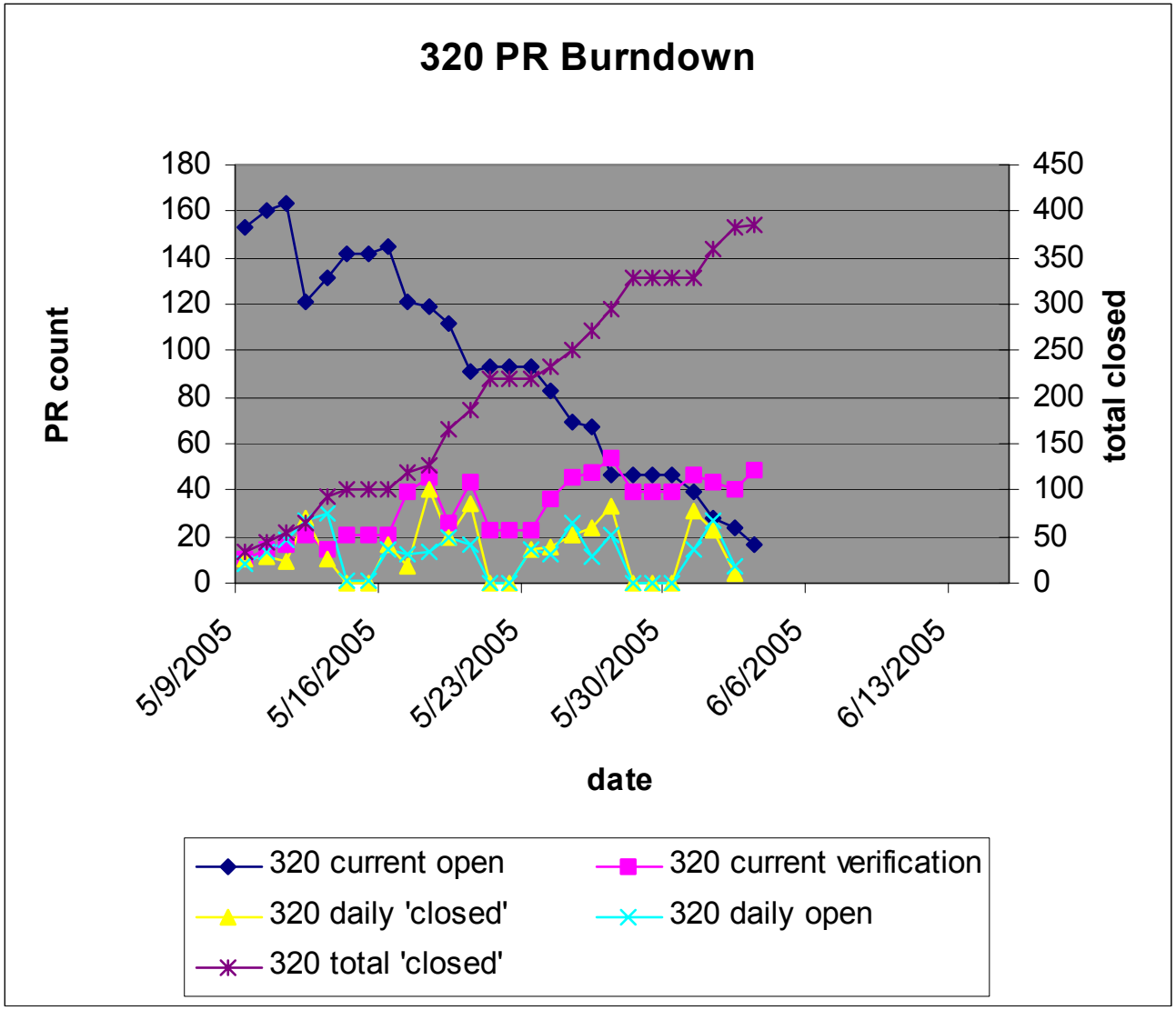
Project Reporting



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For more information

- Contact: jsutherland@patientkeeper.com
- Certified ScrumMaster training opportunities:
  - **Sep 22-23 CSM Boston with Ken Schwaber**
  - **Sep 25-29 JAOO Conference Denmark (keynote & tutorial)**
  - **Oct 13-14 Advanced Scrum Boston**
  - **Oct 27-28 CSM Boston with Ken Schwaber**
  - **Nov 10-11 CSM Boston**
  - **Nov 14-19 Advanced Scrum (Scrum II) Boulder Scrum Gathering**
  - **Dec 8-9 CSM Boston**
  - **Jan 9-10 2006 Hawaii (HICSS 2006 Conference)**

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