

Real World Experience Creating Agile Companies

With help from Google, Yahoo, Microsoft, IBM, Oracle, MySpace, Adobe, GE, Siemens, BellSouth, GSI Commerce, Ulticom, Palm, St. Jude Medical, DigiChart, RosettaStone, Healthwise, Sony/Ericson, Accenture, Trifork, Systematic Software Engineering, Exigen Services, SirsiDynix, Softhouse, Phillips, Barclays Global Investors, Constant Contact, Wellogic, Inova Solutions, Medco, Saxo Bank, Xebia, Insight.com, SolutionsIQ, Crisp, Johns Hopkins APL, Motley Fool, Planon, OpenView Venture Partners, Juske Bank, BEC, Camp Scrum

Jeff Sutherland, Ph.D.
Co-Creator of Scrum
+1 508 644-8298
jeff.sutherland@computer.org

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Characteristics of Real World Agile Companies

- Agile is strategic initiative
- Scrum and/or XP is institutionalized
- Teams pass the Nokia test for Scrum
- Senior management and developers are totally involved
- Scrum is used in all areas of the company, not just development
- Companies have dramatic growth in size and revenue. Products are best of breed and projects are best in class.
- Product companies move into GartnerGroup magic quadrant.

Where did Scrum come from?

- Making the world a better place
 - Japanese manufacturing – Takeuchi and Nonaka
 - Team process – Silicon Valley entrepreneurs
 - Micro enterprise development – Accion and Grameen Bank
- Process innovation and productivity research
 - Alan Kay and Xerox Parc
 - IBM Surgical Team (Mythical Man Month)
 - Coplien and the Borland Quattro Project
 - Complex adaptive systems and iRobot subsumption architecture



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Scrum is based on complex adaptive systems

- Self organization
 - Central planning will destroy it
- No single point of control
 - Command and control will crush it
- Interdisciplinary teams
 - Isolated activities and lack of transparency will cripple it
- Emergent behavior
 - Failure to remove impediments will ensure emergence of mediocrity
- Outcomes emerge in context
 - Empirical process requires inspect and adapt
- Team performance far greater than sum of individuals
 - More product in less time at less cost with higher quality, improved customer satisfaction, and a better life for both producer and end user




J. Sutherland, A. Viktorov, and J. Blount, *Adaptive Engineering of Large Software Projects with Distributed/Outsourced Teams*, in International Conference on Complex Systems, Boston, MA, USA, 2006.

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How Alan Kay influenced Scrum: Innovation at Xerox Parc




Personal Workstation




Mouse (SRI)




Ethernet




Windows Interface



Laser Printer



Smalltalk

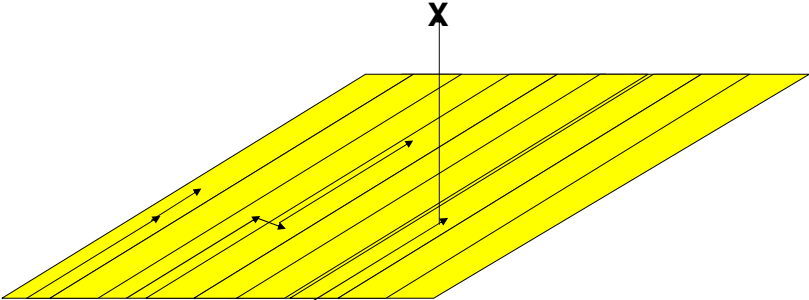
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Alan Kay's Innovation Strategy

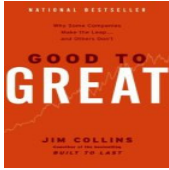
- Incremental
- Cross Discipline
- Out of the Box



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Out of the Box

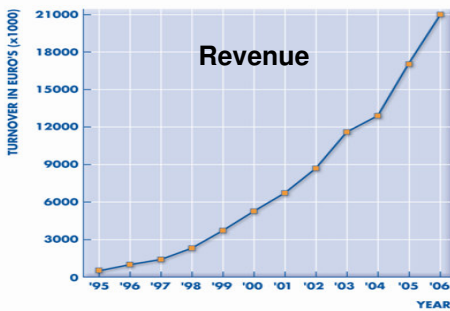
- Scrum looked at projects that were off the charts
 - IBM surgical team
 - Takeuchi and Nonaka
 - Borland Quattro Project
- *Scrum: A Pattern Language for Hyperproductive Software Development*
 - By M. Beedle, M. Devos, Y. Sharon, K. Schwaber, and J. Sutherland. In Pattern Languages of Program Design. vol. 4, N. Harrison, Ed. Boston: Addison-Wesley, 1999, pp. 637-651.
- Going from good to great means Toyota or better.

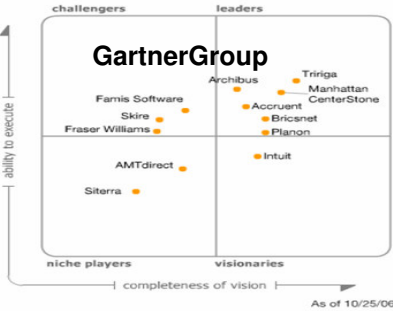


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Planon Scrum

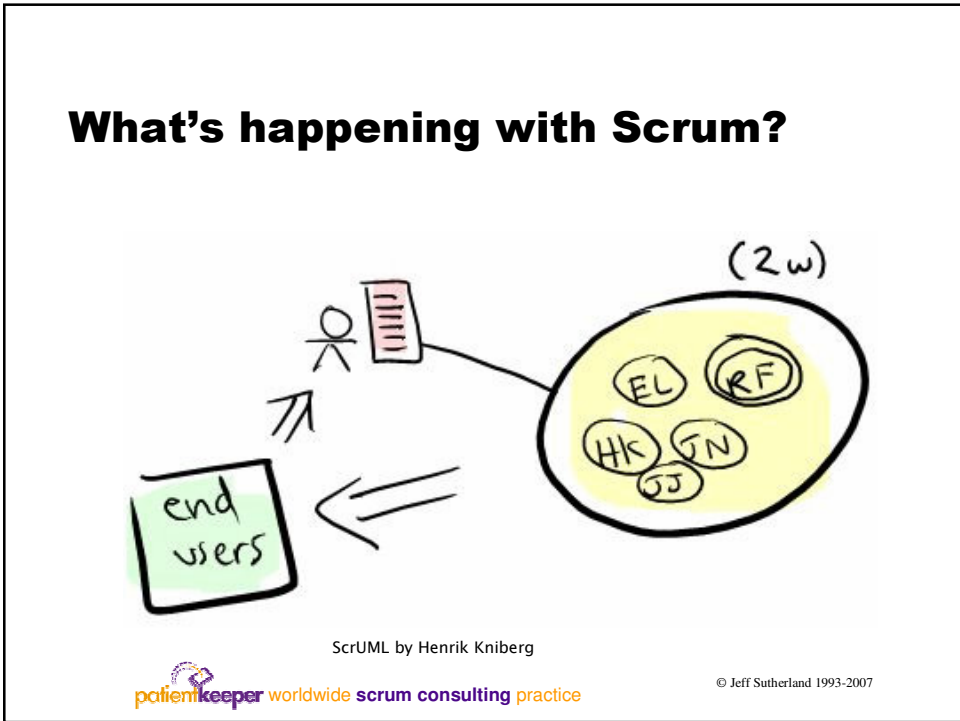
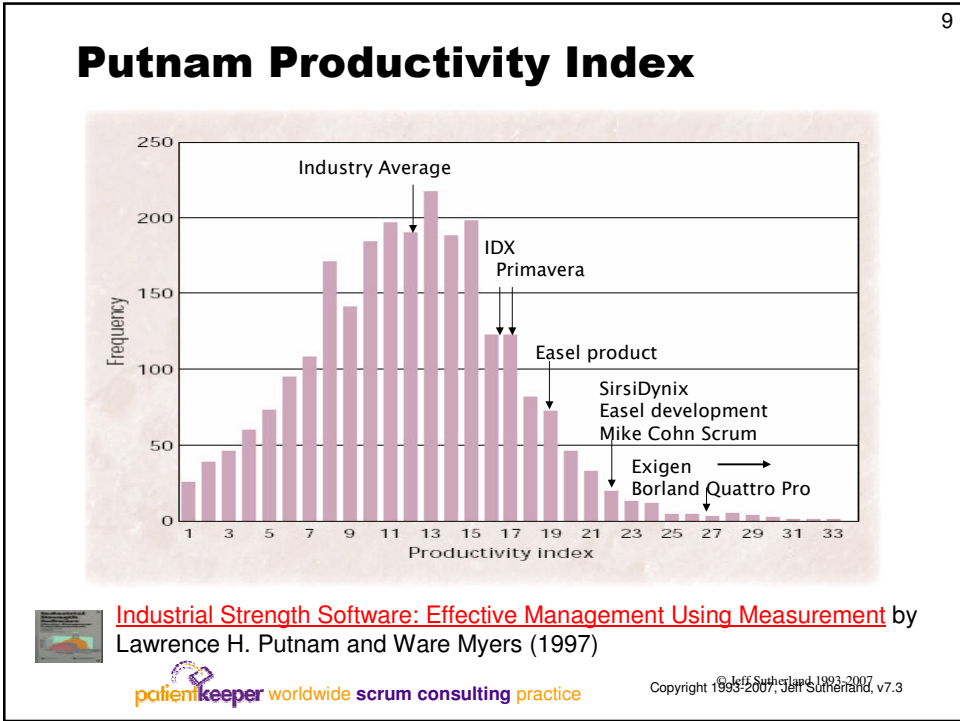


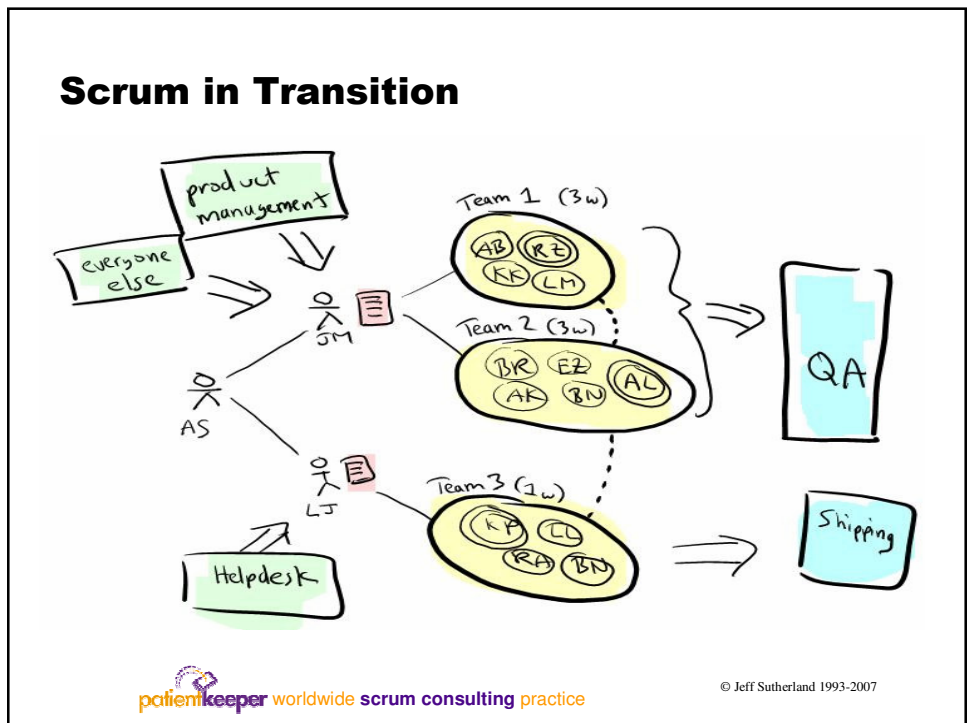
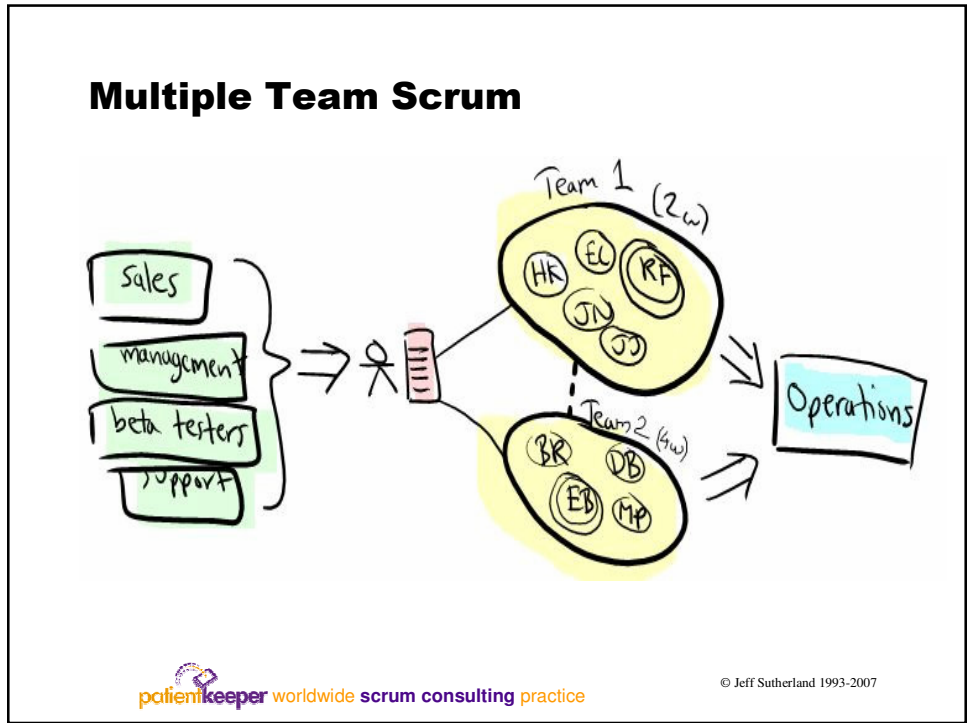


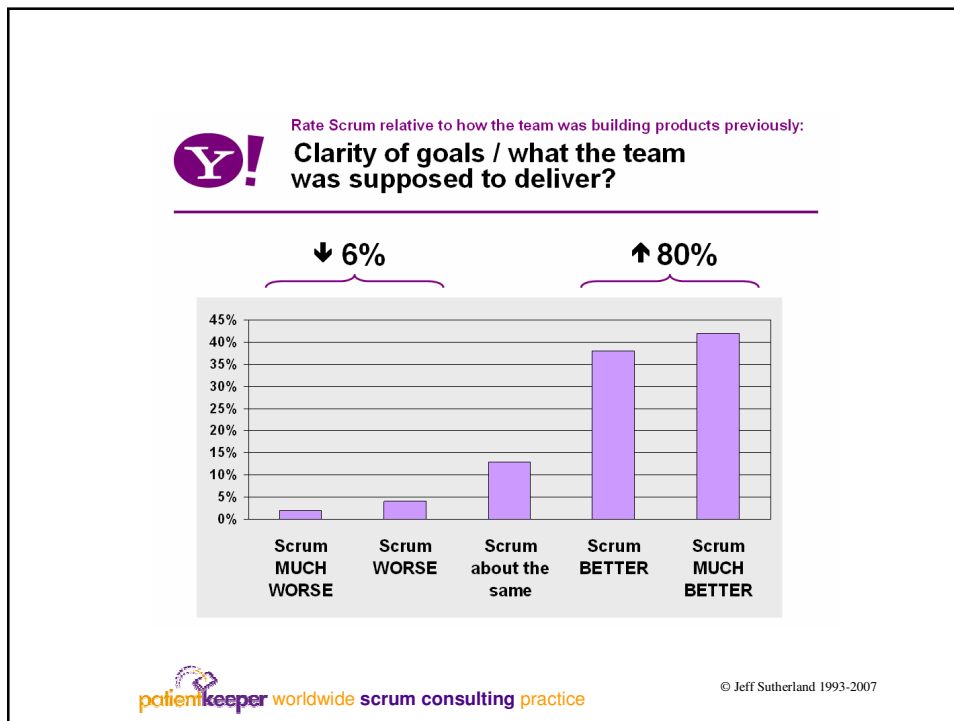
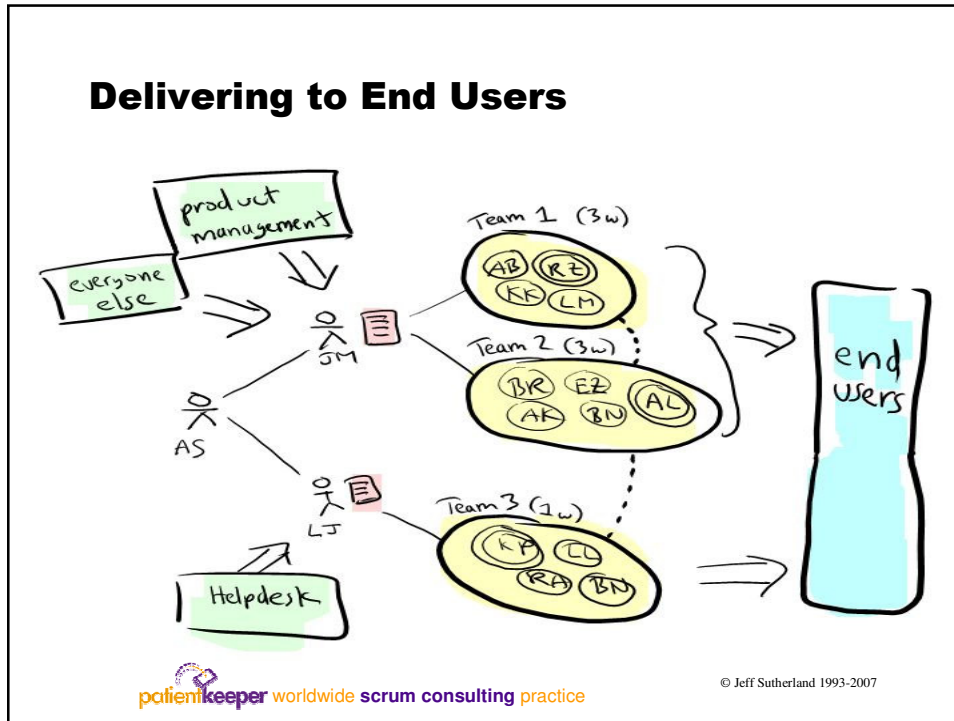
- Great means you are the industry leader in your market and revenue is skyrocketing
- Anyone can aspire to be great!
- That aspiration will make you better

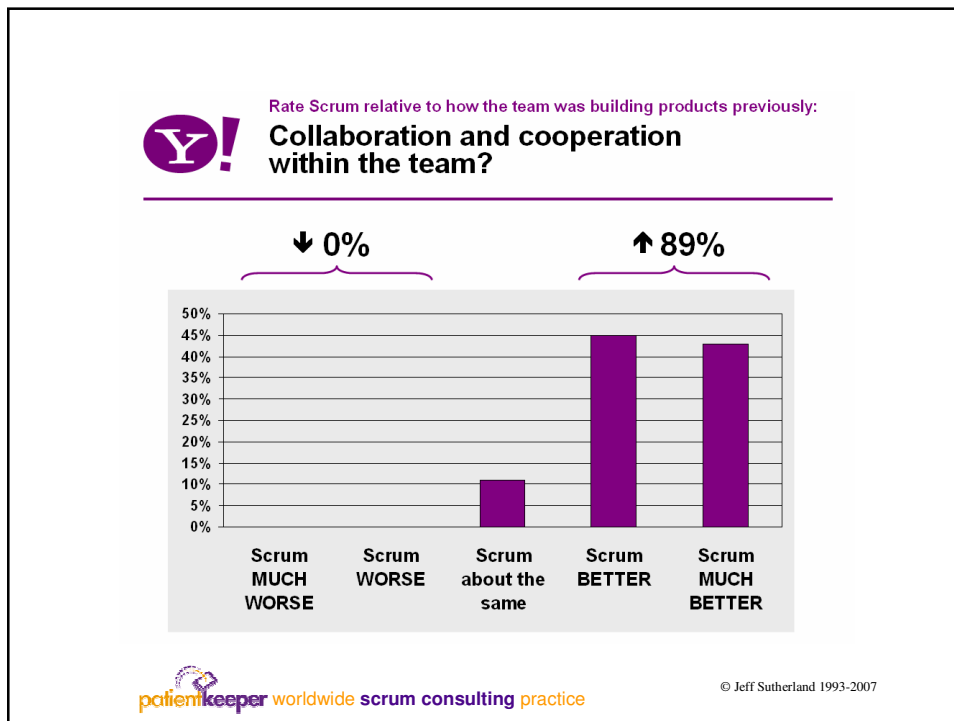
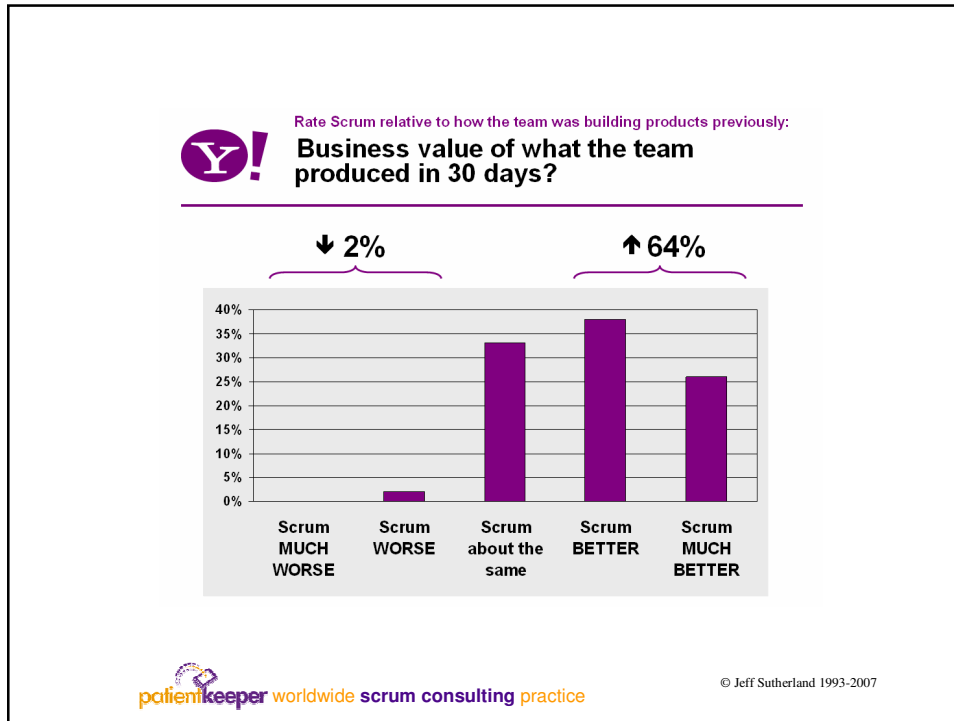


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Yahoo ROI on Scrum Training

- Each Scrum Trainer starts up and coaches 10 new Scrum teams a year
- Average velocity increase is 300-400%
- Net cost reduction per trainer is over \$1M/yr
- ROI ~ 1000% the first year
- Does not include soft benefits – innovation, creativity, customer satisfaction, increased revenue, employee retention

G. Benefield, "Rolling Out Agile at a Large Enterprise," in *HICSS'41, Hawaii International Conference on Software Systems*, Big Island, Hawaii, 2008.



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For those doing Scrum well ...

- You know who the product owner is
- There is a product backlog prioritized by business value
- The product backlog has estimates created by the team
- The team generates burndown charts and knows their velocity
- There are no project managers (or anyone else) disrupting the work of the team



Kniberg, Henrik. *Scrum and XP from the Trenches: How We Do Scrum. Version 2.1, Crisp, 5 Apr 2007.*



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Investing in Scrum OpenView Venture Partners



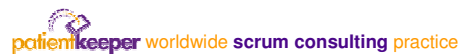
- Invest *only* in Agile companies
- Scrum and XP are Oracle and SQL Server of Agile processes. Portfolio companies must use them.
- Portfolio companies need to pass the Nokia test
 - Chief product owner, one product backlog, prioritized by business value and estimated by developers
 - Fixed iterations with software done (working and tested)
 - Teams have burndown charts and know their velocity
 - No external disruption of teams during Sprint



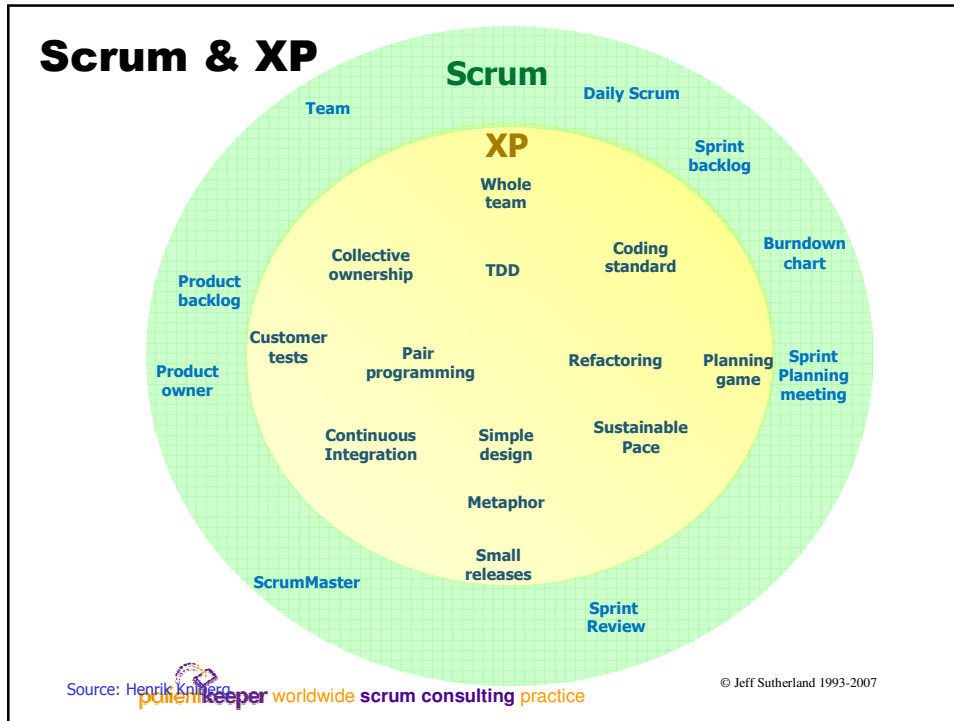
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Experiences with people doing Scrum Hyperproductive Scrum Teams

- It is easy to double productivity with Scrum by implementing only high business value features.
- To quadruple productivity (Toyota effect) requires surfacing impediments and removing them (inspecting and adapting).
- Scrum was designed for 5-10 times productivity improvement. This has been experienced in three types of teams:
 - *The first Scrum team and similar colocated teams.*
 - *The first distributed Scrum team.*
 - *Large distributed/outsourced projects.*
- Understanding hyperproductive Scrum teams can help improve your software development with Scrum.



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Outsourcing

- Outsource \$2M development
- Outsourcing costs - \$1.6M
 - Industry data show 20% cost savings on average
- Introduce Scrum locally
 - 240% improvement at IDX, for example
- Local Scrum costs – \$0.83M
- SirsiDynix radically reduced outsource costs making outsourcing reasonable for:
 - Gaining expertise that is unavailable locally
 - Expanding and contracting development staff without layoffs

Distributed Scrum Styles

Isolated Scrums

Distributed Scrum of Scrums

Totally Integrated Scrums

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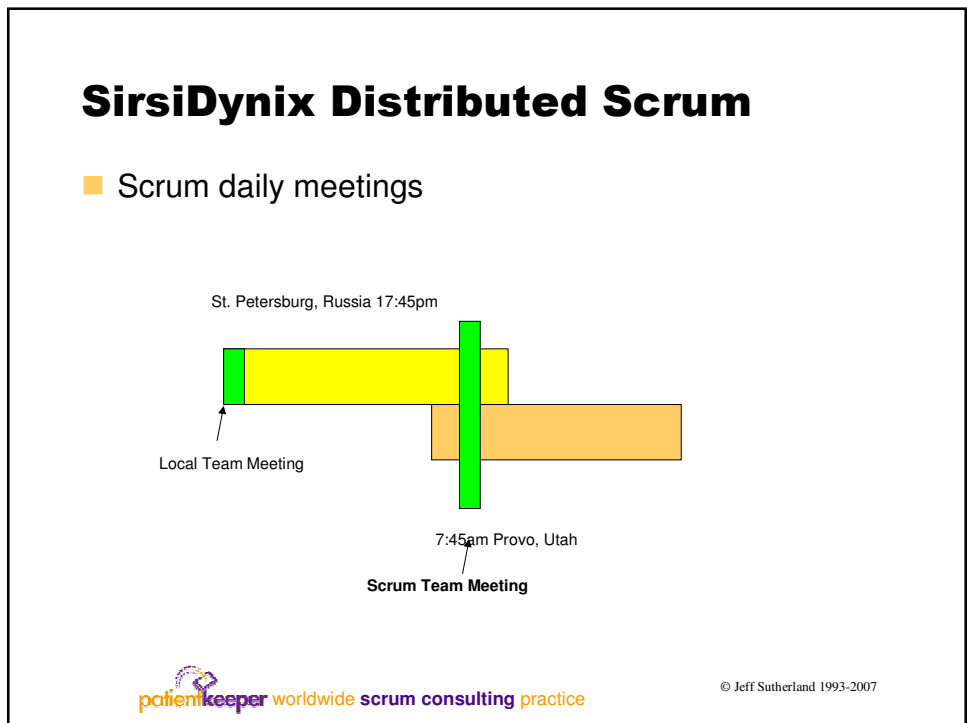
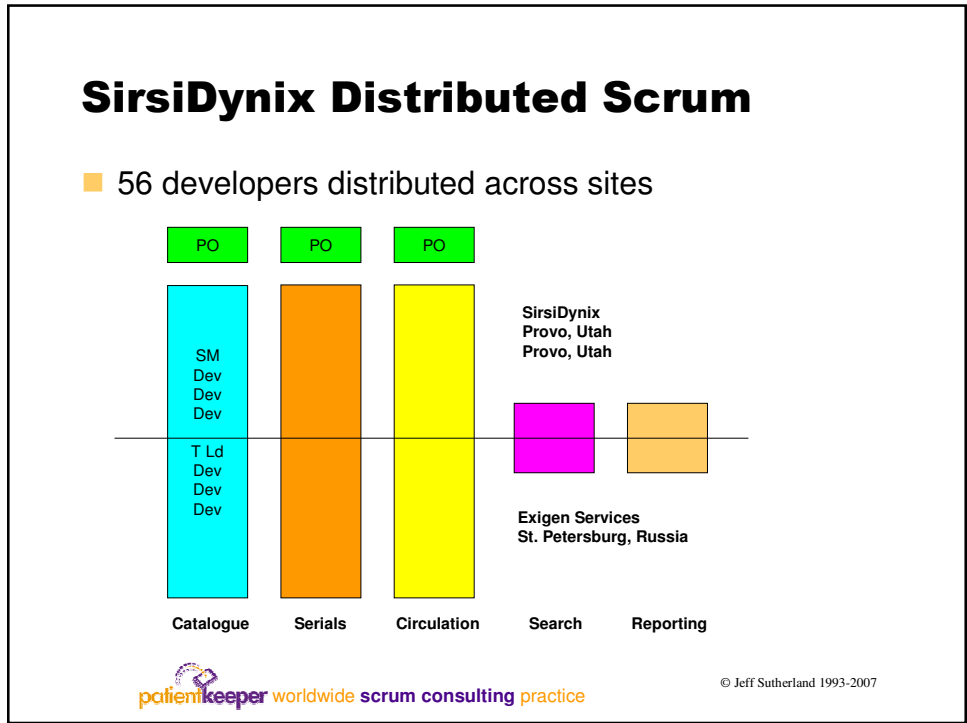
SirsiDynix Distributed Scrum

■ Over a million lines of Java code

Quarter	Java (Kilo BC)	Python (Kilo BC)	JSP (Kilo BC)
JAN1 2003	0	0	0
APR1	100	0	0
JUL1	150	0	0
OCT1	200	0	0
JAN1 2004	250	0	0
APR1	400	0	0
JUL1	500	0	0
OCT1	550	0	0
JAN1 2005	600	0	0
APR1	750	0	0
JUL1	950	0	0
OCT1	1100	0	0
JAN1 2006	1000	0	0

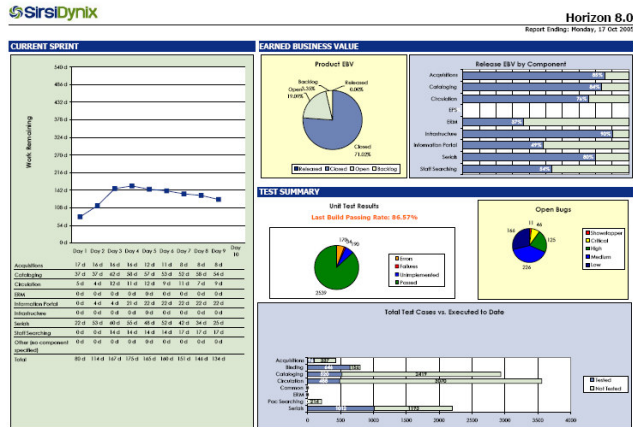
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SirsiDynix Distributed Scrum

Common tools



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SirsiDynix Distributed Scrum

Uncommon performance

	Colocated Scrum*	Waterfall*	SirsiDynix Distributed Scrum**
Person Months	54	540	827
Lines of Java	51,000	58000	671,688
Function Points	959	900	12673
FP per dev/month	17.8	2.0	15.3

*M. Cohn, User Stories Applied for Agile Development. Addison-Wesley, 2004
 **J. Sutherland, A. Viktorov, J. Blount, and N. Puntikov, "Distributed Scrum: Agile Project Management with Outsourced Development Teams," in HICSS'40, Hawaii International Conference on Software Systems, Big Island, Hawaii, 2007.

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SirsiDynix was off the charts

- Distributed
- Outsourced
- Hyperproductive
- Linearly scalable
- Out of the Box

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First Demonstration of Linear Scalability

Scrum Teams

Waterfall

Velocity

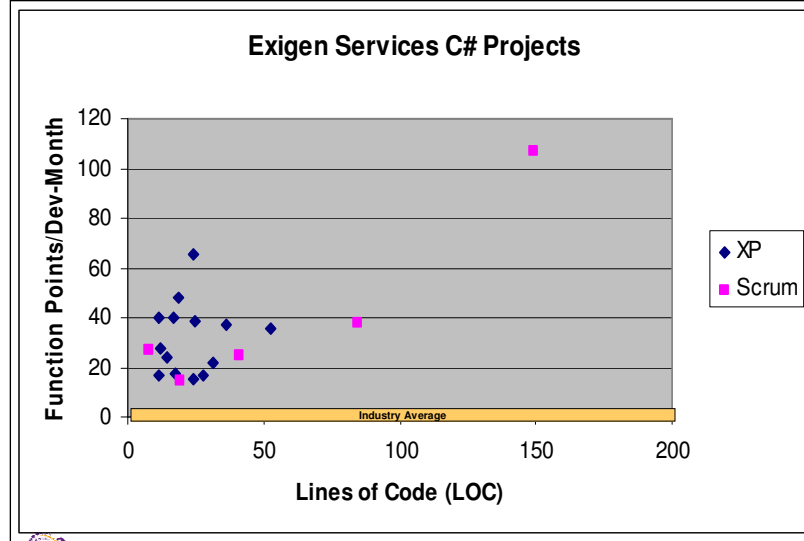
Project Size

•J. Sutherland, A. Viktorov, J. Blount, and N. Puntikov, "Distributed Scrum: Agile Project Management with Outsourced Development Teams," in HICSS'40, Hawaii International Conference on Software Systems, Big Island, Hawaii, 2007.
•J. Sutherland, C. Jacobson, and K. Johnson, "Scrum and CMMI Level 5: A Magic Potion for Code Warriors!," in Agile 2007, Washington, D.C., 2007.

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The first company where all the teams look hyperproductive ...



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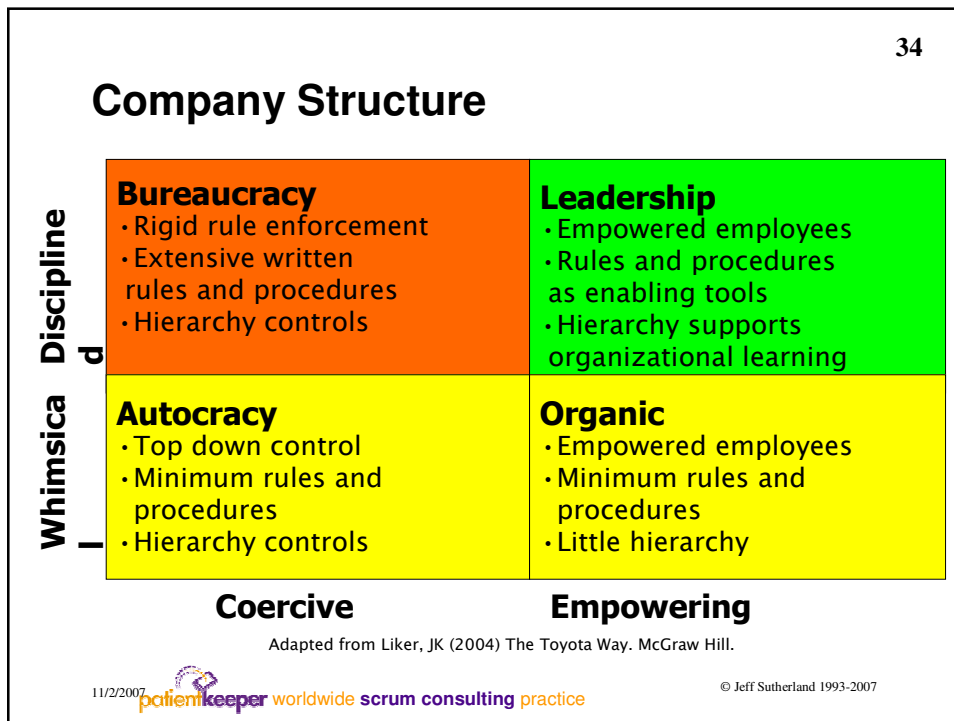
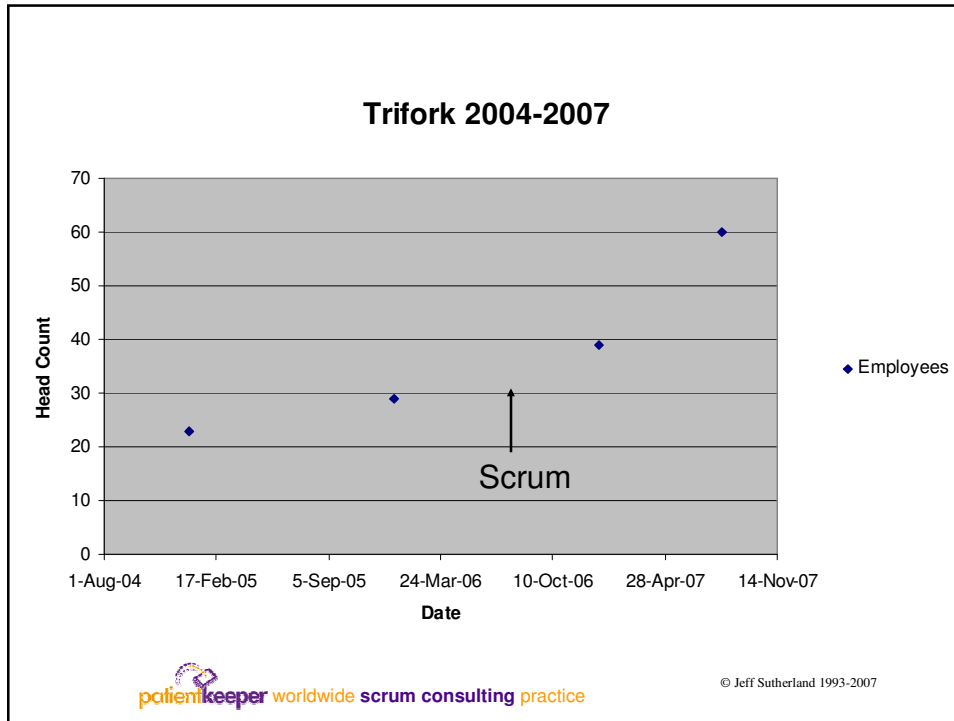
Trifork



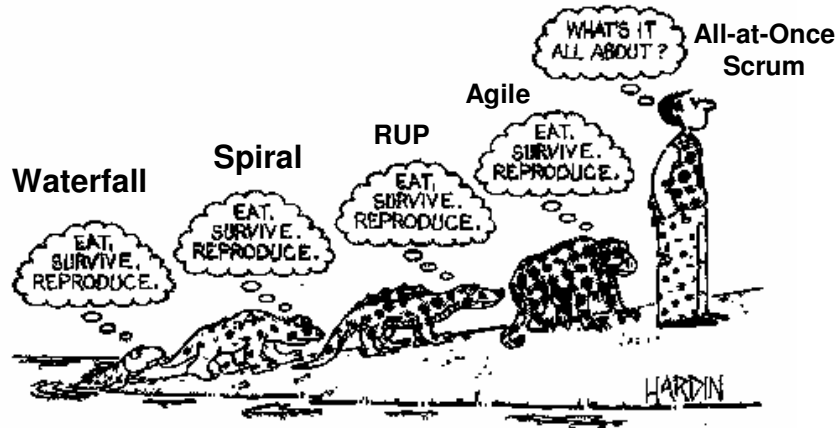
- Company wide Scrum
- Goals
 - Every employee a Certified ScrumMaster
 - Every part of company run by Scrum
- Sales force are Certified ScrumMasters and only execute Agile contracts
- JA00 run by Scrum – bigger than Agile 2007

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Climbing out of the tar pit ...



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Theory: Scrum Evolution

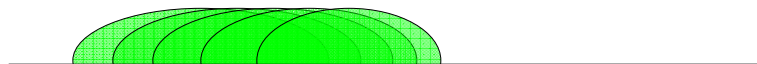
Type A, B, C Sprints



Type A – Isolated cycles of work



Type B – Overlapping iterations



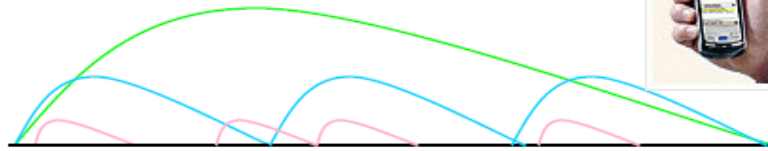
Type C – All at once

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

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Simultaneous Overlapping Sprints



Red - weekly
 Blue - monthly
 Green - quarterly

PatientKeeper delivers 45 production releases of quality code to tens of thousands of physician users in large healthcare systems every year. Largest client is HCA with 176 hospitals.

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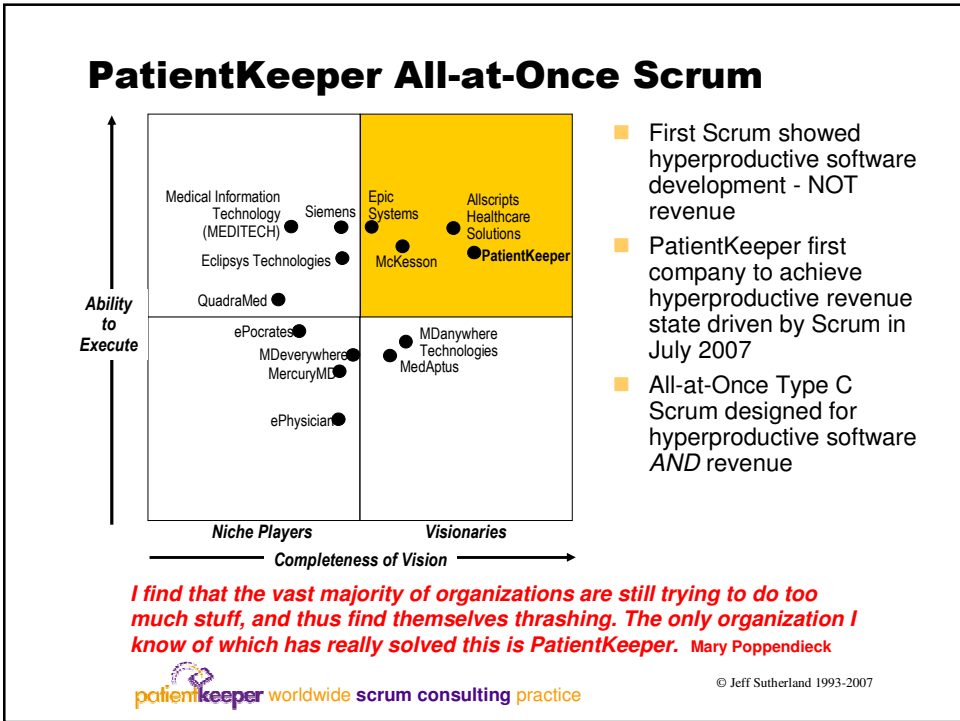
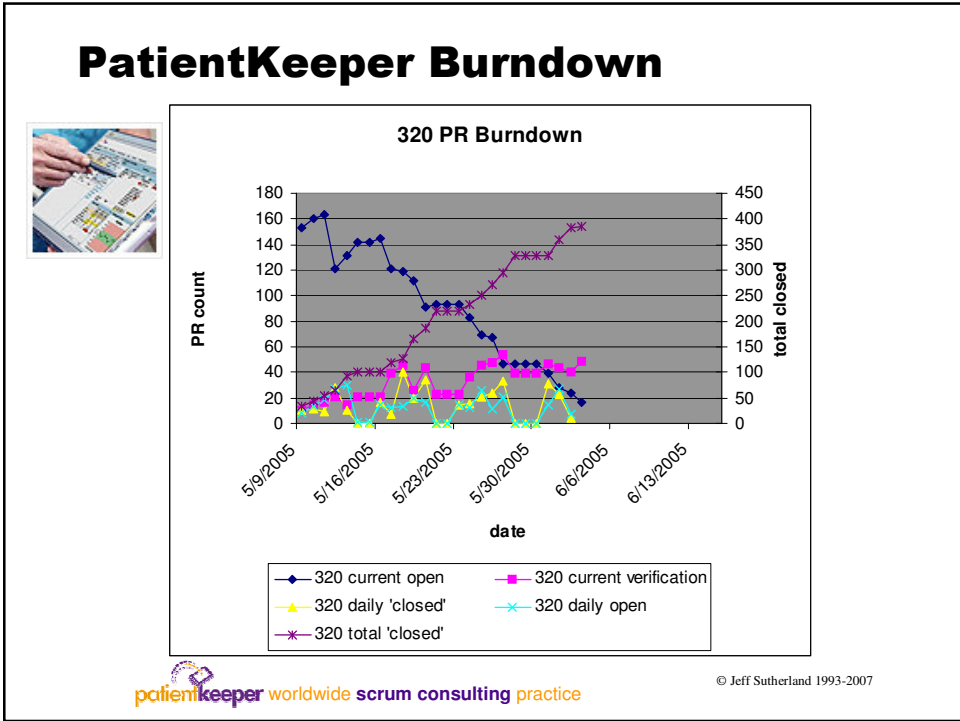
PatientKeeper Strategy for Done, Done, Done, Done

- Sprint Planning
 - Product Backlog must be “ready” (estimable and testable)
- Week 1
 - Develop Agile technical specifications
 - Testers update test plans with delta
 - Developers put code in build
 - Smoke test ensures build never fails
 - Testers immediately test completed stories
- End of Week 2
 - Install Release Candidate 1 at customer sites
- End of Week 3
 - Install Release Candidate 2 at customer sites
- End of Week 4
 - Complete all customer requests, bugs, testing
 - Install final Release Candidate at customer sites
- Last day of Sprint
 - Train users and go live!
- Sprint Review
 - Did customers complain/rejoice?

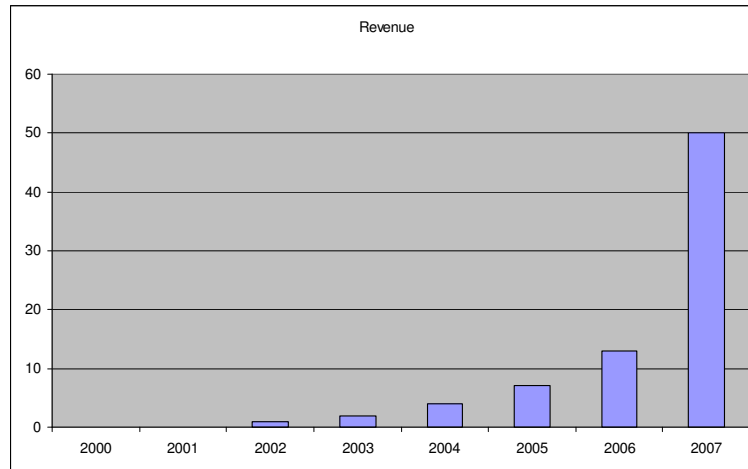


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PatientKeeper Revenue



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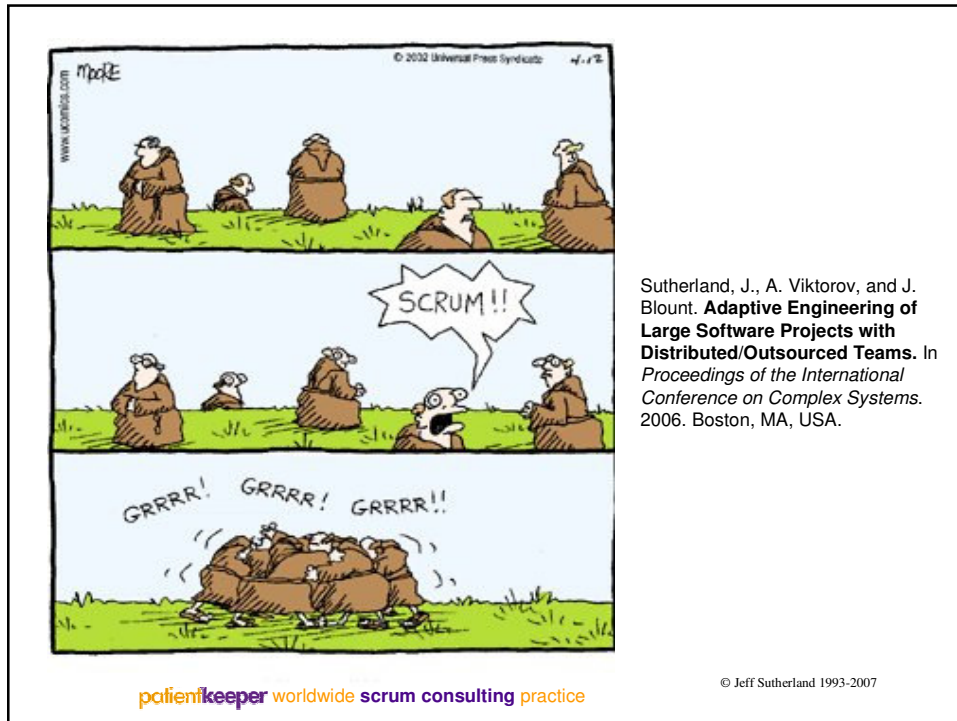
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Don't try this at home!



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Sutherland, J., A. Viktorov, and J. Blount. **Adaptive Engineering of Large Software Projects with Distributed/Outsourced Teams.** In *Proceedings of the International Conference on Complex Systems*. 2006. Boston, MA, USA.