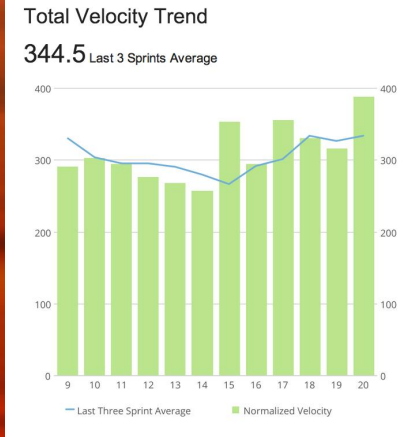


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Hyperproductive Distributed Scrum Fast, Cheap, and Scalable



Hosts: *Jeff Sutherland*
Joe Justice



Biographical Sketch - Jeff Sutherland



- 1960-1975 - West Point, Fighter Pilot, U.S. Air Force
 - 100 missions over North Vietnam F4 Phantom
- 1973-1986 - Univ. Colorado School of Medicine
 - Asst. Prof. Radiology, Biometrics, and Preventive Medicine
 - Complex adaptive systems research, mathematical simulations of cancer cell formation
- 1983-2008 - VP/CTO/CEO 10 technology companies, Agile coach to 21 startups
 - 1983-1993 prototyping new development processes
 - 1993 created first Scrum, now the leading software development methodology
 - 1996-2008 CTO IDX (GE Healthcare) and PatientKeeper
 - 2006-present Senior Advisor, OpenView Ventures
 - 2008-present Chairman Scrum Foundation
- 2006-present CEO Scrum Inc.



QuickTime™ and a
GIF decompressor
are needed to see this picture.

QuickTime™ and a
GIF decompressor
are needed to see this picture.



Joe Justice

“WE HAVE FOUND TEAM MORALE TO BE A MULTIPLIER FOR VELOCITY.”

- **Consultant at Scrum Inc, and CEO of WIKISPEED** - global manufacturer of ultra-efficient prototype cars and Social good initiatives.
- **Creator of eXtreme Manufacturing** – Technical practices enabling Scrum in hardware manufacturing and engineering organizations.
- **Scrum in space systems**, rockets, missiles, automotive, housing, metrology, medical devices, radio, radar, dev-ops, organizational transformation, entertainment, legal, software architecture, composites, etc.
- **Speaker and Consultant at Unesco World Headquarters**, TEDx, Cambridge University UK, UC Berkley USA, Google, Microsoft, Boeing, Lockheed Martin, Raytheon, Wikimedia Foundation, Open Source Ecology, Aspen Institute, Pictet Bank, Johnson Controls, and other organizations world-wide.



Justice@ScrumInc.com

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Scrum Inc. is the Agile leadership company of Dr. Jeff Sutherland, co-creator of Scrum. We are based in MIT Kendall Square.

We maintain the Scrum framework by:

- Capturing and codifying evolving best practices,
- Conducting original research on organizational behavior
- Adapting the methodology to an ever-expanding set of industries, processes and business challenges



We also help companies achieve the full benefits of Scrum through our full suite of support services:

- Training (Scrum Master, Product Owner, Agile Leadership, online courses, etc.)
- Consulting (linking Scrum and business strategy, customizing Scrum)
- Coaching (hands-on support to Scrum teams)
- Publishing and new content development

We run our services company using Scrum as the primary management framework, making us a living laboratory on the cutting edge of “Enterprise Scrum”

Find out more at www.scruminc.com.

Agenda

- Why Collocate? Benefits?
- Why Distribute? Problems?
- Types of Distributed Scrum
 - Special Case: Outsourcing
- Distributing Velocity is the Challenge
 - Single team in multiple locations
 - Linear scalability – how to break Brooks Law
- Case studies of globally distributed Scrum
- Distributed Scrum at Scrum Inc

Collocation

- Teams work best when collocated
 - Collocated means team members can see and talk with one another while working
 - Decades of MIT research shows distance of more than 30 meters causes distributed effect
- Multiple studies show collocation doubles production
 - This happens even when comparing collocated vs. non-collocated teams in the same building



Collocated XM Scrum Team

Example: Collocation Doubles Productivity

TABLE 2
Comparative Statistics on Productivity Measures

	Pilot Teams	Company Baseline	Industry Standard
FP/Staff Month <i>(higher is better)</i>	29.49 <i>(SD = 7.88)</i>	14.18	11.25
Cycle Time per 1000 FPs <i>(lower is better)</i>	7.64 <i>(SD = 3.37)</i>	12.74	11.75

TABLE 4
Comparison of the Pilot with Subsequent Teams in the RSDC

	Pilot Teams	Subsequent Teams	<i>significance</i>
FP/Staff Month <i>(higher is better)</i>	29.49 <i>(SD = 7.88)</i>	49.28 <i>(SD = 18.52)</i>	<i>p < .01</i>
Cycle Time <i>(lower is better)</i>	7.64 <i>(SD = 3.37)</i>	6.34 <i>(SD = 5.93)</i>	<i>n.s.</i>

Rapid Software Development through Team Collocation. Stephanie D. Teasley, Lisa A. Covi, Member, IEEE Computer Society, M.S. Krishnan, Member, IEEE Computer Society, and Judith S. Olson, IEEE TRANSACTIONS ON SOFTWARE ENGINEERING, VOL. 28, NO. 7, JULY 2002

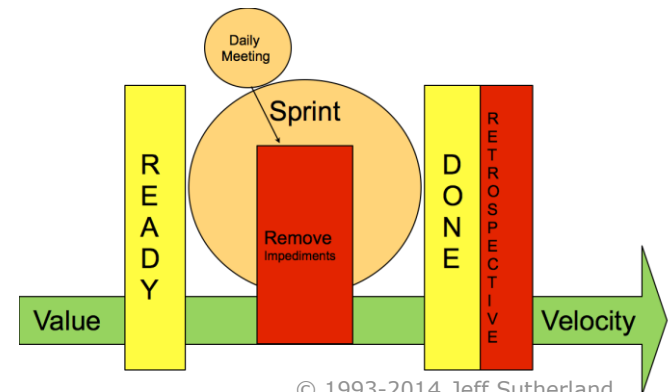
Collocation Good for Team Dynamics

- Stages of team development: Forming, storming, norming, performing
- Authority
- Trust
- Cultural differences
- Styles of conflict resolution



Scrum Framework Challenges

- High productivity depends on
 - All software DONE and usable at the end of a sprint
 - Product backlog in high READY state at the beginning of a sprint
 - Impediments aggressively removed via the Daily Scrum and Retrospective
- Distribution makes this more difficult
- However, several case studies show it is possible to overcome these challenges



Why Distribute?

- Common Objectives
 - Save money
 - Capture talent
 - Scale up and down quickly
- Common Results
 - Increase risk
 - Increase dysfunction
 - Delay projects



Microsoft

Distributed Agile Development at Microsoft patterns & practices

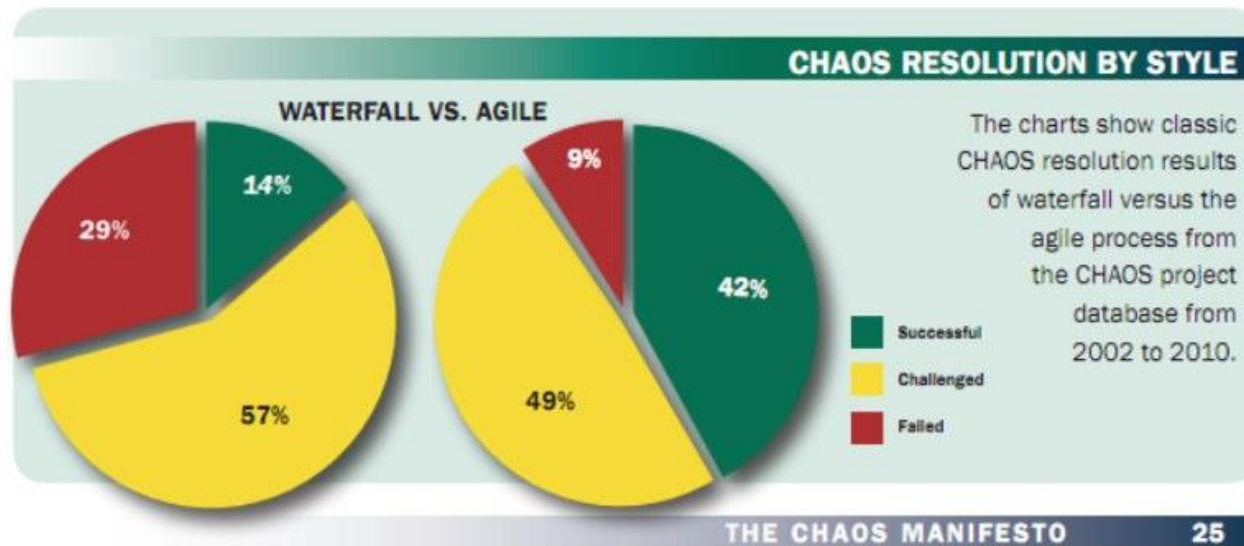
*Ade Miller, Microsoft patterns & practices
October 2008*



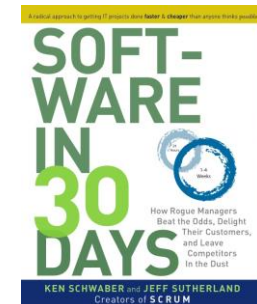
- With distributed agile development it is possible to tap into new global markets and make best use of globally available talent, while potentially reducing costs.
- Teams at patterns & practices have been successfully using this approach for a number of years.
- The decision to distribute your project should be a conscious one and the decision maker(s) must understand that in doing so they:
 - reduce the project's likelihood of success
 - increase the delivery time
 - reduce the team's performance and increase its dysfunction
- The risk/reward tradeoff needs to be clearly understood before deciding to distribute your team(s).

Source: <http://www.microsoft.com/en-us/download/details.aspx?id=14916>

Don't Distribute Bad Agile



Source:



Never Outsource to Waterfall!

- Scrum collocation effect will always overwhelm any hour rate savings for outsourced waterfall teams.
- Outsourced Scrum teams have problems
 - Turnover rate is 30-50% a year in India and China making it impossible to have stable teams
 - Cost savings even for high performing outsourced teams is minimal
- Only outsource to Scrum teams and only to:
 - Use local talent for local products and services
 - Capture talent not available onshore
 - Scale up and down at will without layoffs

Example: Scrum Changes the Basic Economics of Outsourcing

- What happens if you outsource \$2M of development?
 - Industry data show 20% cost savings on average
- Outsourcing from PatientKeeper to Indian waterfall team:
 - Two years of data showed breakeven point occurs when Indian developer costs 10% of American Scrum developer
 - Actual Indian cost is 30%
- \$2M of Scrum development at Patientkeeper costs \$6M when outsourced to Indian waterfall teams

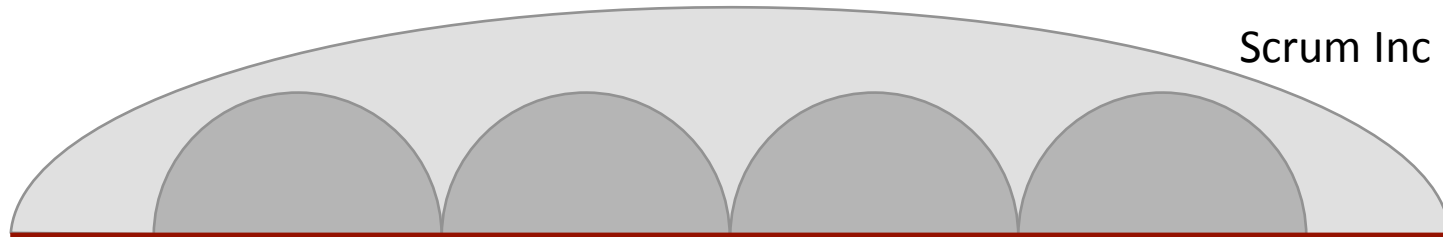
Distributed Team Approaches That Work

John Deere



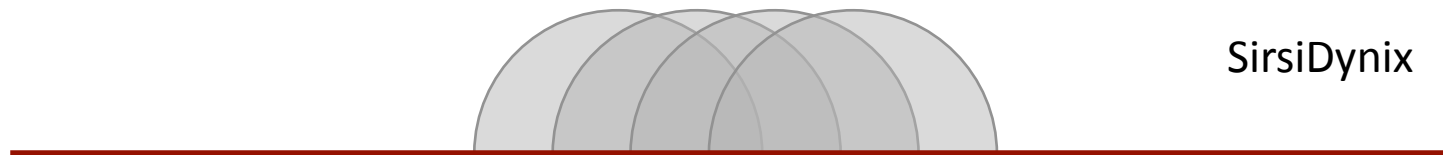
Distributed Scrum Teams each cross functional and collocated

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Distributed Scrum of Scrums with locally collocated teams

SirsiDynix



Distributed Team Members with video Daily Meeting

Getting to Done

- Common tools and development environment
- Continuous integration of code globally
- XP engineering practices
- Similar talent in all locations for non-collocated team

- Because distribution magnifies dysfunction, engineering practices must be excellent to avoid project delays and loss of money
- Lack of cross-functional teams can easily cut productivity in half (outsourced test team).

Getting to Ready

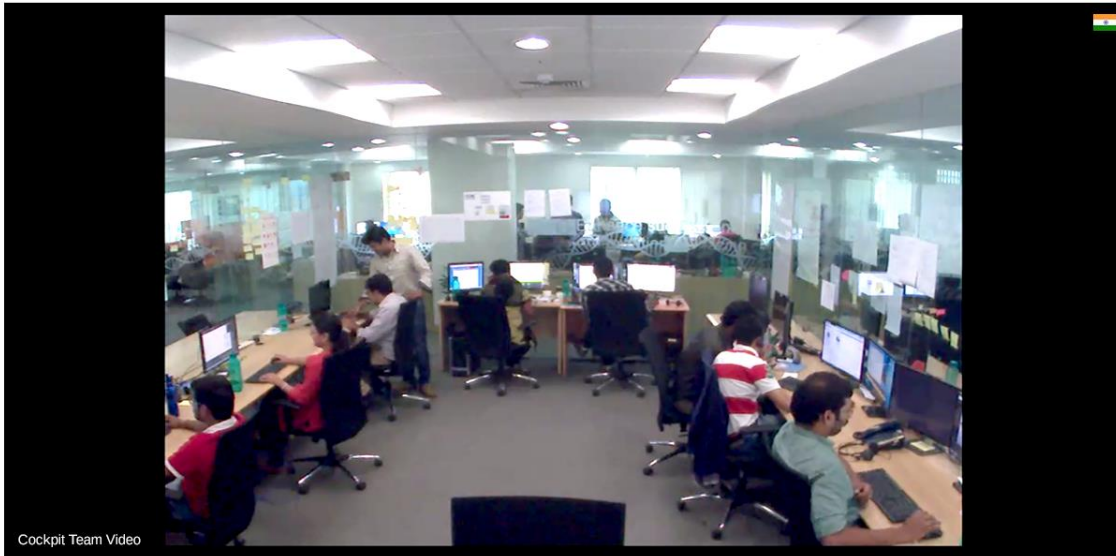
- Product Owner is often not collocated even though role requires spending half time with the engineering team. (May require proxy product owner)
- Tooling must provide common visualization of work to be done
- Face to face meetings via video are essential to clarifying stories

Removing Impediments

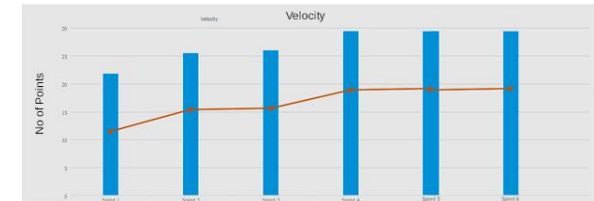
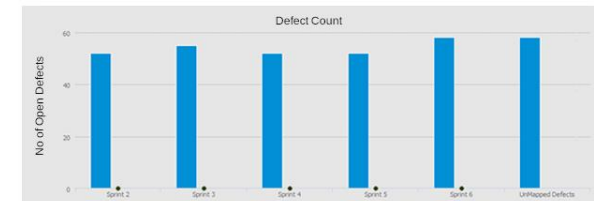
- Face to face daily meetings and retrospectives are critical (by video if not collocated)
- Human factors are more critical when distributed
 - Cultural differences must be understood and resolved
 - In-person meetings are essential to get started and are needed periodically to maintain communication saturation.
 - Need to have “water cooler” meetings by video.

Talk to Your Team 24/7

Video (Live Feed)



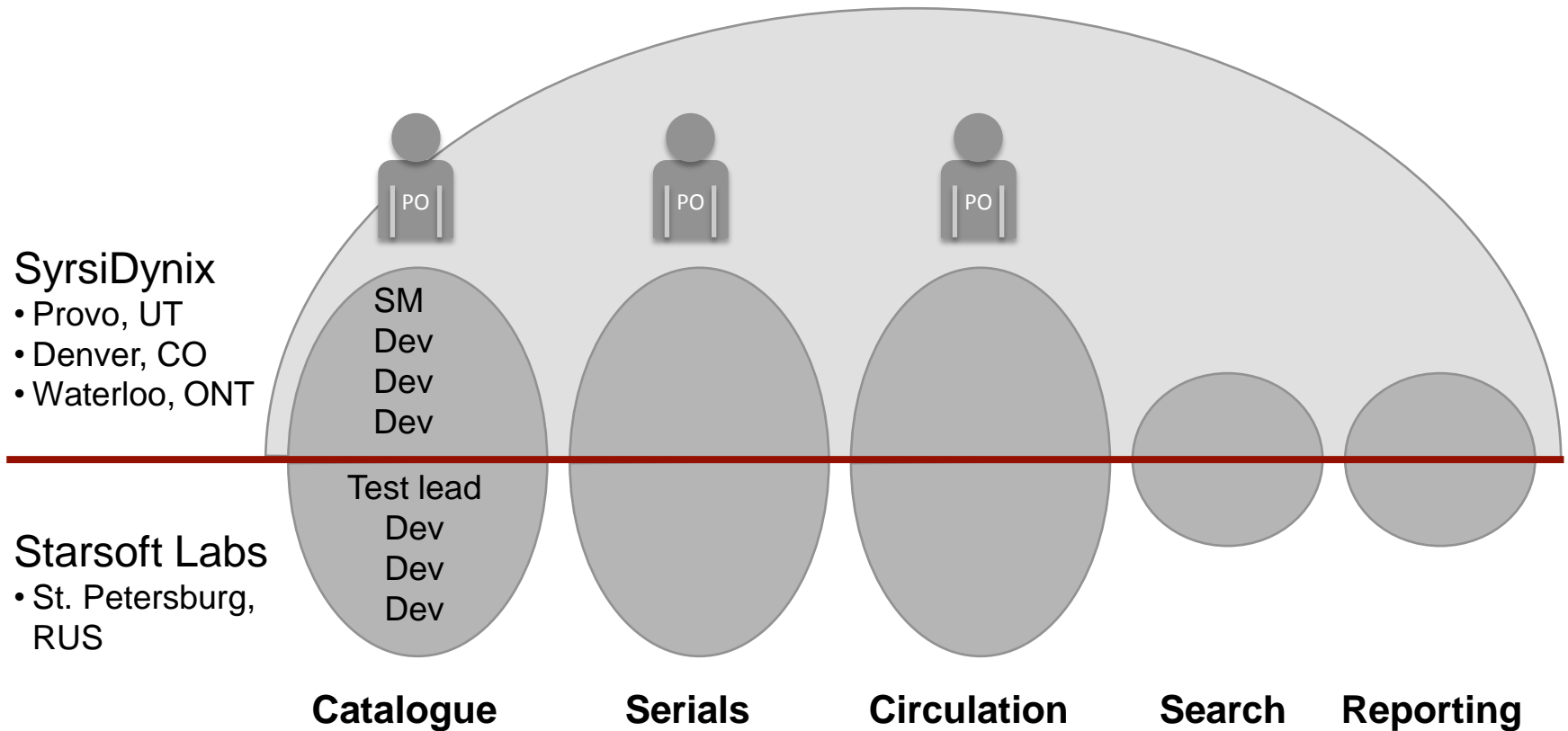
KPI (Key Performance Indicators)



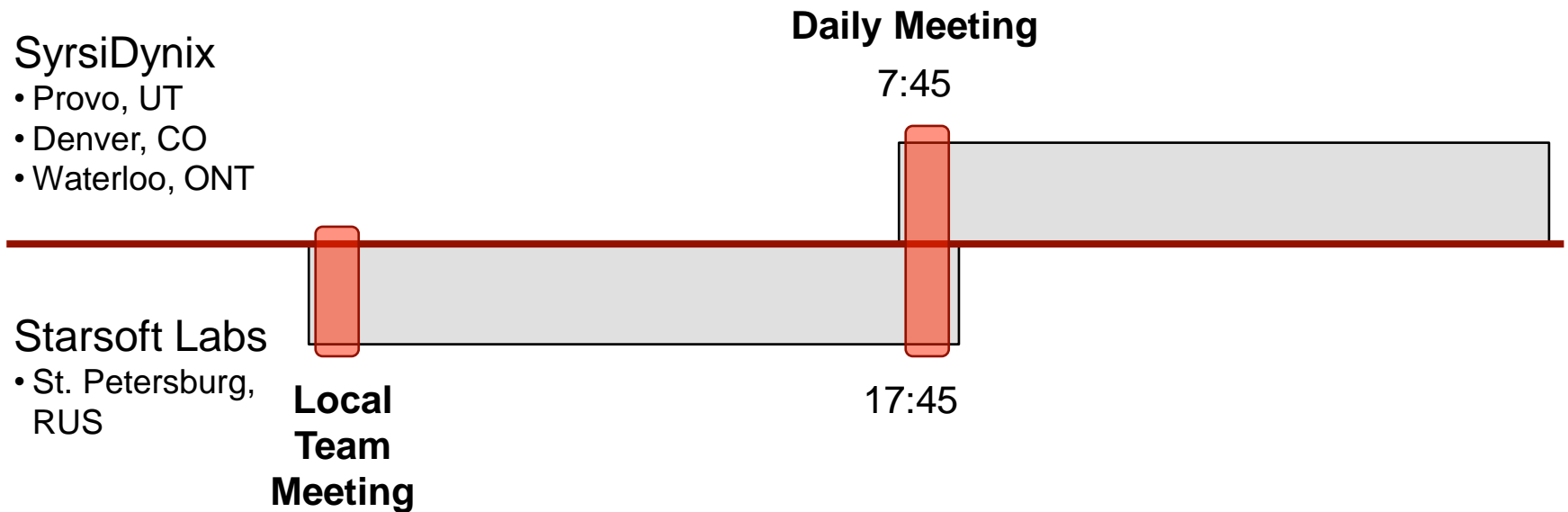
Agile Cockpit by Prowareness.com

Distributed Scrum Success Story

SirsiDynix – Digital Library Catalogue



SirsiDynix: Daily Meeting Scheduled to Fit Both Team's Calendar



Daily Meeting conducted by video to enhance robustness of communication

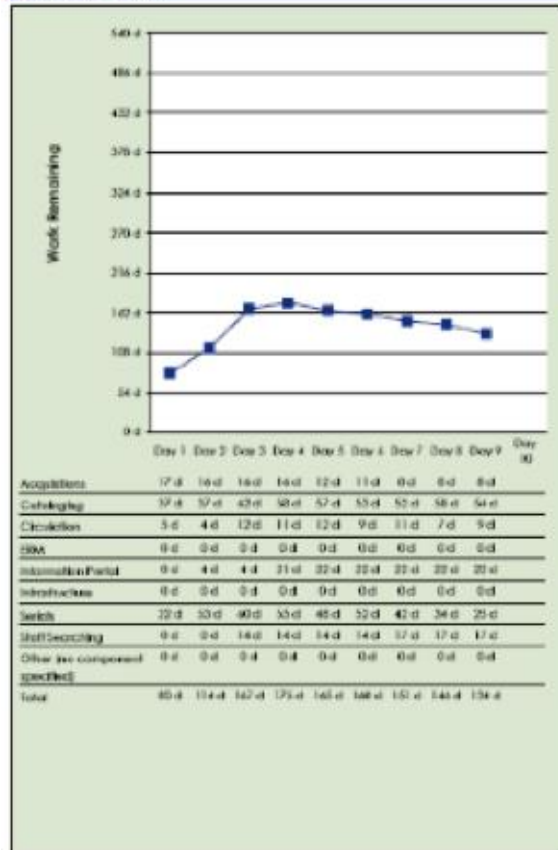
SirsiDynix: Robust Metrics Dashboard Supported Transparency



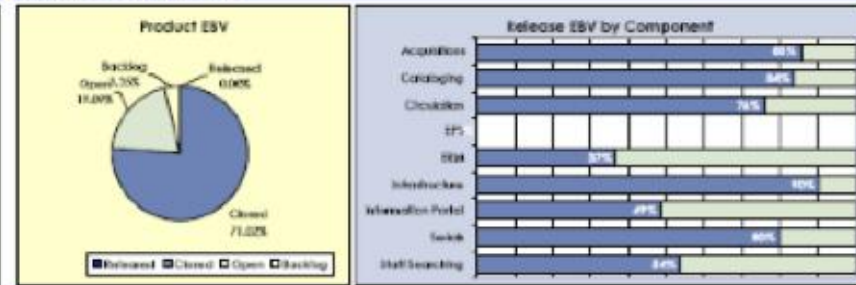
Horizon 8.0

Report Ending: Monday, 17 Oct 2005

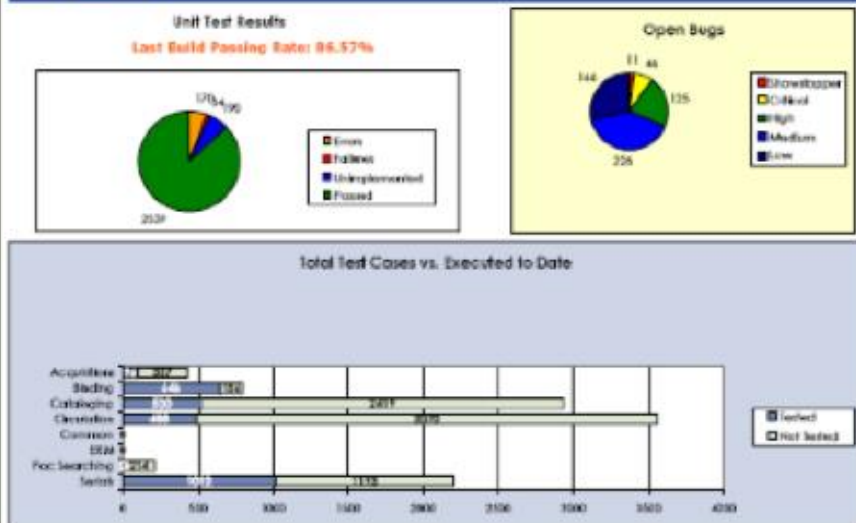
CURRENT SPRINT



EARNED BUSINESS VALUE

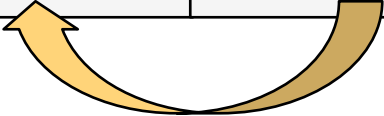


TEST SUMMARY



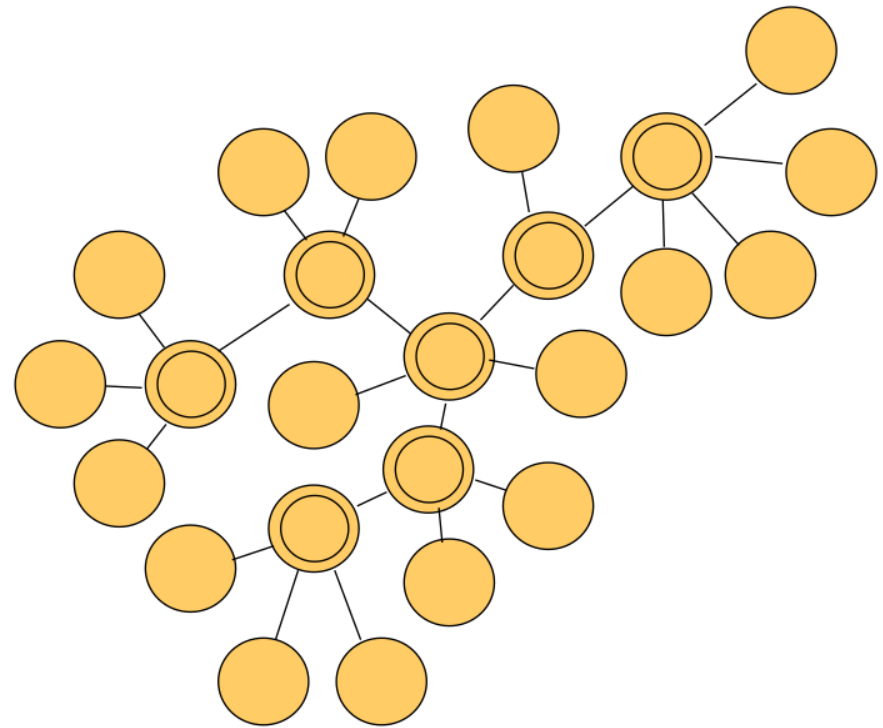
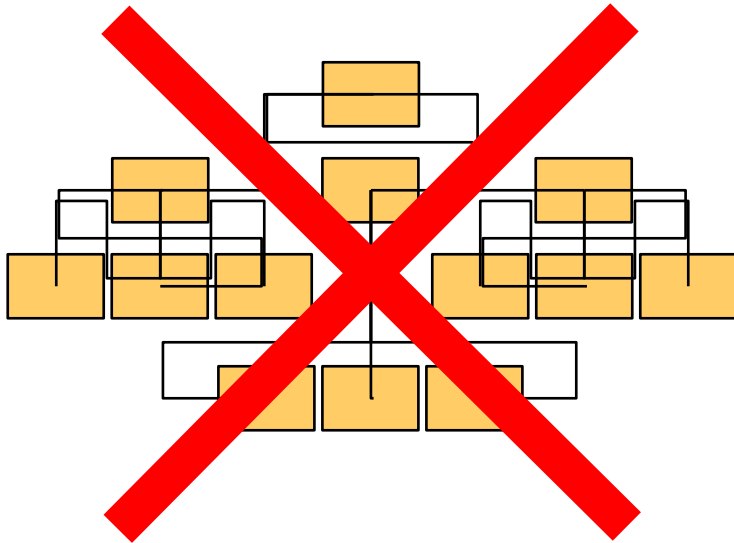
SirsiDynix: Outcome

	Waterfall ¹	Scrum ¹	SirsiDynix ²
Person Months	540	54	827
Lines of Java	58,000	51,000	671,688
Function Points	900	959	12,673
Function Points/ Developer Mo.	2.0	17.8	15.3

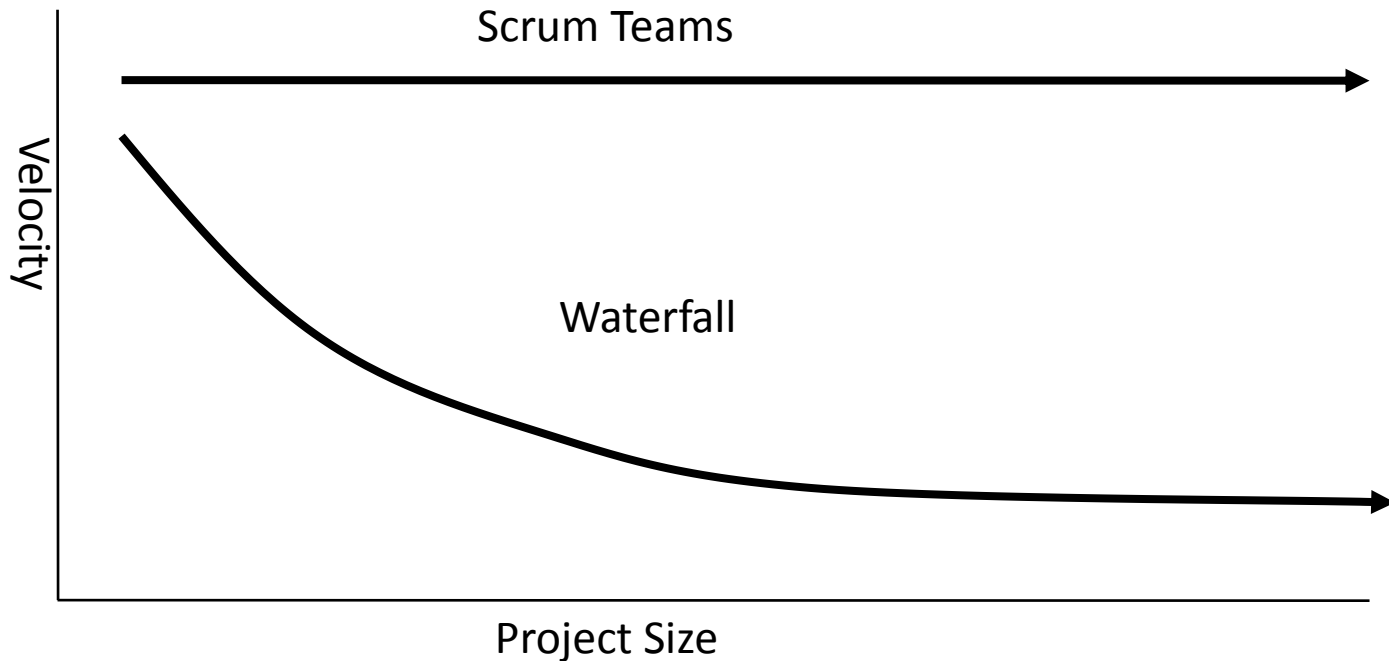


1. M. Cohn, User Stories Applied for Agile Development. Addison-Wesley, 2004
2. J. Sutherland, A. Viktorov, J. Blount, and N. Puntikov, "Distributed Scrum: Agile Project Management with Outsourced Development Teams," in HICSS'40, Hawaii International Conference on Software Systems, Big Island, Hawaii,

Scrum Scales “Fractally” Rather than “Hierarchically”

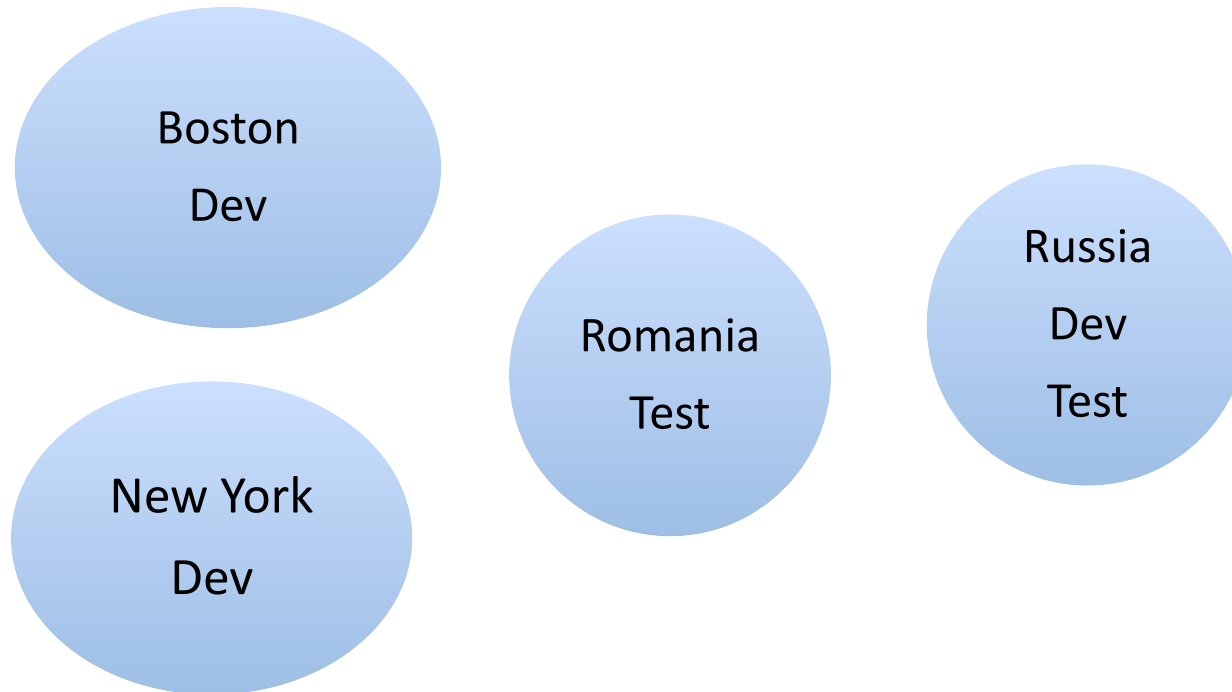


As a Result Linear Scalability Can be Maintained at Scale



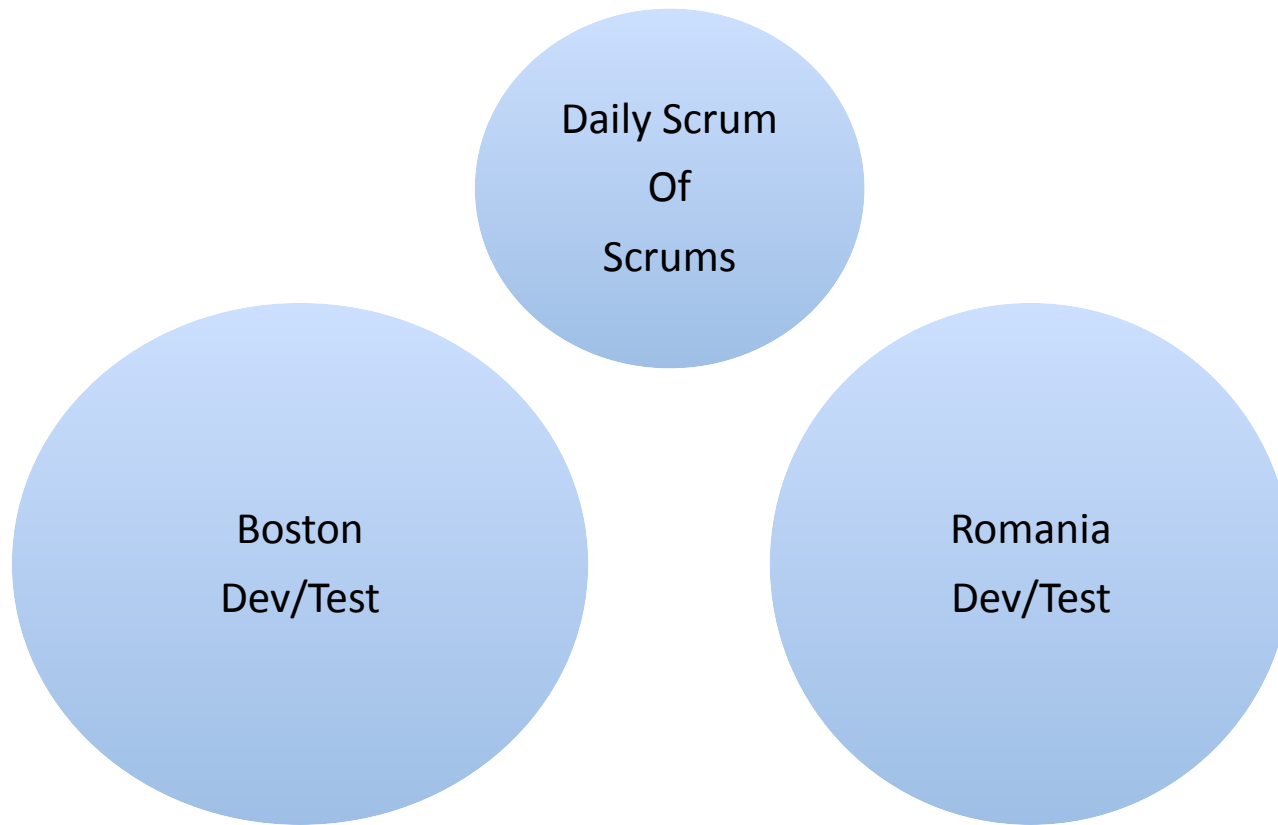
- J. Sutherland, A. Viktorov, J. Blount, and N. Puntikov, "Distributed Scrum: Agile Project Management with Outsourced Development Teams," in HICSS'40, Hawaii International Conference on Software Systems, Big Island, Hawaii, 2007.
- J. Sutherland, C. Jacobson, and K. Johnson, "Scrum and CMMI Level 5: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

Venture Company Example: Before



- Issues
 - Retaining intellectual property
 - Cannot measure productivity across teams
 - Clear productivity losses from test strategy
 - Cannot show real cost savings

Venture Company Example: After



- Benefits
 - All knowledge retained onshore
 - Productivity same on both shores
 - Measurable cost savings

Scrum Crowd Sourcing - Swarming

- 500 team members, variable workforce, variable hours.
- Competing in the most regulated industry world-wide, the American automobile market.
- Email list “Virtual Scrum Room” and <5 min demo videos let anyone get up to speed in their own timezone.
- Public access backlog, with acceptance criteria, allows anyone to pull a card.
- <5 min video of a card meeting it’s acceptance criteria means the PO may move the card to done, even without ever meeting the doer.



<5MIN DEMO VIDEOS:
Asynchronous global collaboration and funding

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SCRUM CROWD SOURCED DELIVERY

500+ CONTRIBUTORS IN 20 COUNTRIES

March 2014

WIKISPEED WORLD

June 2014

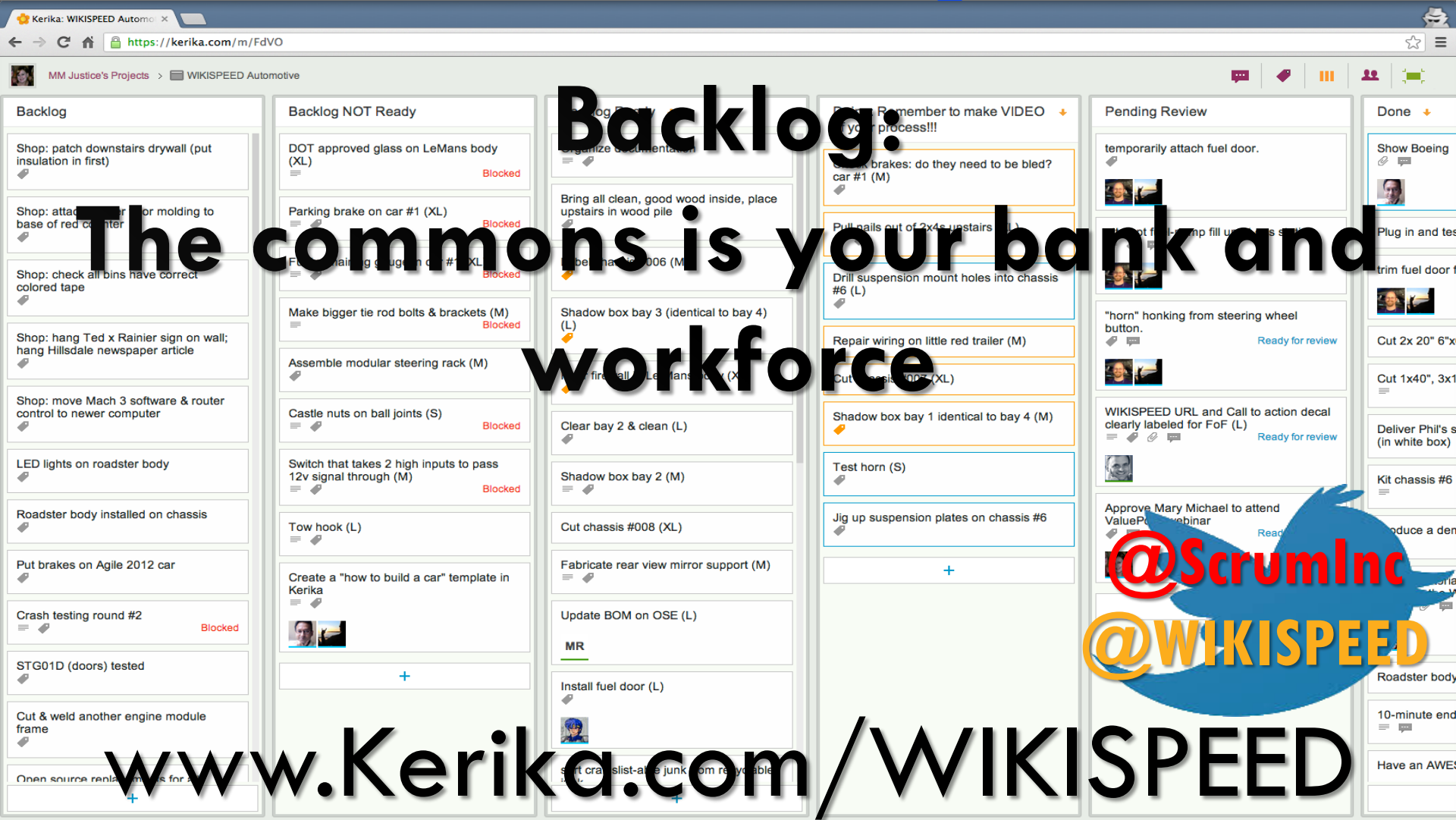


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Brazil, Canada, Canary Islands, China, France, Germany, Hungary, India, Indonesia, Ireland, Italy, New Zealand, Philippines, South Africa, Spain, Switzerland, Turkey, United Kingdom, United States, Vietnam.



Backlog:
The commons is your bank and workforce

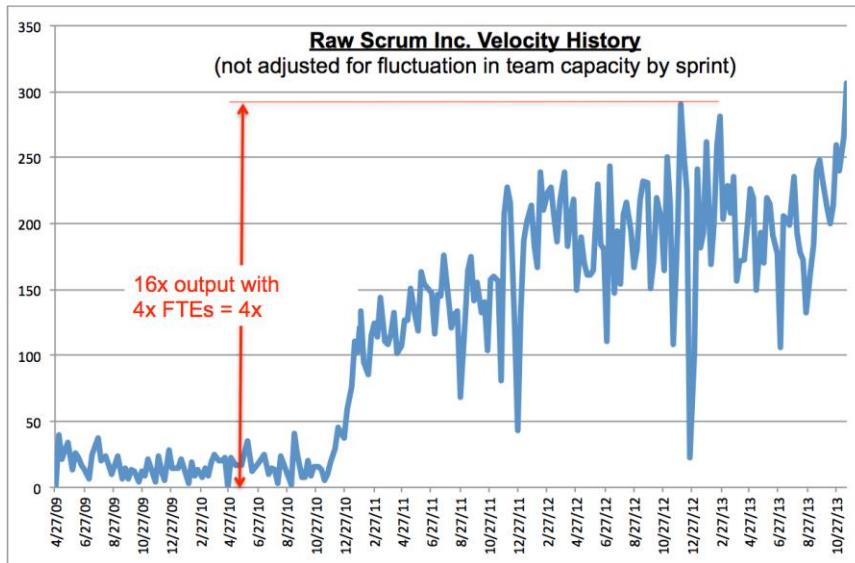
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www.Kerika.com/WIKISPEED

Scrum Inc. Distributed Teams

- 3 teams
 - PO Seattle, SM/Team Philippines
 - PO/SM Boston, Team Seattle, Boston
 - PO Lincoln, SM Portland, Team Lincoln, Washington
- Always some team members traveling in Europe or Asia
- Weekly sprints
- Daily meeting 11am East Coast Time
- Monday 10-1pm East Coast Time
 - Sprint Review, Retrospective, Sprint Planning
- Quarterly face to face planning

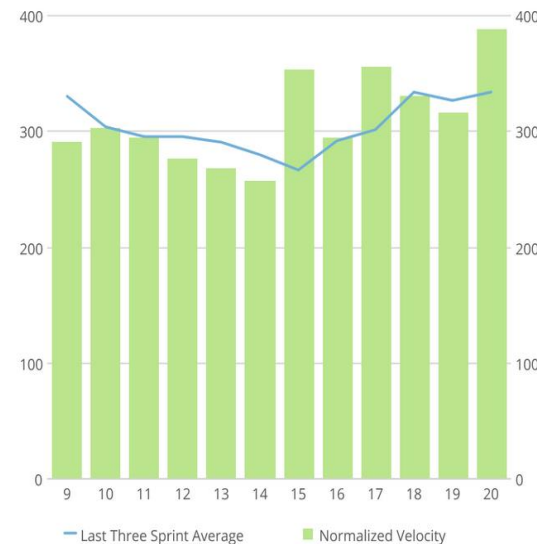
Scrum Inc Distributed Team Dashboard



Combined Teams
9 people (before split)

Total Velocity Trend

344.5 Last 3 Sprints Average



Combined Teams
4 and 5 (after split)

Conclusions

- Good distributed teams are possible if they are high performance Scrum teams
- Special care must be taken to avoid the downside of distribution
 - Common tooling
 - Video meetings
 - Regular face to face meetings
 - Resolving cultural differences
- If you are not Done at the end of a sprint it is much worse if distributed
- If you are not Ready at the beginning of a sprint the distribution radically increases risk
- If you do not aggressively remove impediments during the sprint, distribution will accentuate delays.

Questions?



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- Alex@scruminc.com

Twitter, Facebook, and G+

- @Scruminc, #Scrum, #Agile

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- check in for announcements, new content and services, book releases, and more!

ScrumLab

- Scrumlab.scruminc.com
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