

Distributed & Offshore Agile Development

Strategies & Techniques for Highly Effective
Distributed Teams

By Brad Swanson

Agile Process Improvement Coach



About me

- Agile Process Improvement Coach and Founder of Propero Solutions
- Software developer and manager since 1994
- Early agile adopter, starting with XP in 1999
- Certified Scrum Coach, Scrum Practitioner & Scrum Master
- Worked with distributed teams in the US, India and China, including 4 months in China
- Have coordinated successful ISO 9001 audit and led CMM assessment efforts

Agenda

- Why choose agile for a distributed team?
- Relating agile principles to distributed teams
- Team & organization structures
- Organizational preparation for distributed agile
- Establishing a cohesive team
- Maintaining team effectiveness
- Overcoming communication and cultural barriers
- Collaboration tools for distributed teams
- Distributed agile success stories

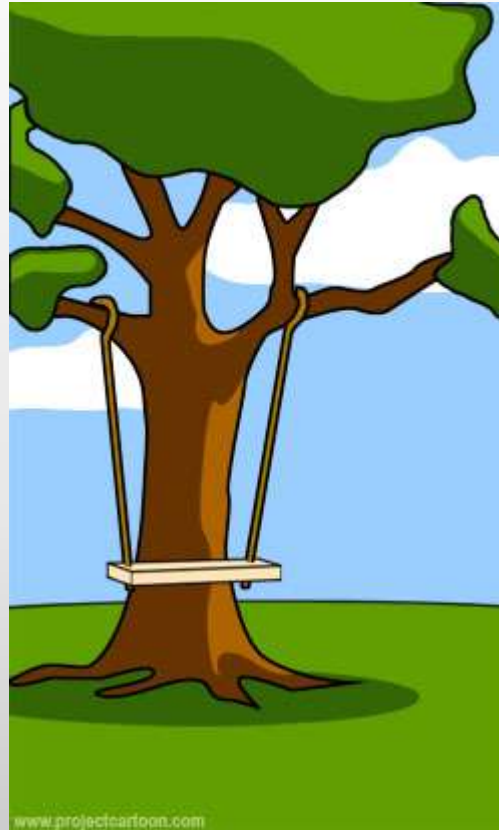
Are you nuts?

- Agile was meant only for small, co-located teams, right?
- Why do we choose agile for any project?
- Deliver faster
- Feedback & discovery
- Progress measured by working software
- Harness the strength of empowered teams

Why do so many projects struggle?



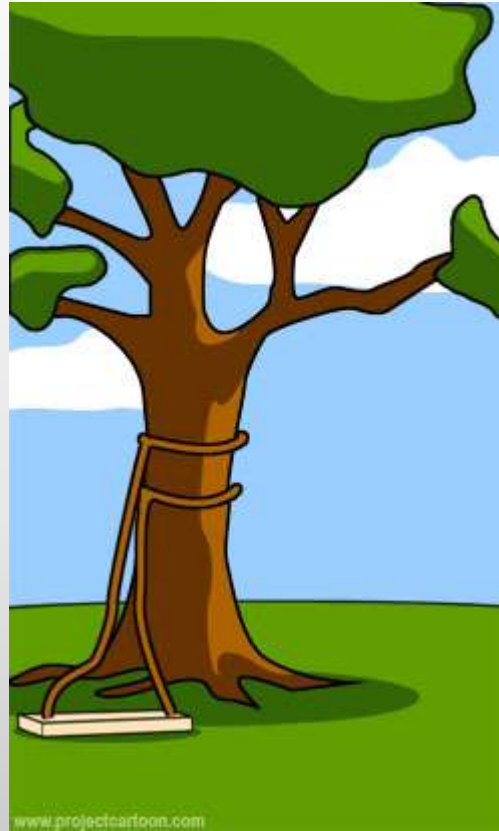
How the customer explained it



How the project leader understood it



How the analyst designed it



How the programmer wrote it



How the business consultant described it

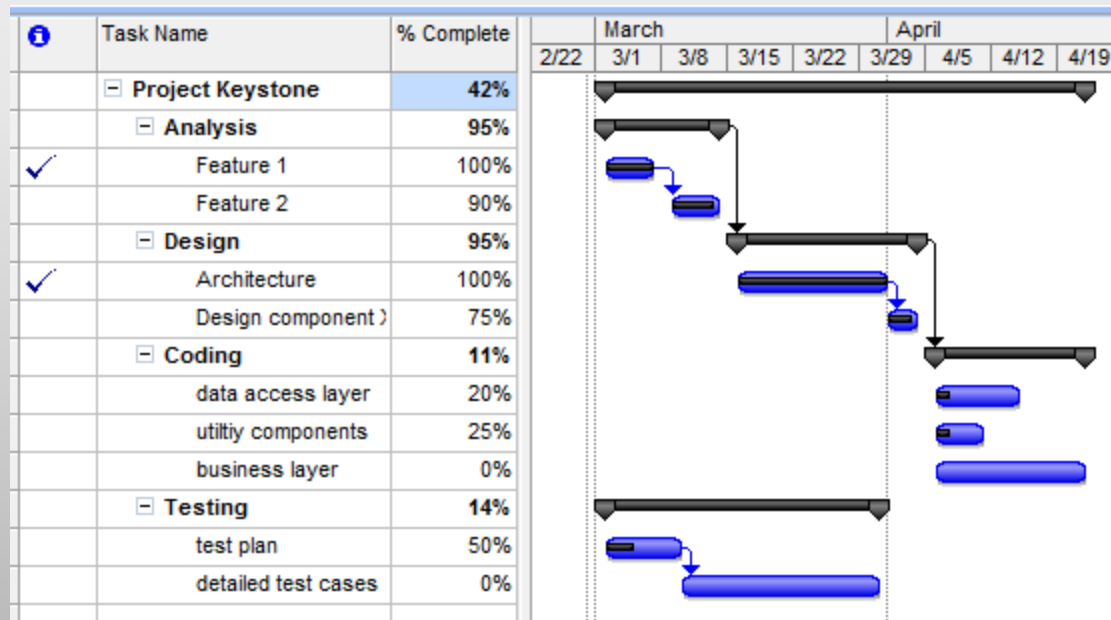


Remember what the customer asked for? (9 months ago)

What the customer really needed

If the disconnect is this bad with a co-located team, how bad will it be when the team is scattered across the globe?

Do you really want to rely on *this* to measure your remote team's progress until they finally deliver?



Agile principles & distributed teams

- ✓ Our highest priority is to satisfy the customer through early and continuous delivery of valuable software
- ✓ Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale
- ✓ Working software is the primary measure of progress
- ✓ We welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage
- ✓ Build projects around motivated individuals. Give them the support they need, and trust them to get the job done
- ✓ Simplicity--the art of maximizing the amount of work not done--is essential

Agile principles & distributed teams

- ✓ Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely
- ✓ Continuous attention to technical excellence and good design enhances agility
- ✓ At regular intervals, the team reflects on how to become more effective and adjusts its behavior accordingly
- ! The best architectures, requirements, and designs emerge from self-organizing teams
- ! Business people and developers must work together daily throughout the project
- ⊗ The most efficient and effective method of conveying information is face-to-face conversation

credit: Kevin Sheen for inspiring this slide

Team & organization structures



#1: Outsource all of development

- Business stakeholders in 1 location, development in another
- Benefits?
 - All *technical* staff are co-located
 - Availability of talent and/or cost (beware hidden costs)
- Challenges?
 - Sharing domain knowledge & vision with developers
 - Daily involvement of business people
- Recommendations
 - Product Owner “proxy” or SME co-located with dev team
 - Maximize availability of business stakeholders

#2: Functional split

- E.g. programmers in one location, QA in another
- Benefits?
 - Access to specialized talent, easy to get started
 - Cost? (beware hidden costs)
- Challenges?
 - How to make team truly cross-functional?
 - Avoid the “toss it over the wall” mentality
- Recommendations
 - Strong coaching & training to integrate the teams
 - Choose teams with true agile experience

#3: component split

- Each location owns 1 component or sub-system
- Benefits?
 - Leverage existing specialized knowledge centers
 - Short-term productivity, Cost?
- Challenges?
 - Focus on delivering the whole system's value, not components
 - Some teams have more work than others – too specialized
- Recommendations
 - Strong coordination efforts: Scrum of scrums, meta-scrum, integration team
 - Cross-training so teams learn other components

#4: Open source, a.k.a shotgun

- Individual contributors scattered everywhere
- Benefits?
 - Flexibility, scalability, cost?
 - Access to specialized talent wherever it may be
- Challenges?
 - Plenty. Vision, communication, coordination, personality conflicts, egos, etc.
- Recommendations
 - See *The Apache Way* <http://incubator.apache.org/learn/theapacheway.html>
 - Infrastructure: source control, bug tracking, mail lists

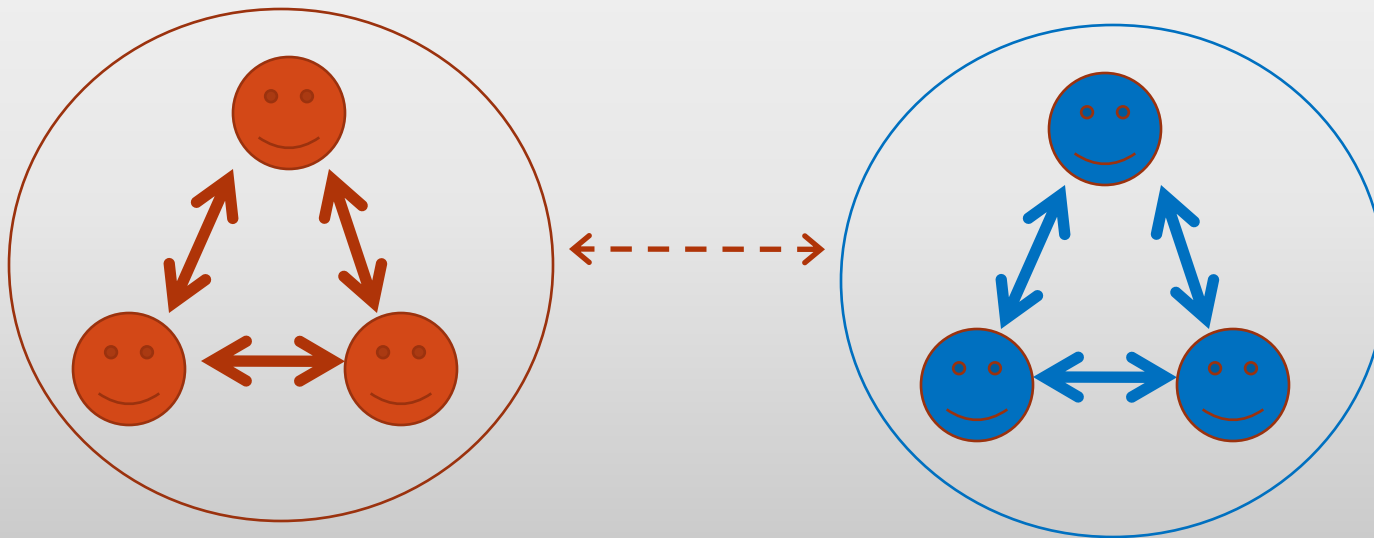
Thanks to Matt Raible for this advice!

#5: Large scale

- Many cross-functional teams in many locations
- Benefits?
 - Scalability
 - Cross-functional nature of each team
- Challenges
 - Huge coordination effort
 - Cultural differences
- Recommendations
 - Strong coordination: Scrum of scrums, meta-scrum, integration team
 - Enterprise-wide support, coaching & training on agile

Multiple distributed team locations

- Minimize coupling between locations, maximize cohesion within locations



What is your team structure?

- Benefits & challenges?

Self-organizing teams

- Can distributed teams self-organize?
- May not get to decide the locations of team members, but otherwise should have the same latitude that co-located teams have
- First need to establish trust, shared vision, communication & collaboration mechanisms
- Teams with lower agile maturity may need stronger coaching & facilitation to enable and encourage self-organization
- Coordination between teams requires concerted effort
 - Scrum of Scrums, Meta-scrum, dedicated integration team

Organizational preparation

Are you ready to start a distributed agile project?

Agile training & experience

- Establish common understanding of agile principles & practices
 - Training for *all* team members, including stakeholders
- Experience with or training in agile practices & tools
 - E.g. TDD, continuous integration, pair programming, etc.
- Have an experienced agile coach at each location
- Establish an agile culture across the organization
- Gain agile maturity within single teams before going large scale...or get a some good coaching

Infrastructure for distributed teams

- Phone, web & video conferencing
 - Full-duplex speakerphone for conferences
 - Headsets for 1-on-1 calls
- VPN, remote desktop tools, etc.
- Source control
 - Host your own or 3rd party hosted? (GitHub, WanDisco, etc.)
- Collaboration tools
 - Wiki, intranet, file sharing
- SCP or (S)FTP for transferring large files
- You can buy more bandwidth, but you can't buy better latency!

Travel preparations

- Does everyone have a passport & visa?
 - Takes time to obtain
- Immunizations?
 - CDC has recommendations based on travel destination
 - Some immunizations are required months in advance
 - Urban areas are typically safe, but what about that weekend tour you wanna take to some exotic jungle preserve outside the city?
 - Consider a hepatitis A vaccination wherever you're going: transmitted in water and food



Visas: everywhere you want to be®

- B1: for conferences, mtgs, business events
 - Typically 2-4 weeks. Must not involve local employment. Applicants without strong home ties may be denied.
- H-1B: temporary employment in the US. 65,000 per year.
- L-1: for intra-company transfer to US branch.
 - US & Foreign companies must share ownership, applicant must already be employed by foreign affiliate. Larger companies can obtain blanket L status.
- H-3: for training at a US company that is not available in home country. Many restrictions apply.
- J-1: “exchange” visitors in pre-approved areas of study.
- Visa waiver program for visits of 90 days or less from 27 countries (mostly European, also Japan, Singapore, NZ)

Visa abuse: Achtung!

- Many companies abused B-1 visas for years, but recently US gov't has cracked down.
- Attempting to obtain a visa by the willful misrepresentation of a material fact, or fraud, may result in the permanent refusal of a visa or denial of entry into the United States

Establishing a cohesive team

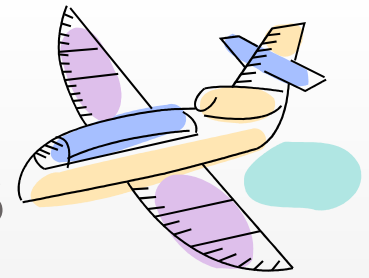
The foundations of an effective distributed agile team

Establishing trust



- How important is trust to a team?
- Trust is the foundation of any effective team
- Can you establish mutual trust & rapport between a group of people that have never met each other face to face?
- If so, how long will it take?
- Can you afford to delay the trust and the productivity associated with it?

Planes, trains & automobiles



- Bring the entire team together at the beginning of the project
- Conduct agile training
- Domain training, access to SMEs
- Team-building exercises
- Establish a shared product vision, roadmap
- Establish common culture
- Reach consensus on tech practices, e.g. DoD
- 1st release planning
- Iteration 0 (preparation) and iteration 1, more if possible

How can I afford this much travel?

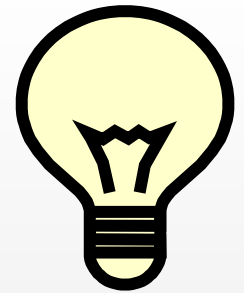
- Can you afford the productivity loss of *not* doing it?
- If the closer collaboration results in only a 10% improvement in:
 - Delivery time (sooner ROI)
 - Building the right features (and *only* the right ones)
 - Quality and customer satisfaction
- Then wouldn't you be willing to invest in it? How much will that 10% improvement impact your bottom line?
- Would your results be better with 10 people who never meet each other or 9 people who collaborate effectively?

The Blame Game

- Squash the “Us” versus “them” mentality. We’re one team pursuing the same objective.
- How does your organization measure & reward employee performance?
- What behavior does the typical “bell curve” individual performance evaluation process encourage? Competition or cooperation?
- Reward individuals based on the performance of the teams the work with.

Maintaining team effectiveness

Evangelize the product vision



“If you want to build a ship, don't drum up people to collect wood and don't assign them tasks and work, but rather teach them to long for the endless immensity of the sea.”

-- Antoine de Saint-Exupery

- Establish a clear vision, socialize it, make it visible to every team member
 - Place vision posters at every team location, every desk
- Start each iteration planning by reviewing the vision



Discipline

- Continuous attention to technical excellence and good design enhances agility – Agile Manifesto Principle
- How much discipline does agile require versus traditional methodologies?
- Do distributed teams require more or less technical discipline than co-located teams?

Let's do the time warp



- Samir is in Bangalore. Ann is in Denver, 11.5 hrs behind India
- Monday 9am Denver: Ann emails Samir a question, needs an answer to finish her task.
- Monday 11 pm Denver: Samir replies.
- Tuesday 9 am Denver: Ann doesn't understand Samir's reply.
- Tuesday 11 pm Denver: Samir replies again
- Wednesday 9 am. Ann understands. Finishes her task @ 10 am.
- The task took *49 times longer* than it would have if Samir and Ann had talked in real-time.

Daily real-time interaction

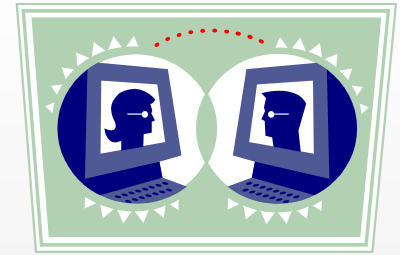


- Find several hours each day when all team members can interact in real time
- Share the burden between each location
- If each location can agree to a permanent early or late shift, do it! If not, alternate to accommodate the early birds and night owls.
- Everyone signs in to IM during this time
- Hold daily stand-up/scrum meeting with entire team, using audio, video, & web conferencing
 - Show burndown, task board/list to whole team

More planes, trains & autos

- Ongoing travel between locations
- Build and maintain common culture, trust & rapport
- 1-2 people from location A visit location B for an iteration, and vice-versa
- Rotate through all team members
- Get the entire team together periodically, e.g. for release planning 2-4 times per year

Face time



- What percentage of communication is non-verbal?
- UCLA study: 93 percent of communication effectiveness is determined by nonverbal cues
- Skype, Yahoo, Google chat – free 2-party video
- Paltalk: free multi-party video chat (up to 10 parties)
- Reasonably priced multi-party video conferencing services
 - iVisit, Megameeting, etc.
- Get a decent camera to show the whole team & white board
- Maintain trust and the human connection
- Are you ready to be on camera at 6 am???

Tips for virtual meetings

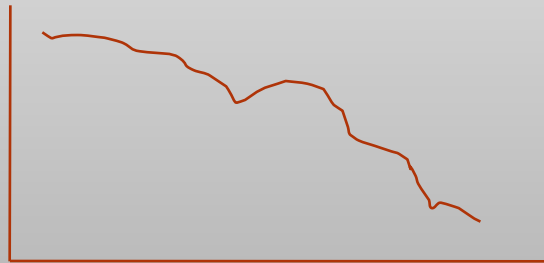
- The seating chart¹
- Get a full-duplex speakerphone or quality headsets
- State your name before each statement. “This is Joe...”
- Assign a facilitator for each call
- Prepare an agenda and follow it



¹ Jean Tabaka, *Collaboration Explained*

Information radiators

- Replicate the physical task board as well as you can
- Display the burndown and task list prominently, at least daily in the stand-up
- Display posters of the project vision at every location
- If using physical task boards, send daily digital photos to each location, or post on wiki
- If using an online tracking tool, keep it up to date and refer to it regularly



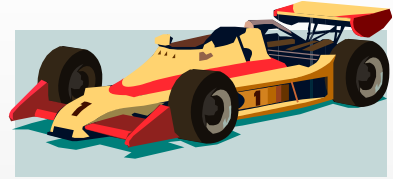
Iteration meetings

- Schedule to allow broad team participation
 - Monday == Sunday? Hold mid-week meetings
- Use video, audio & web conferencing
- Iteration review / demo: coordinate beforehand.
 - Will you have multiple presenters?
 - Need remote control of presenter's desktop?
- Retrospective: Use a virtual white board
 - Let whole team view notes throughout meeting
- Iteration planning
 - 3-person co-located sub-teams do task breakdowns

Lost in translation

Overcoming language and cultural barriers

Speed trap



- Imagine you're listening to a conversation in a foreign language in which you're not fluent. Can you keep up?
- Make a conscious effort to speak slowly
- Avoid "\$100 words". Use plain, simple language.
- If your colleagues aren't fluent, pretend you're talking to a 1st grader

Idioms and expressions: Exercise

- Goal: keen awareness of idioms we use commonly
- Gather into groups of 5-10 people
- Do we have participants from different cultural or language backgrounds? If so, get into groups with the same culture, or at least 1 group of non-American cultures / languages
- List common expressions, idioms, proverbs, jargon, clichés
 - Non-English/Non-American groups: state the expression in its native language and provide a *literal* translation
- Extra credit: create a dialog including many expressions
- Each group shares its expressions. What are their literal meanings?

Prime the pump

- Step up to the plate
- Get our ducks lined up
- The early bird catches the worm
- Hit the bulls eye
- Hit a home run
- Don't throw the baby out with the bathwater
- Lay my cards on the table
- Missed the boat
- Play it by ear

Some Chinese idioms

狐假虎威

Hu2 jia3 hu3 wei1

The fox borrows the tiger's terror

对牛弹琴

Dui4 niu2 tan2 qin2

Play the lute to an ox

掩耳盗铃

Yan3 er3 dao4 zhong2

Plug one's ears while stealing a bell

画蛇添足

Hua4 she2 tian1 zu2

Draw a snake and add feet to it.

Facilitating cross-cultural meetings

- Use a strong, active facilitator as “traffic cop”
 - Remind people to slow down
 - Point out idioms and expressions, ask speaker to re-phrase
 - Encourage people to speak up if they don’t understand
- If you ask “Do you understand?” The answer will likely be “Yes”.
- If you ask “Can you tell me what ‘Catch 22’ means?”, the answer will likely be “No”.
- Trust helps: gives people confidence to say “I don’t understand.”

Verbal communication isn't enough

- With distributed teams, and especially cross-cultural teams, you need to rely more on documents
- Specific requirements and test cases
 - Fit and Fitness are good for documenting requirements along with unambiguous, automated test cases
- Document the bigger picture context for requirements
 - Not just what, but *why*
- Is this less “agile”?
- Maybe so. But the goal is to deliver value to end users as quickly and efficiently as possible.

Collaboration tools for distributed teams

When a single white board isn't enough

Basic information sharing

- Wikis & intranet
 - Confluence, Sharepoint, Mediawiki, etc.
 - Host your own or let somebody else host it
- File sharing & collaboration
 - Use your source control repository
 - Google apps/docs, Box.net
- Hybrid project management & collaboration
 - Huddle, Zoho, Basecamp, etc.
 - Not specifically designed to support agile
- SCP or (S)FTP for large file transfers

Real-time collaboration

- Some web conferencing tools have whiteboard-like drawing features (e.g. Readytalk)
- Virtual white boards: Scriblink, skrbl, Dabbleboard, etc.
 - All of the above are free, some offer premium features for \$
- Online planning poker: www.planningpoker.com

Agile project management tools

- The good 'ol white board with sticky notes is still useful – and encouraged - within a single location, but something more will be needed to coordinate across locations.
- An ever-growing list of commercial and open-source tools
 - Rally, Version One, ScrumWorks, Mingle, etc.
 - Most have trial or free editions
 - Open source options: Xplanner, IceScrum, Agilefant
 - Jira + agile plug-ins: free add-ins or Greenhopper
 - Taskboard only: TangyOrange
- What tools does your organization use?

Distributed agile success stories

What is possible?

Perficient: Outsourced web app

- My own experience with a US-Chinese development team building a video streaming web app
- Delivered working software to beta customers every 2 weeks
- Quickly responded to real customer needs & requests
- Quality and features of the beta led to a single sale to a large customer that doubled the company's sales goal
- Key success factors:
 - Bringing Chinese team to US for several months
 - Sending US tech lead to China for 4 months
 - Collaborating as closely as possible between locations

Eclipse “Callisto”²

- Simultaneous release of 10 Eclipse toolsets
- 262 committers
- 12 countries
- 72,000 resolved bugzilla entries
- 6 million LOC

² <http://www.infoq.com/news/Eclipse-Callisto-Agile-Success>

BMC software ^{3,4}

- 7 teams, 135 people in 4 cities (Texas, Calif., Pune India)
- 4X faster time to market
 - 4.5 months for 600 stories & 596K LOC
- team was 2X larger than average study team
- same defect rate for level of effort
- individual team productivity up 20-50%

³ Webinar: <http://www.globallogic.com/Webinars/Webinar05/default.html>

⁴ QSM Associates study of 29 agile projects and 7,500 traditional projects

Jeff Sutherland – Xebia ⁵

- Teams of peers split between Netherlands and India
- Brought entire Indian team to Netherlands for 2 iterations
- Rotating travel schedule between sites
- Pair-programming across continents
- Heavy use of video conferencing
- Full XP practices, high quality (95% defects found in iteration)
- 15 function pts/dev/month vs. Cohn's reported 6-person co-located team results of 16 function pts/dev/month
- Conclusion: fully distributed Scrum more valuable than localized

⁵ <http://www.infoq.com/presentations/Distributed-Scrum-Sutherland-Schoonheim>

Other distributed case studies

- Share your experiences!

Recap: Key points



- Preparation: agile training, company culture, infrastructure
- Technical discipline
- Bring the entire team together periodically
- Send individuals team members to other locations throughout the project
- Maximize opportunities for real-time collaboration
- Cross-cultural communication: slow down, use simple words, avoid idioms & expressions
- Find effective tools for distributed collaboration

Questions?