



# ***Lean & Agile*** **Project Management**

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*for Large Distributed Virtual Teams*

Dr. David F. Rico, PMP, CSM

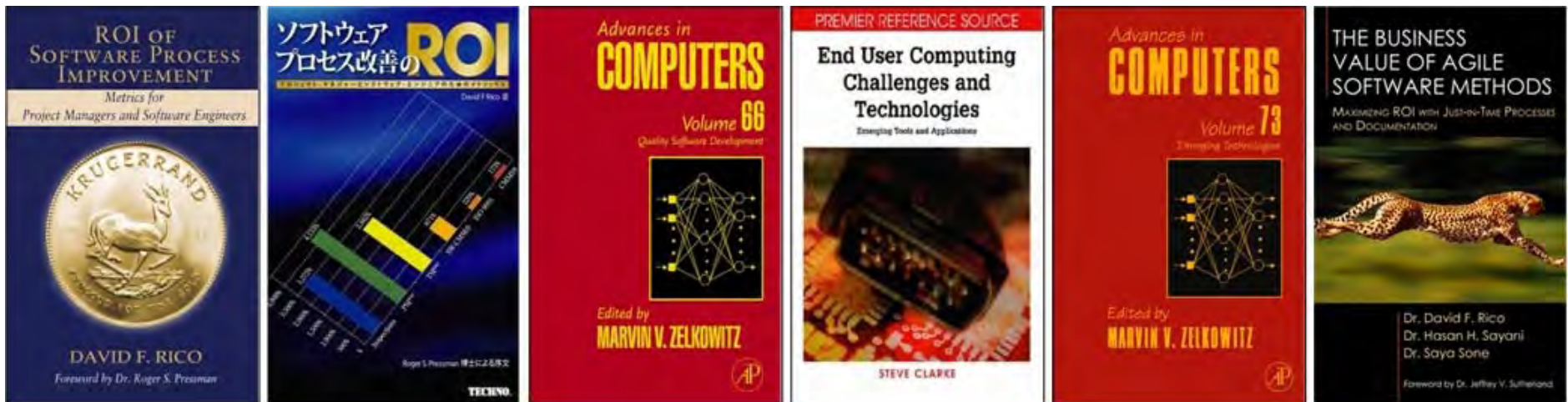
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**LinkedIn:** <http://www.linkedin.com/in/davidfrico>

**Facebook:** <http://www.facebook.com/profile.php?id=1540017424>

# Author Info

- ❑ DoD contractor with 28+ years of IT experience
- ❑ B.S. Comp. Sci., M.S. Soft. Eng., & D.M. Info. Sys.
- ❑ Large gov't projects in U.S., Far/Mid-East, & Europe



- Published six books & numerous journal articles
- Adjunct at George Washington, UMUC, & Argosy
- Agile Program Management & Lean Development
- Specializes in metrics, models, & cost engineering
- Six Sigma, CMMI, ISO 9001, DoDAF, & DoD 5000
- Cloud Computing, SOA, Web Services, FOSS, etc.

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Types of Virtual Teams

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# What is Lean & Agile Proj. Mgt.?



- Lean-Agile (lēn-āj'əl): Quick, lightweight, effective, adaptable; Project mgt. model free of excess waste
  - Customer satisfaction *through frequent interaction to establish understanding, trust, and lasting relationships*
  - Team performance *through empowerment, coaching, and mentoring that fosters collaborative problem solving*
  - High product quality *through disciplined processes that focus on rapid iterative delivery of operational products*
  - Business value *through adaptation to changing customer needs by flexible organizations, processes, and products*
  - Project management model *based on relationships, value, systems thinking, flow, pull, and perfection*



Leach, L. P. (2005). *Lean project management: Eight principles for success*. Boise, ID: Advanced Projects.

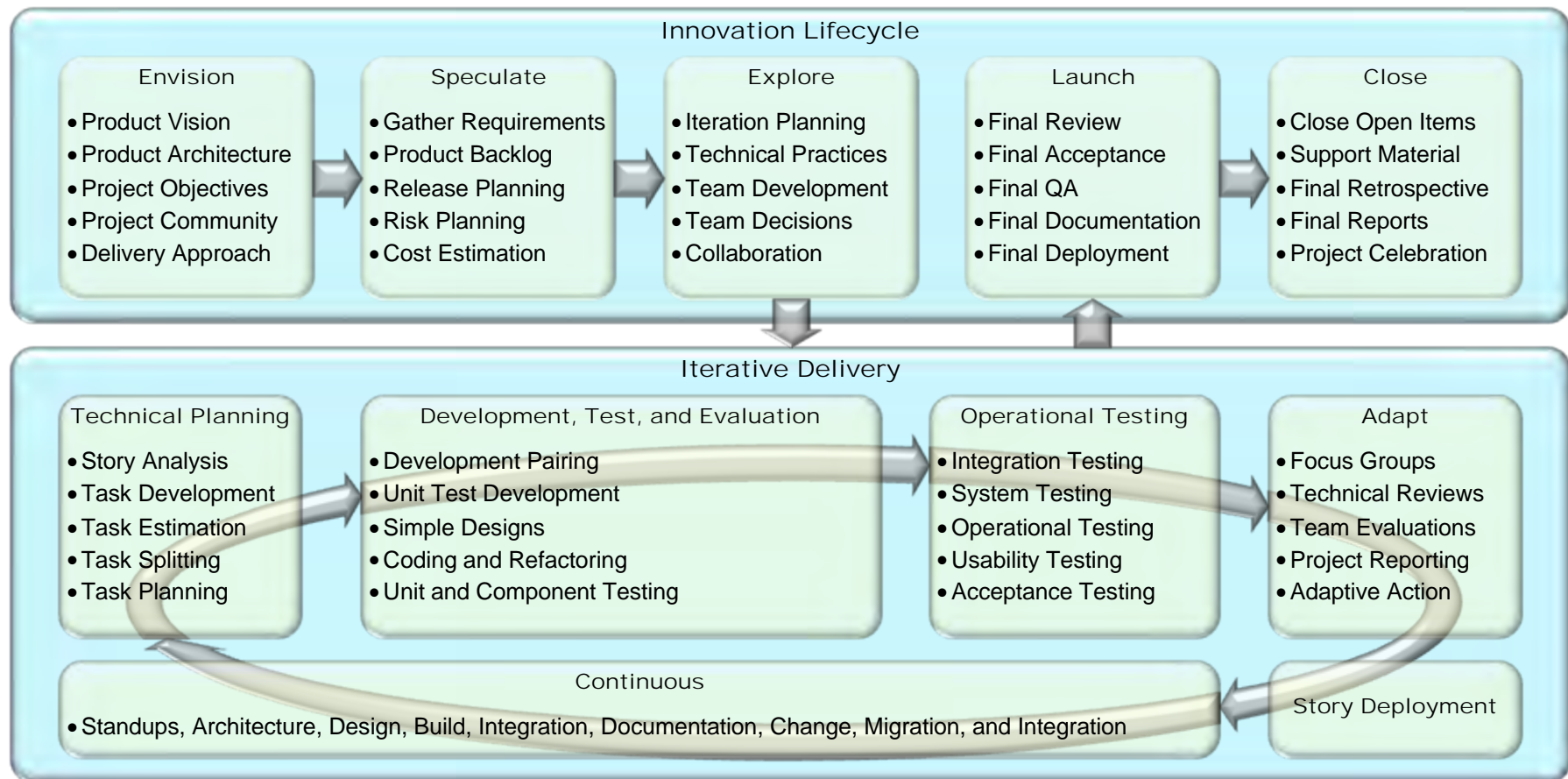
Leach, L. P., & Leach, S. P. (2010). *Lean project leadership: Synthesizing the tools of professional project management*. Boise, ID: Advanced Projects.

Mascitelli, R. (2002). *Building a project driven enterprise: How to slash waste and boost profits through lean project management*. Northridge, CA: Technology Perspectives.



# Lean & Agile Proj. Mgt. Model

- ❑ Created by Jim Highsmith at Cutter in 2003
- ❑ Radical project mgt., Scrum, & XP hybrid model
- ❑ Includes strategic, program, and project mgt. tools



# How Do Lean & Agile Intersect?

- ❑ Agile is **naturally** lean and based on small batches
- ❑ Agile directly **supports** six principles of lean thinking
- ❑ Agile may be **converted** to a continuous flow system

| Agile Values           | Lean Pillars           | Lean Principles | Lean & Agile Practices  | Flow Principles                    |
|------------------------|------------------------|-----------------|---|------------------------------------|
| Empowered Teams        | Respect for People     | Relationships   | <ul style="list-style-type: none"><li>• Customer relationships, satisfaction, trust, and loyalty</li><li>• Team authority, empowerment, and resources</li><li>• Team identification, cohesion, and communication</li></ul>                    | Decentralization                   |
| Customer Collaboration |                        | Customer Value  | <ul style="list-style-type: none"><li>• Product vision, mission, needs, and capabilities</li><li>• Product scope, constraints, and business value</li><li>• Product objectives, specifications, and performance</li></ul>                     | Economic View                      |
|                        |                        | Value Stream    | <ul style="list-style-type: none"><li>• As is policies, processes, procedures, and instructions</li><li>• To be business processes, flowcharts, and swim lanes</li><li>• Initial workflow analysis, metrication, and optimization</li></ul>   | WIP Constraints & Kanban           |
| Iterative Delivery     | Continuous Improvement | Continuous Flow | <ul style="list-style-type: none"><li>• Batch size, work in process, and artifact size constraints</li><li>• Cadence, queue size, buffers, slack, and bottlenecks</li><li>• Workflow, test, integration, and deployment automation</li></ul>  | Control Cadence & Small Batches    |
| Responding to Change   |                        | Customer Pull   | <ul style="list-style-type: none"><li>• Roadmaps, releases, iterations, and product priorities</li><li>• Epics, themes, feature sets, features, and user stories</li><li>• Product demonstrations, feedback, and new backlogs</li></ul>       | Fast Feedback                      |
|                        |                        | Perfection      | <ul style="list-style-type: none"><li>• Refactor, test driven design, and continuous integration</li><li>• Standups, retrospectives, and process improvements</li><li>• Organization, project, and process adaptability/flexibility</li></ul> | Manage Queues/ Exploit Variability |

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Highsmith, J. A. (2002). *Agile software development ecosystems*. Boston, MA: Addison-Wesley.

Larman, C., & Vodde, B. (2008). *Scaling lean and agile development: Thinking and organizational tools for large-scale scrum*. Boston, MA: Addison-Wesley.

Womack, J. P., & Jones, D. T. (1996). *Lean thinking: Banish waste and create wealth in your corporation*. New York, NY: Free Press.

Reinertsen, D. G. (2009). *The principles of product development flow: Second generation lean product development*. New York, NY: Celeritas.

# What are Virtual Teams?



- ❑ Virtual teams are often non-collocated project teams
- ❑ Often communicate using asynchronous technology
- ❑ Geographically and sometimes nationally dispersed

| Traditional vs Virtual          | Zigurs<br>2003 | Curseu<br>2008 | Schlenkrich<br>2009 | Ahuja<br>2010 |
|---------------------------------|----------------|----------------|---------------------|---------------|
| Collocated vs distributed       | ✓              | ✓              | ✓                   | ✓             |
| F2F vs electronic collaboration | ✓              | ✓              | ✓                   | ✓             |
| Different vs similar goals      |                | ✓              | ✓                   |               |
| Similar vs different hours      |                |                | ✓                   | ✓             |
| Similar vs diverse culture      |                |                | ✓                   | ✓             |
| Same vs different organization  |                |                | ✓                   |               |
| Specialized vs cross functional |                |                | ✓                   |               |
| Single vs multiple teams        |                |                | ✓                   | ✓             |
| Static vs shifting teams        |                |                | ✓                   | ✓             |
| Office bldg vs telecommuting    |                |                |                     | ✓             |

Zigurs, I. (2003). Leadership in virtual teams: Oxymoron or opportunity? *Organizational Dynamics*, 31(4), 339-351.

Curseu, P. L., Schalk, R., & Wessel, I. (2008). How to virtual teams process information? *Journal of Managerial Psychology*, 23(6), 628-652.

Schlenkrich, L., & Upfold, C. (2009). A guideline for virtual team managers. *Electronic Journal of Information Systems Evaluation*, 12(1), 109-118.

Ahuja, J. (2010). A study of virtuality impact on team performance. *IUP Journal of Management Research*, 9(5), 27-56.

# Why Use Virtual Teams?



- ❑ Oft cited benefit of virtual teams is reduced expenses
- ❑ Access to global talent pool is probably best reason
- ❑ Other advantages such as cycle time are oft cited

| Advantage of Virtual Teams      | Bergiel<br>2008 | Labrosse<br>2008 | Shachaf<br>2008 | Kuruppuara-<br>chchi 2009 | Siebdrat<br>2009 |
|---------------------------------|-----------------|------------------|-----------------|---------------------------|------------------|
| Reduced operating expenses      | ✓               | ✓                |                 | ✓                         | ✓                |
| Utilize global talent pool      | ✓               | ✓                | ✓               | ✓                         | ✓                |
| Staffing flexibility            |                 | ✓                |                 | ✓                         |                  |
| Improved productivity           |                 | ✓                |                 | ✓                         |                  |
| Workforce diversity             | ✓               | ✓                |                 | ✓                         | ✓                |
| Reduced travel expenses         | ✓               | ✓                |                 | ✓                         | ✓                |
| Faster cycle time               |                 |                  | ✓               | ✓                         | ✓                |
| Better work life balance        |                 |                  |                 | ✓                         |                  |
| Reduced environmental footprint |                 | ✓                |                 |                           |                  |
| Improved business advantage     | ✓               | ✓                |                 | ✓                         | ✓                |

Bergiel, B. J., Bergiel, E. B., & Balsmeier, P. W. (2008). Nature of virtual teams: A summary of their advantages and disadvantages. *Management Research News*, 31(2), 99-110.

LaBrosse, M. (2008). Managing virtual teams. *Employment Relations Today*, 35(2), 81-86.

Shachaf, P. (2008). Cultural diversity and information and communication technology impacts on global virtual teams. *Information & Management*, 45(2), 131-142.

Kuruppuarachchi, P. R. (2009). Virtual team concepts in projects: A case study. *Project Management Journal*, 40(2), 19-33.

Siebdrat, F., Hoegl, M., & Ernst, H. (2009). How to manage virtual teams. *MIT Sloan Management Review*, 50(4), 63-68.



# What are the Pitfalls?



- ❑ Culture and language difference most oft cited pitfalls
- ❑ Time zones and communications are frequently cited
- ❑ Lack of visioning, context, and requirements are key

| Disadvantage of Virtual Teams  | A | B | C | D | E | F | G | H | I | J |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|
| Cultural differences           | ✓ | ✓ | ✓ | ✓ |   | ✓ |   |   | ✓ | ✓ |
| Language differences           |   | ✓ | ✓ | ✓ |   |   | ✓ |   | ✓ | ✓ |
| Time zone                      |   | ✓ | ✓ | ✓ |   | ✓ |   |   | ✓ |   |
| Coordination breakdown         | ✓ |   | ✓ | ✓ |   |   |   | ✓ |   |   |
| Lack of visioning              |   |   | ✓ | ✓ |   |   |   | ✓ | ✓ |   |
| Technology issues              |   |   | ✓ | ✓ | ✓ |   |   |   | ✓ |   |
| Loss of communication richness | ✓ | ✓ | ✓ |   |   |   |   |   |   |   |
| Loss of team cohesion          | ✓ |   |   | ✓ |   |   |   |   |   | ✓ |
| Lack of trust                  |   |   | ✓ | ✓ |   | ✓ |   |   |   |   |
| Lack of F2F communications     |   |   | ✓ |   |   |   |   |   | ✓ | ✓ |
| Ambiguous requirements         |   |   |   | ✓ |   | ✓ |   | ✓ |   |   |

Alves, C. H., et al. (2008). A qualitative risk model for offshoring IT applications. *IEEE SIEDS Conference, Charlottesville, Virginia, USA*, 317-322

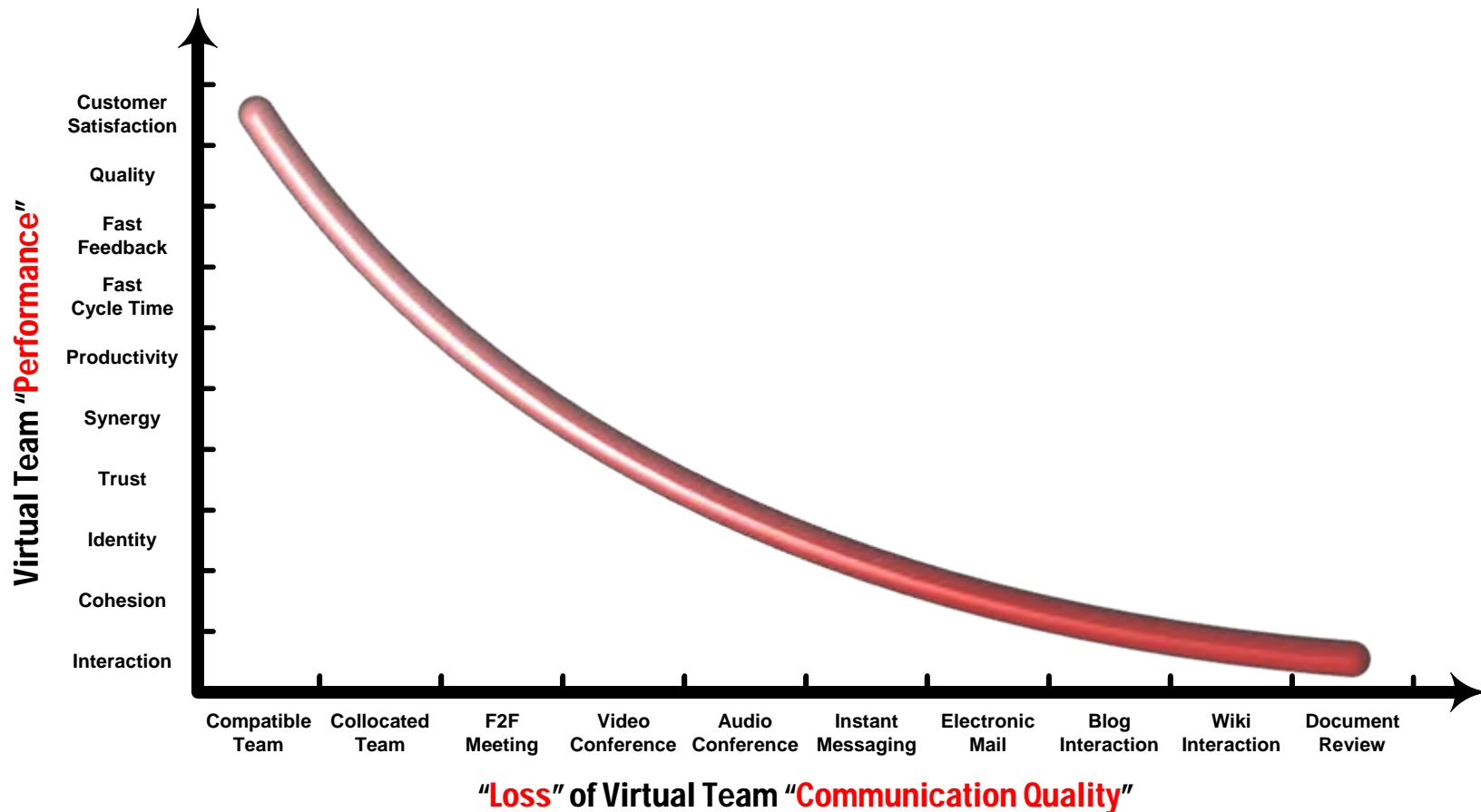
Chatfield, A. T., & Wanninayaka, P. (2008). IT offshoring risks and governance capabilities. *41st HICSS Conference, Waikaloa, Hawaii, USA*, 436-444.

Yalaho, A., & Nahar, N. (2008). Risk management in offshore outsourcing of software projects. *PICMET Conference, Cape Town, South Africa*, 1721-1748.

# What is the Paradox?



- ❑ Collocation & F2F interaction are a means to success
- ❑ Virtual teams communicate less undermining success
- ❑ Low productivity, quality, customer satisfaction results



Rico, D. F. (2010). The paradox of agile project management and virtual teams. *Gantthead*.

Carmel, E. (1999). *Global software teams: Collaborating across borders and time zones*. Upper Saddle River, NJ: Prentice-Hall.

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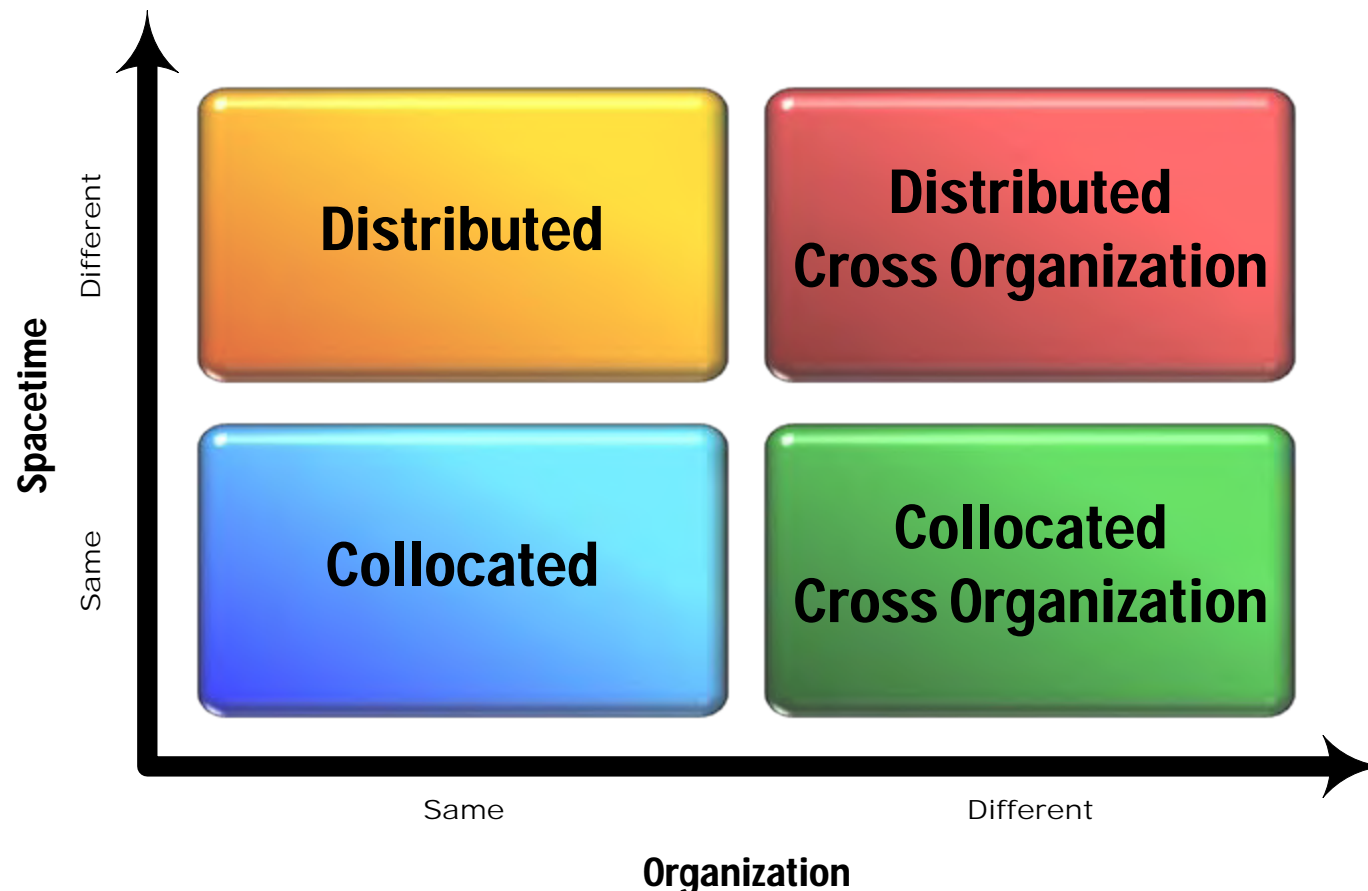
Key Case Studies

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# Basic Varieties of Teams



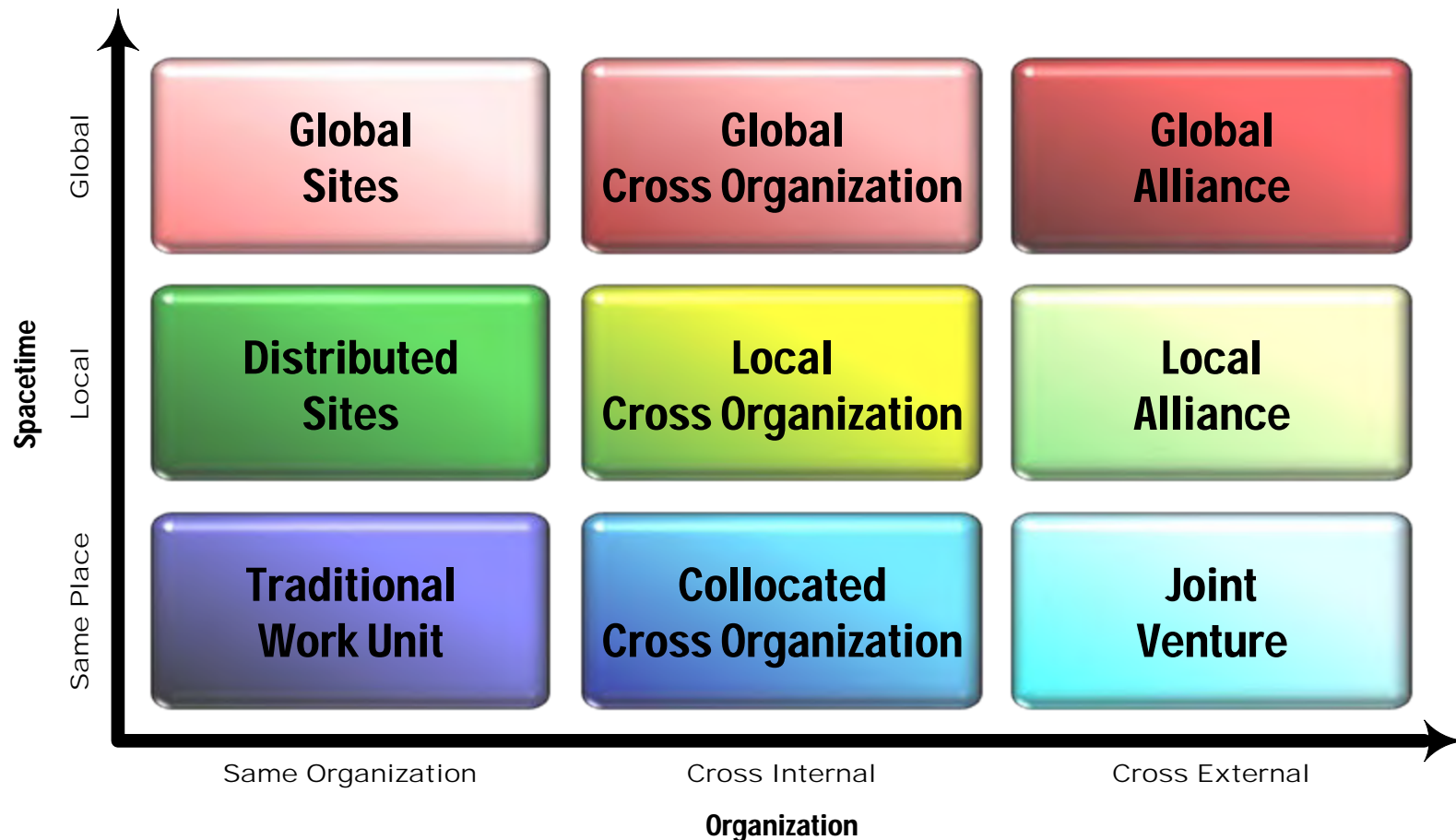
- ❑ Lipnack created a model for virtual teams in 1997
- ❑ Distribution & organization are its major dimensions
- ❑ Distributed, cross organizational teams most complex



# Varieties of Virtuality



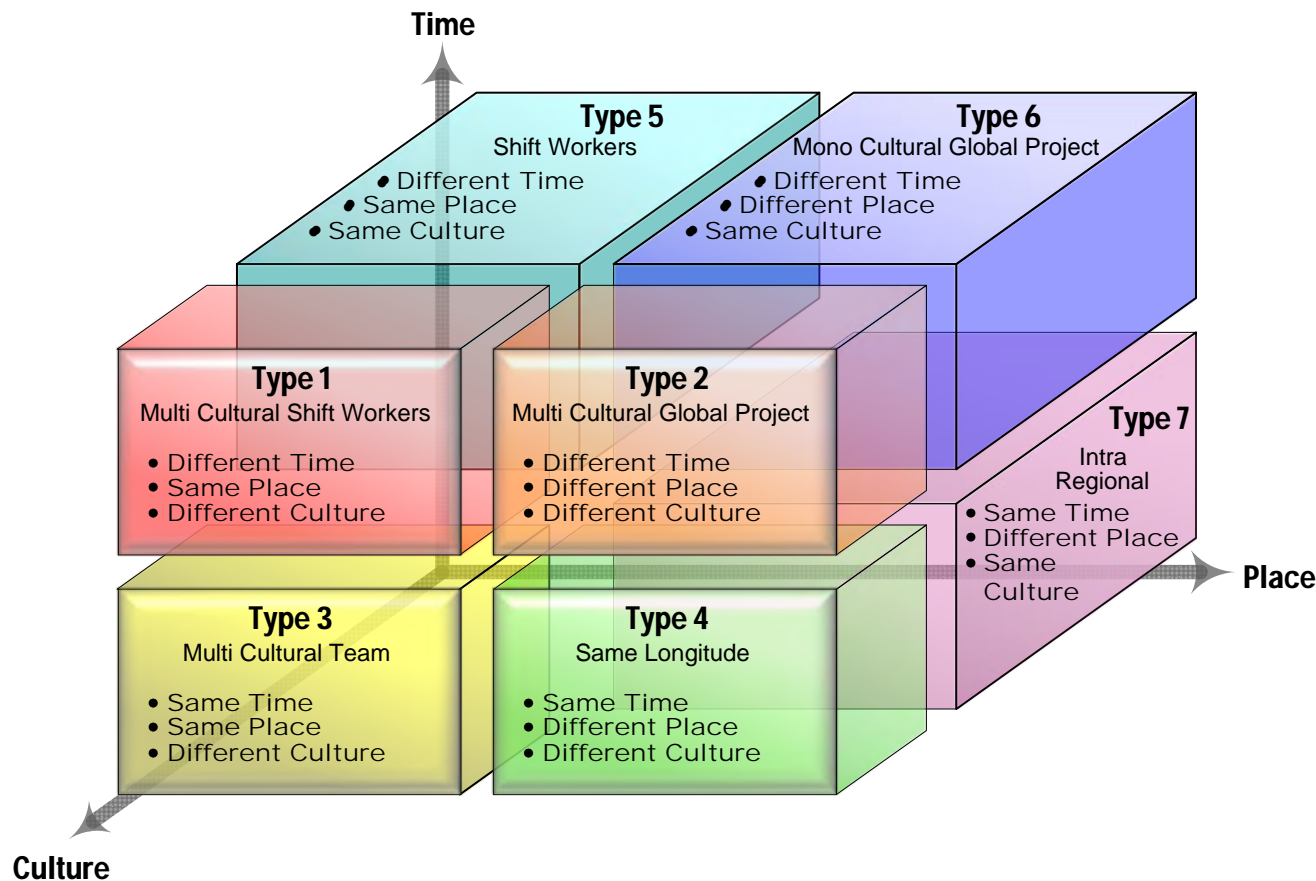
- ❑ Lipnack extended her model for virtual teams in 2000
- ❑ Included notion of external joint ventures & alliances
- ❑ External, global alliances are most complex types





# More Varieties of Virtuality

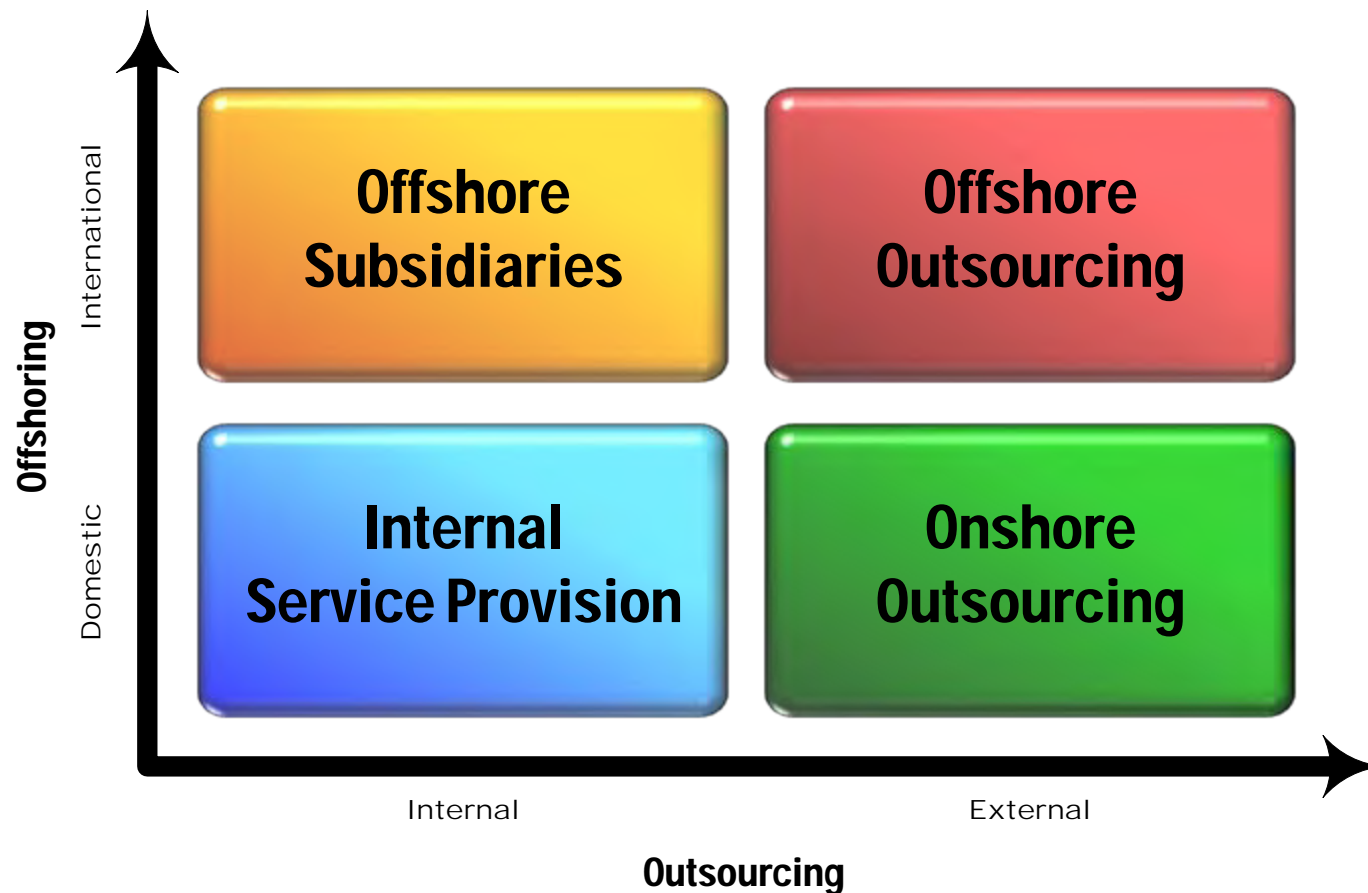
- ❑ Fisher developed a three dimensional model in 2001
- ❑ Includes the dimensions of time, place, and culture
- ❑ Type 2 multi cultural projects are most ambitious



# Outsourcing vs. Offshoring

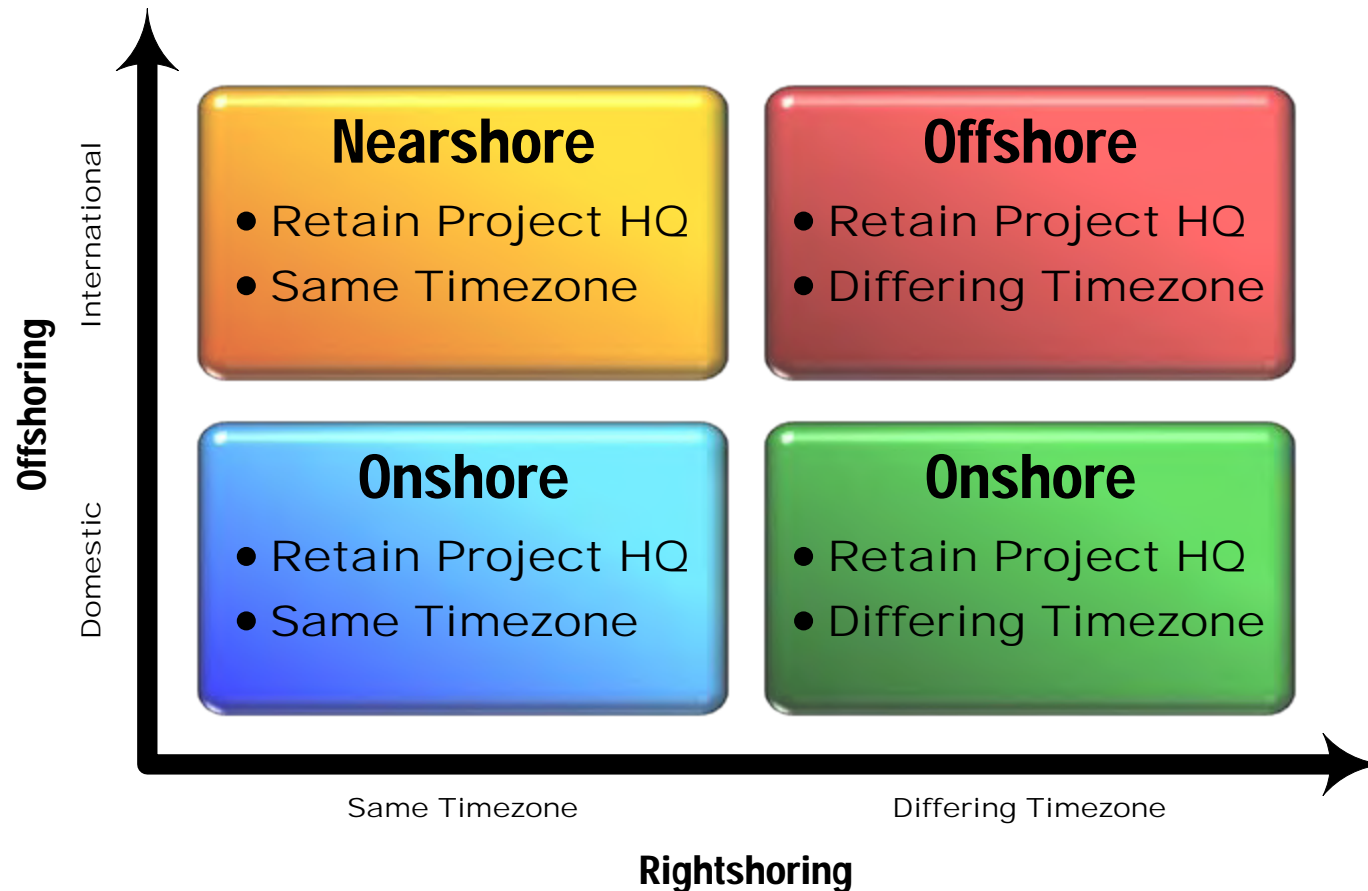


- ❑ Schaaf compared outsourcing vs. onshoring in 2004
- ❑ His model disambiguates outsourcing vs. onshoring
- ❑ Combining outsourcing & offshoring is the riskiest



# Rightshoring vs. Offshoring

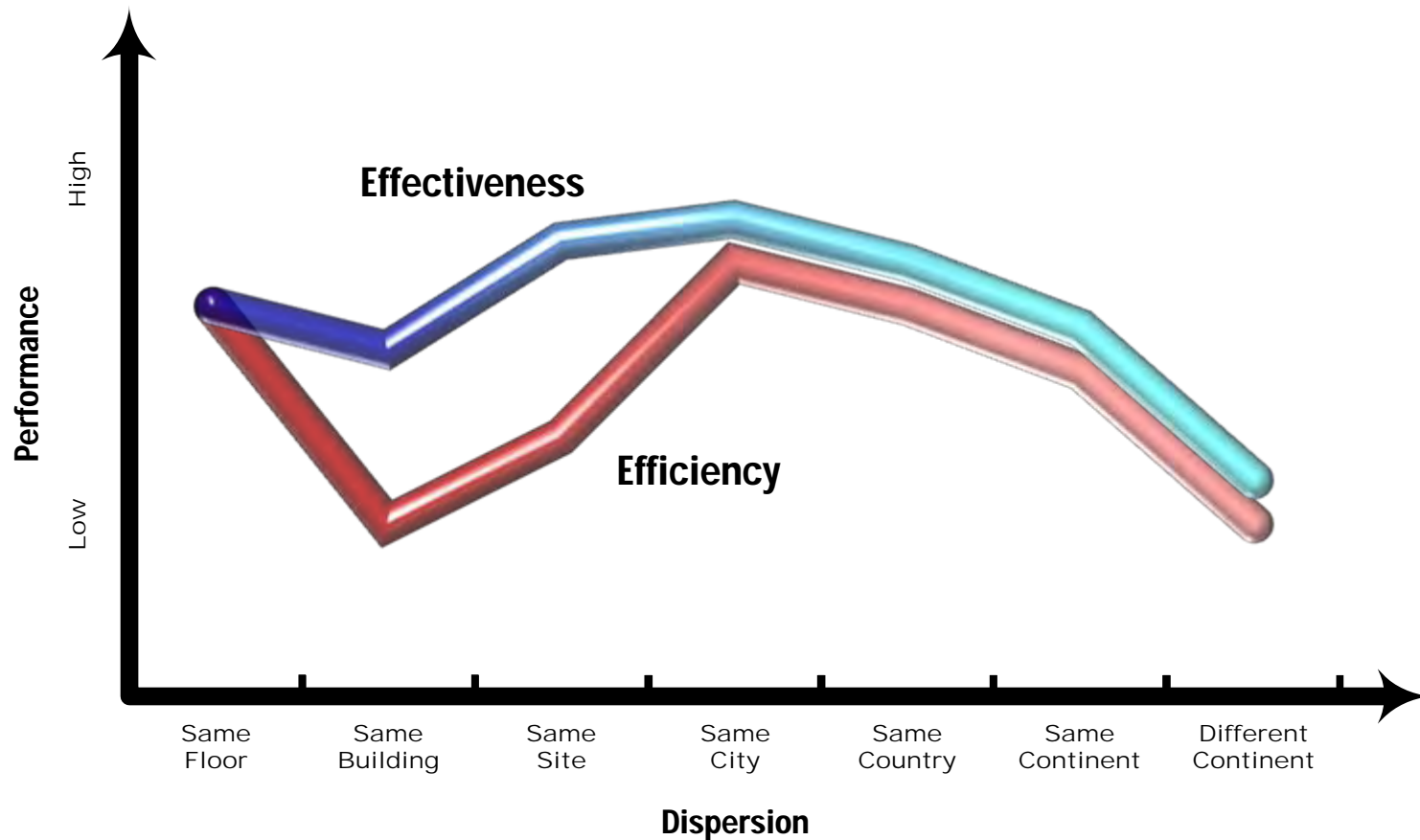
- ❑ Hendel introduced the concept of rightshoring in 2004
- ❑ There are alternatives to just onshoring vs. offshoring
- ❑ A popular notion is to nearshore to similar timezones



# Team Dispersion



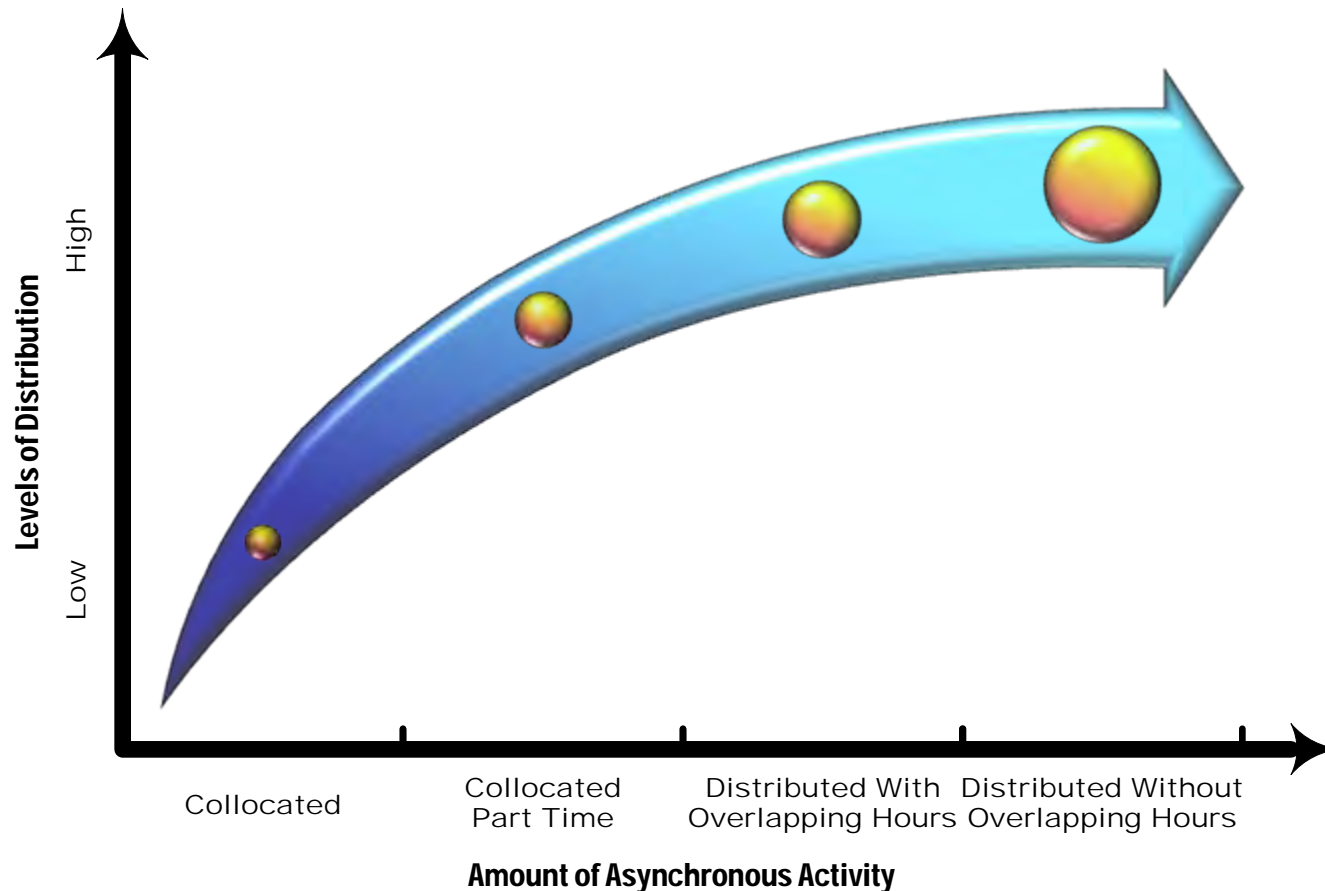
- ❑ Siebdrat simplified types of virtual teams in 2009
- ❑ Time, space, and cultural distance introduces risks
- ❑ Increased virtuality increases risk if not managed well



# Agile Distributed Teams



- ❑ Woodard created basic model of agile teams in 2010
- ❑ It compares asynchronous activities vs. distribution
- ❑ Synchronous activities also needed for success





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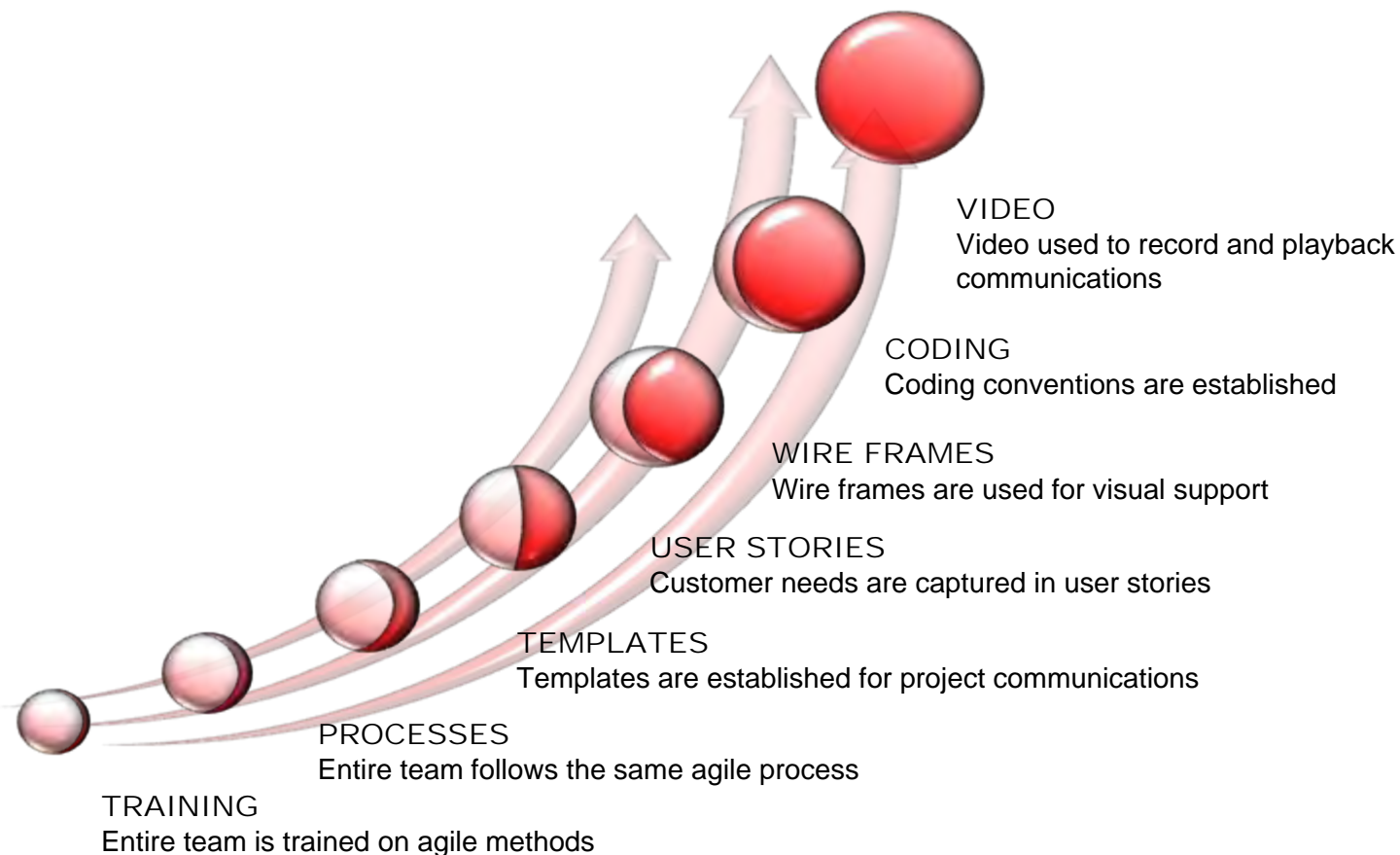
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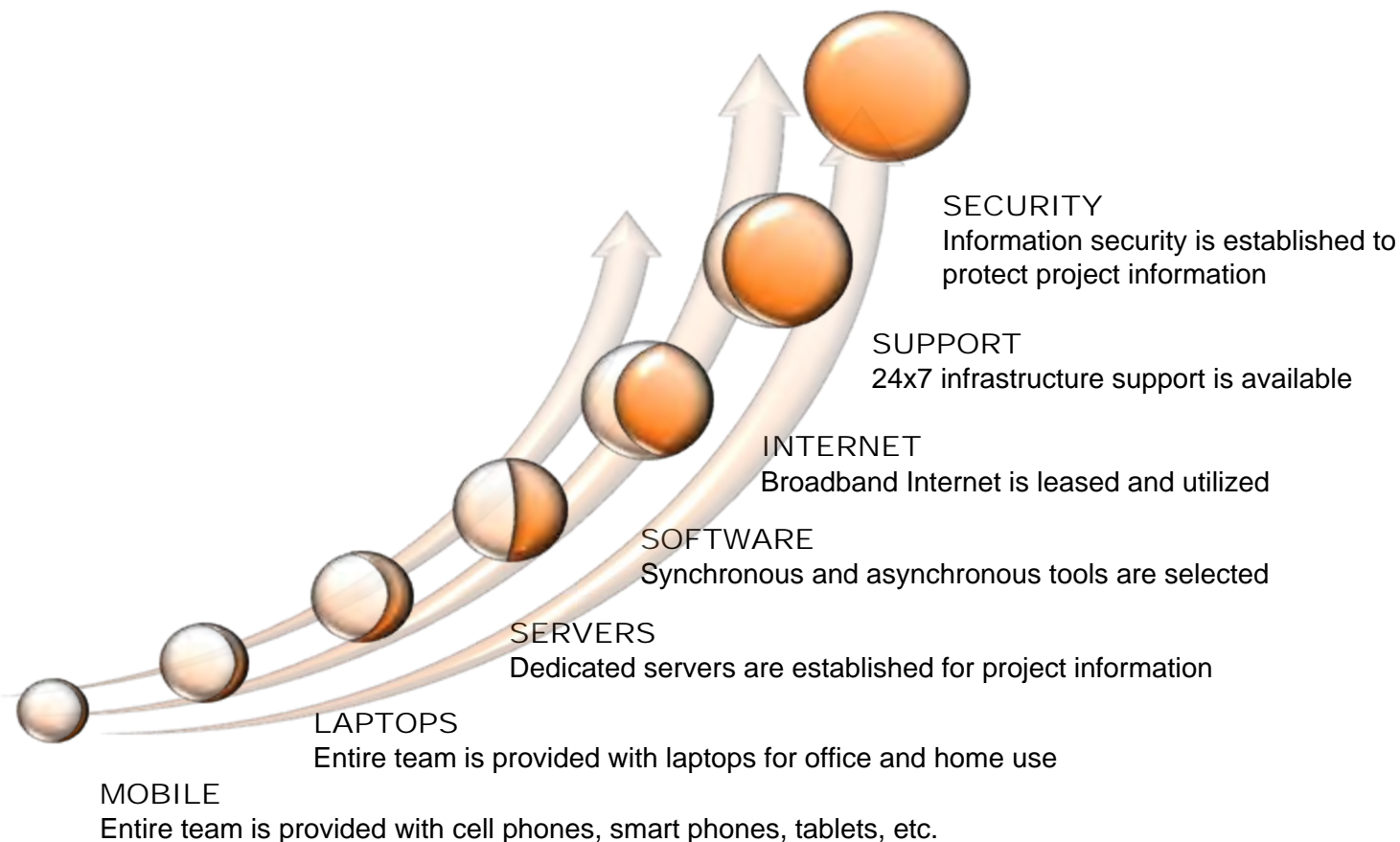
# Standard Practices

- ❑ Standard practices is an oft cited aid to virtual teams
- ❑ Agile methodologies are not known in every country
- ❑ Training should be provided and standards created



# Virtual Infrastructure

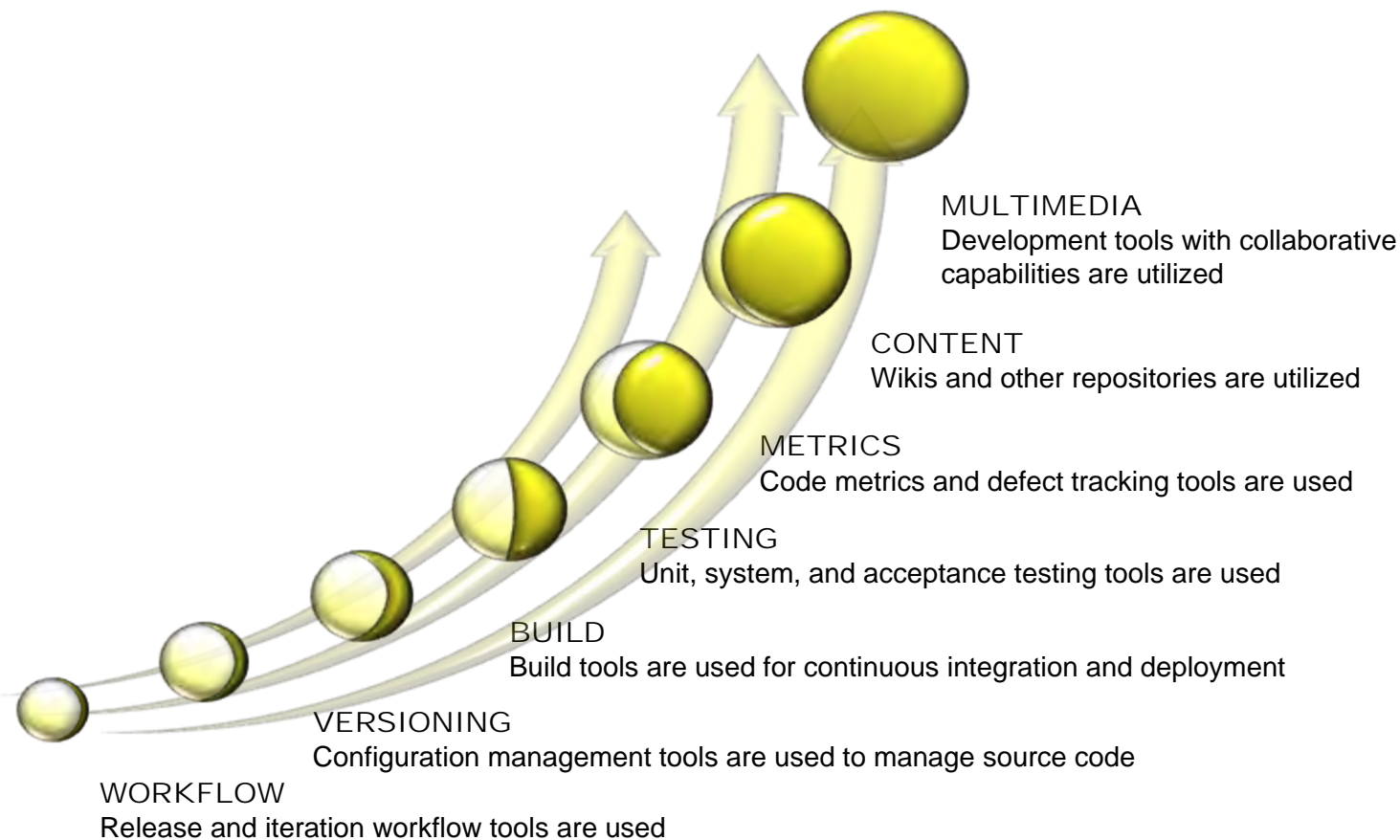
- ❑ Infrastructure needs are most often overlooked
- ❑ Many countries do not have adequate computers
- ❑ Internet service is also a luxury in across the globe



# Virtual Tools

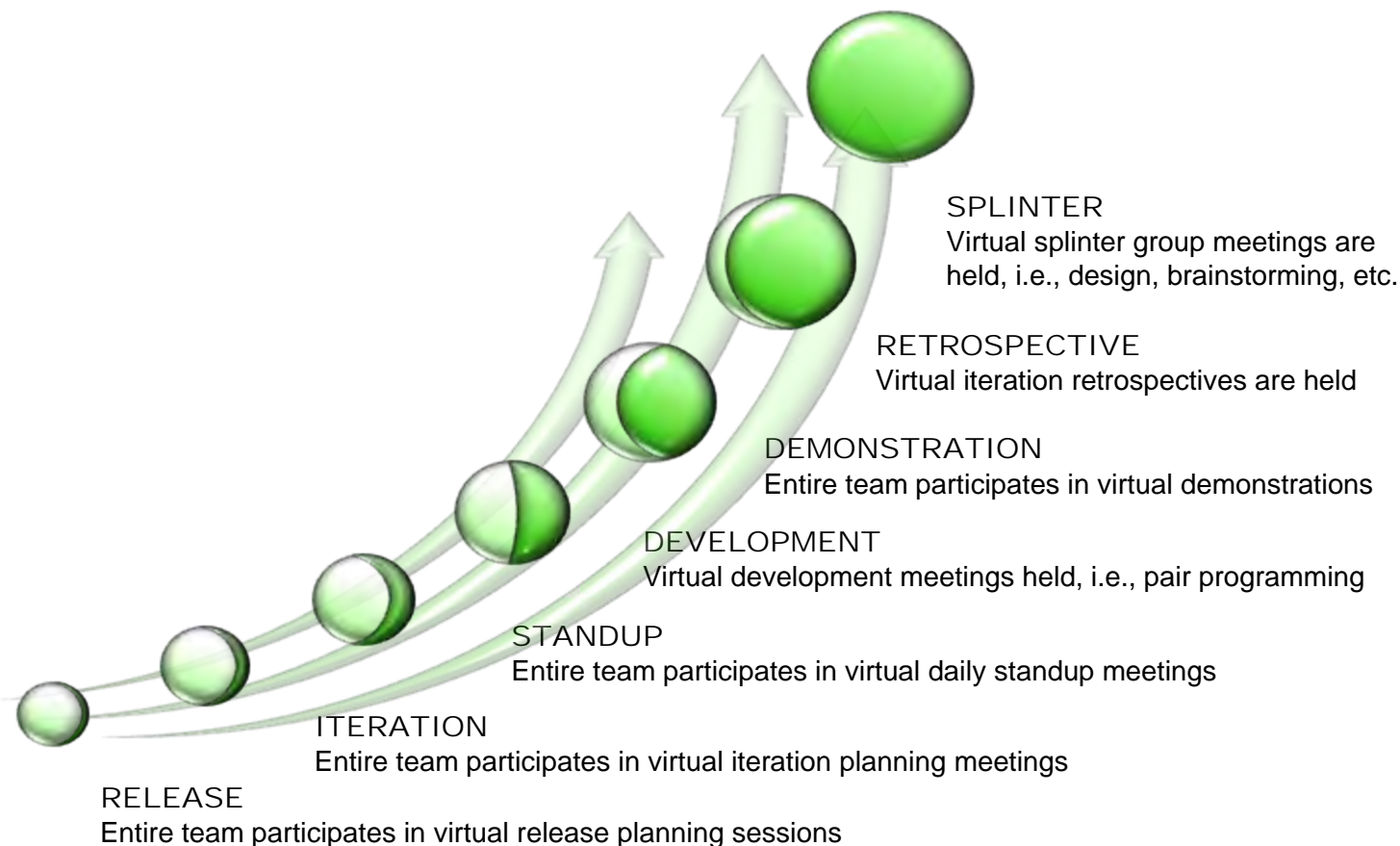


- ❑ Many projects do not standardize development tools
- ❑ Complete development tools are easy to assemble
- ❑ Development environments should be integrated



# Virtual Meetings

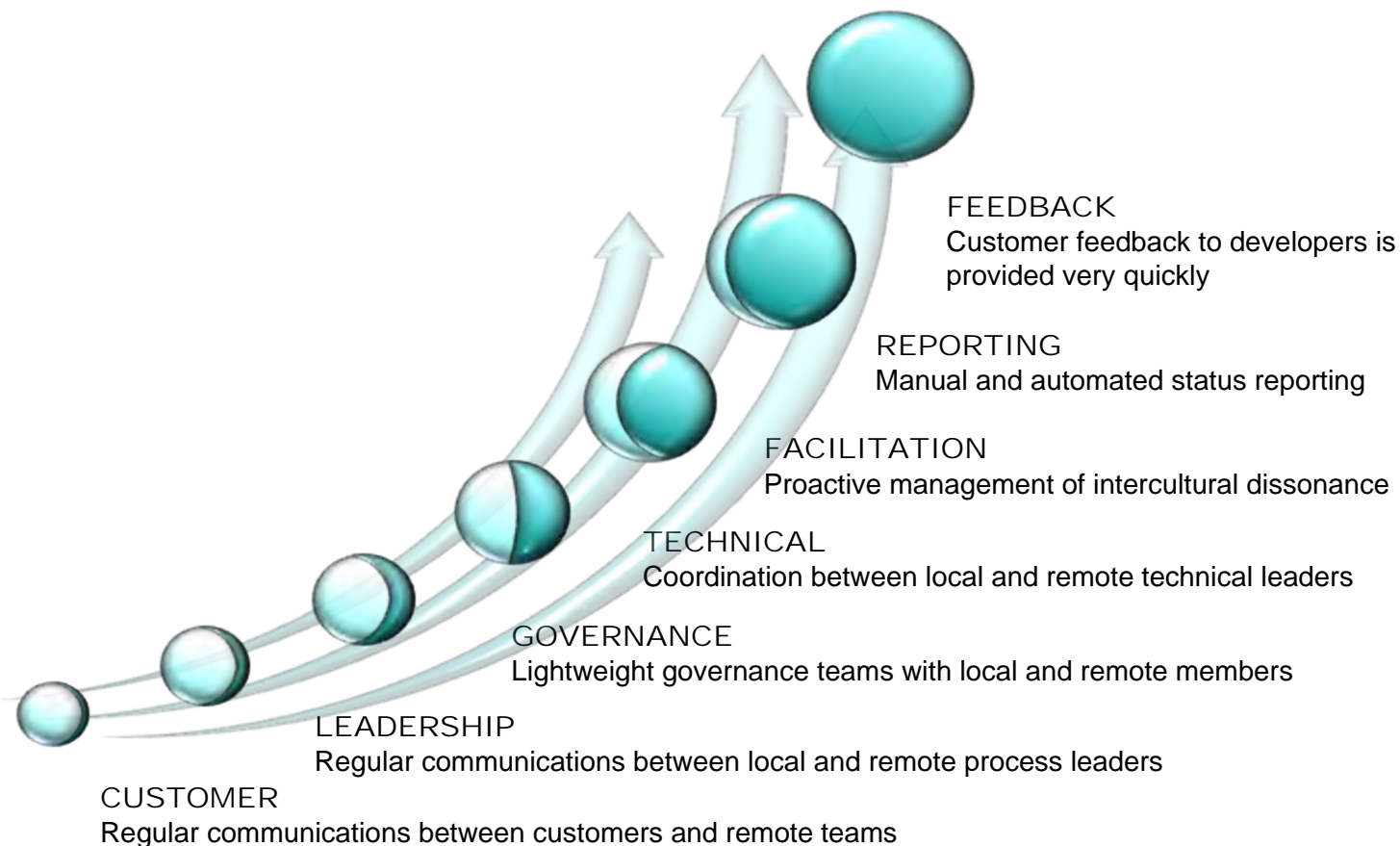
- ❑ Frequent communication is a key to project success
- ❑ Communication is better than documentation alone
- ❑ A critical key is to encourage frequent interactions





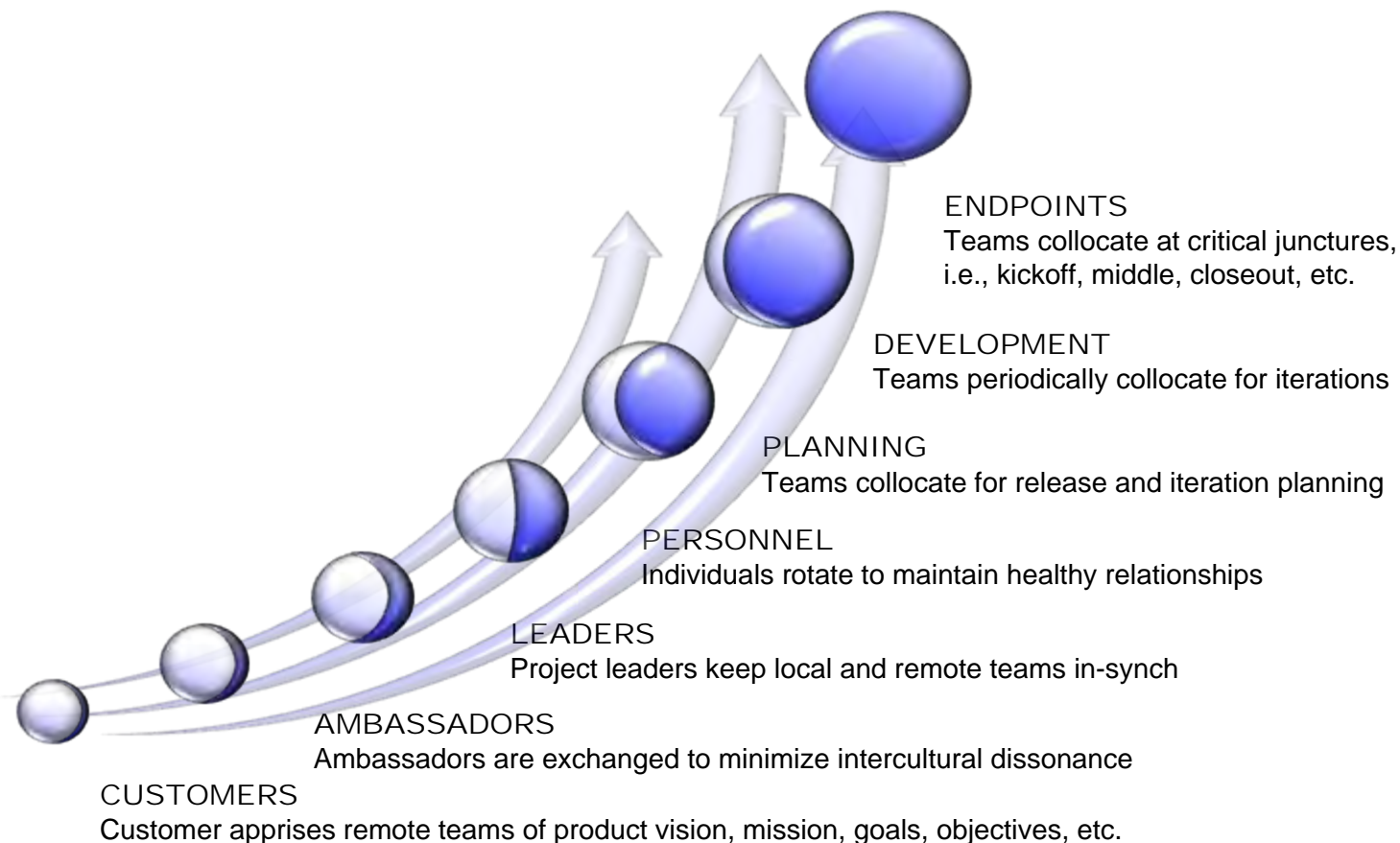
# Light Coordination

- ❑ The work of two or more teams requires facilitation
- ❑ Local/remote team leaders must communicate often
- ❑ All team leaders can then pass on critical information



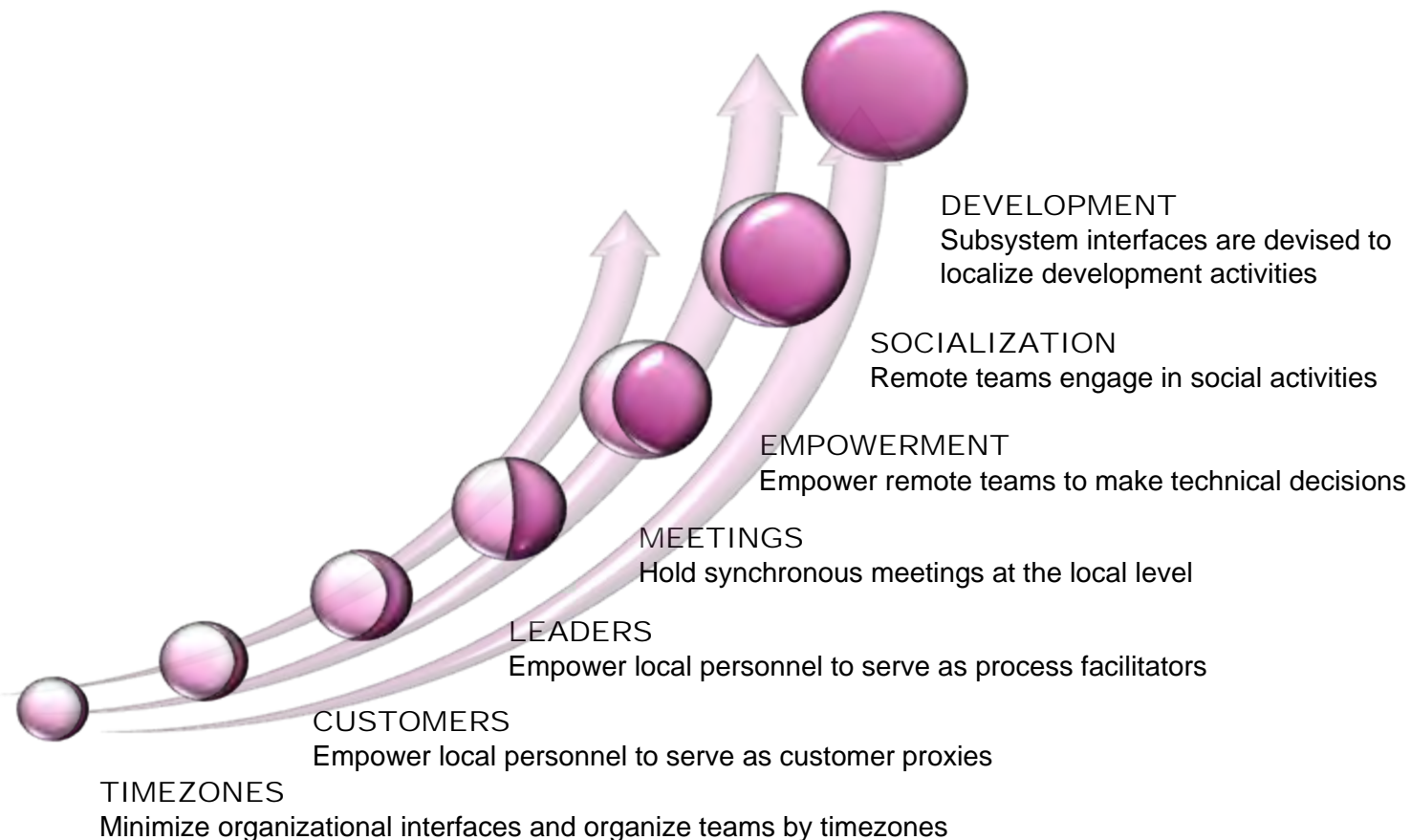
# Periodic Rotations

- ❑ Periodic F2F interaction is a CSF for virtual teams
- ❑ Teams should meet at critical junctures, i.e., kickoff
- ❑ Rotating customers and leaders helps establish trust



# Regional Localization

- ❑ Minimizing interfaces between timezones is oft cited
- ❑ Products should be structured to localize activities
- ❑ It's easier to communicate with nearshore teams



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# VersionOne




- ❑ One of the first APM tools created in 2003
- ❑ Has about 36% of the marketshare for APM tools
- ❑ Free for small teams, but increases sharply thereafter



Product Roadmapping

- Roadmap Authoring
- Customization
- Collaboration
- Publishing




Iteration Closeout Reviews

- Sprint Reviews
- Sprint Retrospectives
- Issue and Action Item Tracking
- Backlog reconciliation




Product Planning

- Backlog Planning and Management
- Epics, Goals, Themes, Feature Groups
- Customer Requests and Idea Management
- Product Roadmapping Features




Tracking

- Sprint and Member Tracking
- Storyboard Wall
- Task Board and Test Board
- My Work and My Dashboard




Release Planning

- Release Planning
- Release Forecasting
- Cross Project Planning and Scheduling
- Regression Test Planning




Reporting and Analytics

- Program Dashboard
- Project Dashboard
- Iteration Dashboard
- Burnup/Burndown Reports



Sprint Planning

- High Level Sprint Planning
- Detailed Sprint Planning
- Capacity Planning
- Issue Management Features



Other Features


- Agile Closeout Reviews
- Test Management
- Collaboration
- Open Source Integration



# Rally




- ❑ One of the first web-based APM tools created in 2004
- ❑ Has about 20-30% of the marketshare for APM tools
- ❑ Also free for small teams and gets more expensive




Agile Project Management

- High Level Roadmap Decomposition
- Epic, Theme, and Feature Tracking
- User Story Planning and Tracking
- User Story Breakdown Management




Communication and Collaboration

- Customizable Role Dashboards
- Rich Text, Email, and RSS Support
- Social Media Style Interfaces
- Comments, Discussions, and IM




Multi-Team Management

- Organization Chart Mirroring
- Multi Level Project Hierarchies
- Common Progress and Status Views
- Program, Feature, and Resource Rollup




Development Management

- Requirements Management
- Test Management
- Defect Management
- Build and Source Code Traceability




Release Planning

- Step by Step Release Planning
- Team Velocity Determination
- Release and Iteration Schedules
- User Story Allocation to Iterations




Reporting

- Flexible Queries and Filters
- Customer Tabular Graphical Reports
- Burnup/Burndown Reporting, etc.
- User Generated Mashup Support



Iteration Planning

- Iteration Goal and Theme Support
- Team Capacity Determination
- Backlog Item Prioritization
- Task Creation, Estimation, and Tracking



Product Management

- Customer Feedback Management
- Product Field Support
- Demand Management
- CRM Integration and Support



# ScrumWorks




- ❑ Scrum project management tool created circa 2004
- ❑ Similar size of user base to VersionOne and Rally
- ❑ Leadership in agile metrics and business value

|   |  |
|---|--|
|  <p>Product Management</p> <ul style="list-style-type: none"><li>• Project Milestone Management</li><li>• Epics for Project Scope Goals</li><li>• Categorization using Themes</li><li>• Business Weighting and ROI</li></ul>                   |  <p>Real Time Custom Dashboards</p> <ul style="list-style-type: none"><li>• Velocity Charts</li><li>• Milestone Charts</li><li>• Cycle Time Charts</li><li>• Cross Product Status Reporting</li></ul>                                       |
|  <p>Program Management</p> <ul style="list-style-type: none"><li>• Coordination of Multiple Projects</li><li>• Manage and Track Overlapping Goals</li><li>• Shared Component/System Modeling</li><li>• High Level Feature Management</li></ul> |  <p>Data Accessibility</p> <ul style="list-style-type: none"><li>• Full Excel Import/Export</li><li>• Print to User Story Cards</li><li>• Web Services API</li><li>• Backups and Notifications</li></ul>                                    |
|  <p>Iteration Management</p> <ul style="list-style-type: none"><li>• Drag and Drop Iteration Planning</li><li>• Team Task Board</li><li>• Sprint Task Tracking</li><li>• Impediment Tracking</li></ul>                                       |  <p>User Management</p> <ul style="list-style-type: none"><li>• Full Access Control</li><li>• Role Based Access Permissions</li><li>• Cross Site Role Templates</li><li>• Security Management</li></ul>                                   |
|  <p>Reporting and Analytics</p> <ul style="list-style-type: none"><li>• Release Date Forecasting</li><li>• Basic Burnup/Burndown Reporting</li><li>• Canned and Custom Report Generation</li><li>• Analysis of Planned vs. Actuals</li></ul> |  <p>Integration</p> <ul style="list-style-type: none"><li>• Commercial Environment Integration</li><li>• Open Source Environment Integration</li><li>• Issue and Defect Tracking Integration</li><li>• Support for Tool Plugins</li></ul> |

# Extreme Planner




- ❑ XP project management tool created around 2004
- ❑ Noted commercial tool for managing XP projects
- ❑ No free version, although it is moderately priced




Multiple Project Support

- Multiple Project Definition
- Multiple Project Status Tracking
- Multiple Project Report Generation
- Multiple Project Task Tracking




Test Management

- Test Criteria Generation
- Test Case Generation and Capture
- Test Case Initiation
- Test Status Reporting




User Story Generation

- Cross Project Story Themes
- Create a Story from an Issue
- Theme and Story Template Reuse
- Inter Project Story Management




Integrated Issue Tracking

- Track Customer Support Requests
- Track Bug Reports
- Track Ad Hoc Suggestions
- Transition Issues to User Stories




Release Planning

- Capture User Stories Generated
- Estimate and Prioritize User Stories
- View Schedule Stories for Releases
- View Estimated Effort for Releases




Report Generation

- Velocity and Task Tracking
- Iteration Burnup/Burndown Charts
- Cumulative Workflow Diagrams
- User Defined Reports



Drag and Drop Iteration Planning

- Iteration Generation and Management
- Drag and Drop User Story Management
- Iteration Effort Estimation
- Iteration Status Reporting




Notification and Alerts

- Email Notifications
- Notification Capture and Management
- Notification Viewing and Filtering
- User Selectable Notifications

# Mingle



- ❑ APM tool created by ThoughtWorks in late 2007
- ❑ Extensible templates for multiple agile methods
- ❑ Growing user base that is free for small teams

|  |  |
|--|--|
|  <p>Program Management</p> <ul style="list-style-type: none"><li>• Support for Multiple Projects</li><li>• Multi Project Status Tracking</li><li>• Multi Project Report Generation</li><li>• Resource Allocation and Management</li></ul>                       |  <p>Test Management</p> <ul style="list-style-type: none"><li>• Visual Defect Workflows</li><li>• User Story and Defect Traceability</li><li>• RSS and Email Test Alerting</li><li>• Wiki Support for Screenshots and Reports</li></ul>           |
|  <p>Project Management</p> <ul style="list-style-type: none"><li>• Multi Agile Method Support</li><li>• Customizable Dashboards</li><li>• Workflow Generators</li><li>• User Management and Access Control</li></ul>  |  <p>Project Collaboration</p> <ul style="list-style-type: none"><li>• Virtual Drag and Drop Card Walls</li><li>• Integrated Wiki</li><li>• RSS Feeds and Email Alerts</li><li>• Murmurs, Queues, and Comments</li></ul>                           |
|  <p>Release and Iteration Planning</p> <ul style="list-style-type: none"><li>• Hierarchical Card Trees</li><li>• Prioritized Card Ranking</li><li>• User Story Searching and Recall</li><li>• Global User Story Updating</li></ul>                            |  <p>Enterprise Support</p> <ul style="list-style-type: none"><li>• Application Life Cycle Management</li><li>• Integration with IDEs</li><li>• Integration with Versioning Tools</li><li>• Integration with Build/Deployment Tools</li></ul>    |
|  <p>Tracking and Reporting</p> <ul style="list-style-type: none"><li>• Customizable Templates</li><li>• Customizable Tabs, Favorites, and Views</li><li>• Advanced Filtering, Properties, and Tags</li><li>• Burndown, Velocity, and Ad Hoc Reports</li></ul> |  <p>External Interfaces</p> <ul style="list-style-type: none"><li>• I/O from Common Data Formats</li><li>• Integration with External Databases</li><li>• Integration with Workflow Tools</li><li>• Integration with External Software</li></ul> |



# Target Process

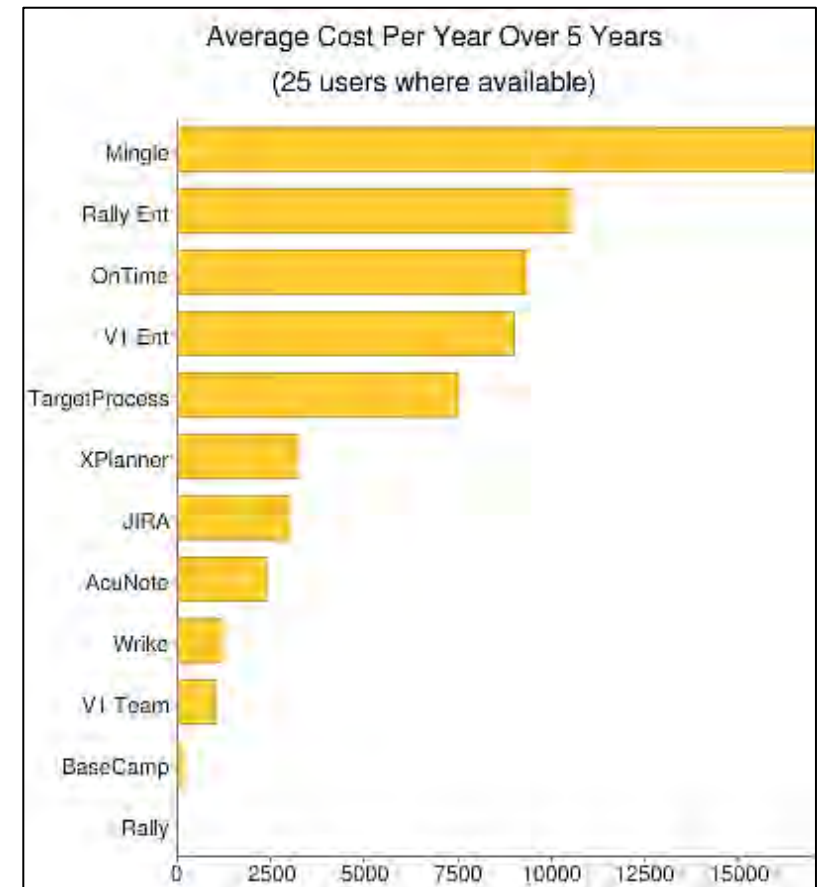
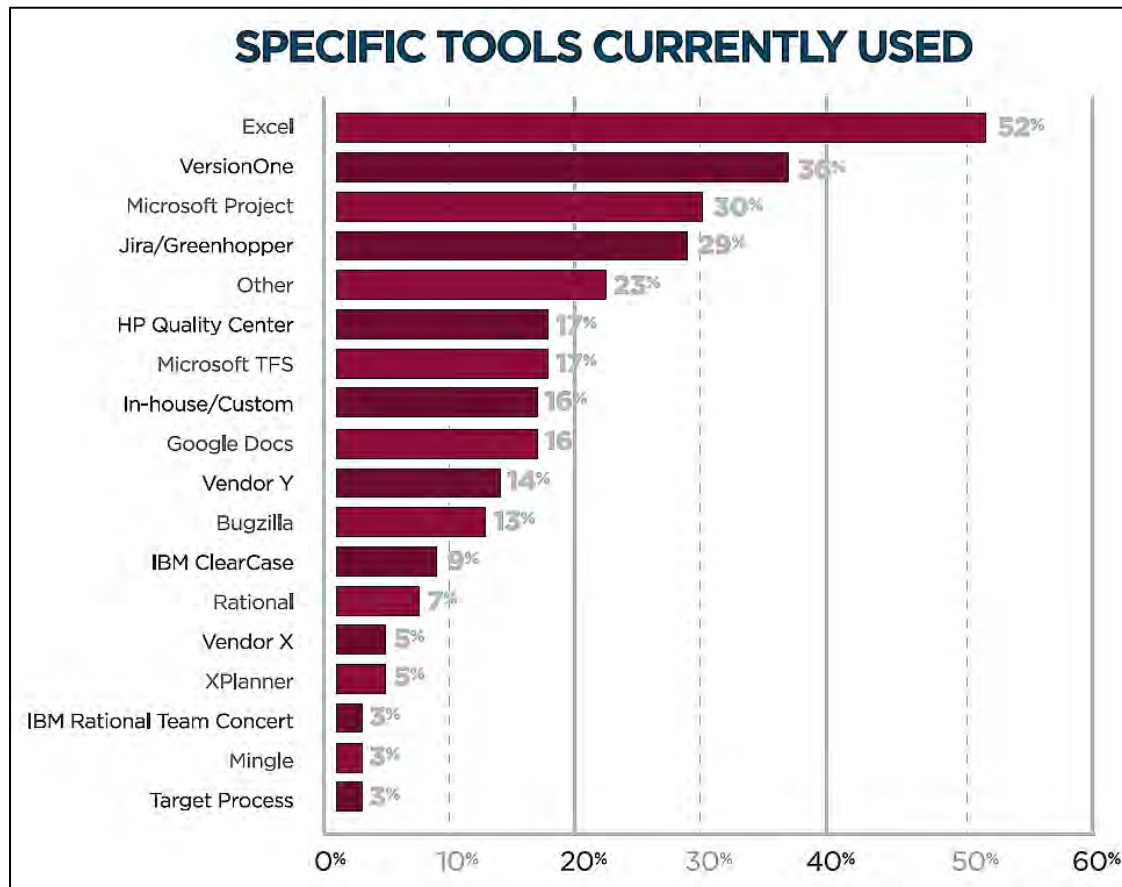


- ❑ APM tool originally created for XP circa 2004
- ❑ Now includes support Scrum, Lean, Kanban, etc.
- ❑ Also free for small teams and then price rises sharply



# Other APM Tools

- ❑ There are literally dozens, if not 100s of APM tools
- ❑ There are dozens of free open source software tools
- ❑ Annual tool & price surveys are frequently conducted



VersionOne. (2010). *5th annual state of agile survey*. Atlanta, GA: Author.

Allen, W. (2008). *Agile PM tools (hosted)*. Retrieved May 11, 2011 from <http://weblogs.asp.net/wallen>.

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 **Key Case Studies**

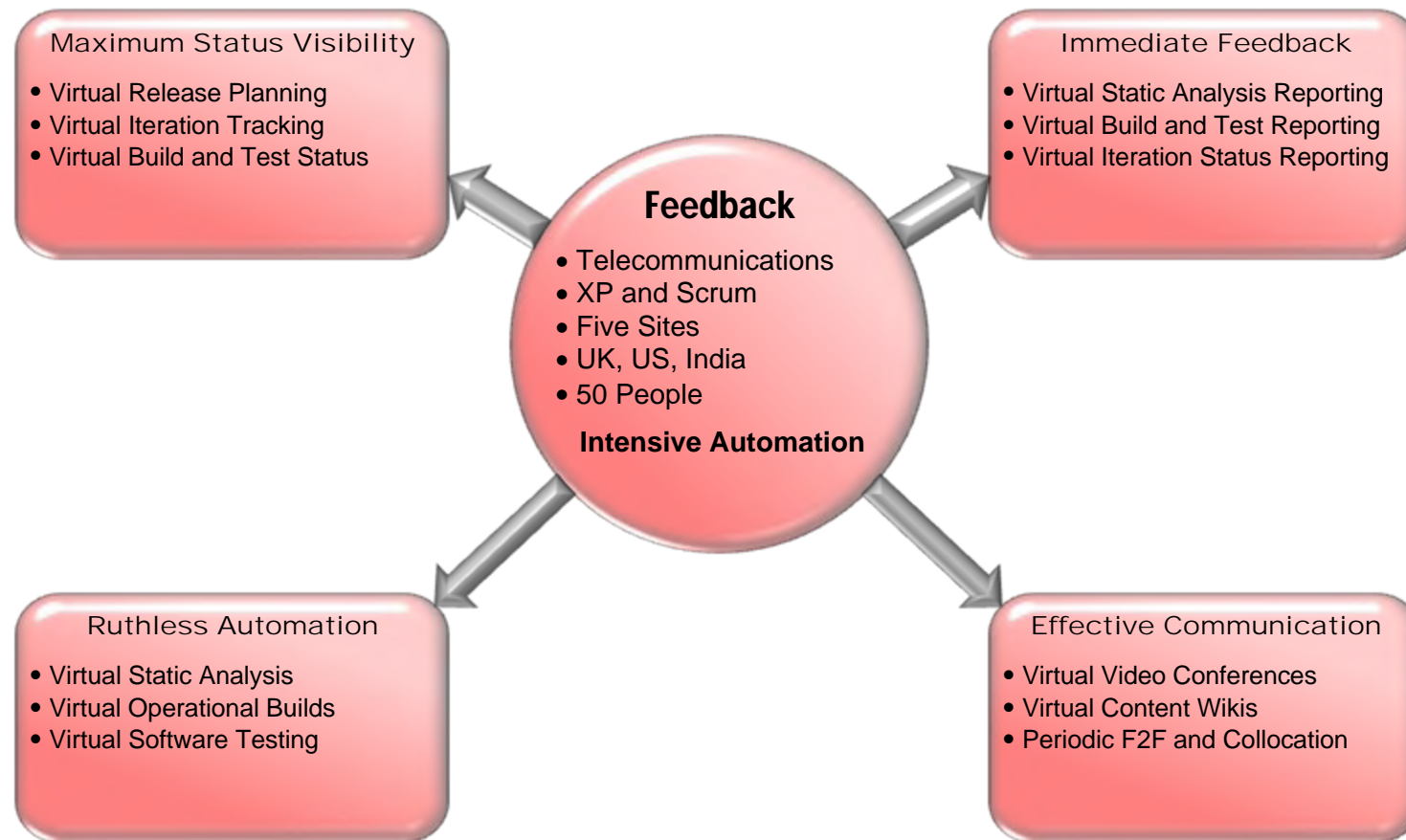
Conclusions & Summary



# British Telecom



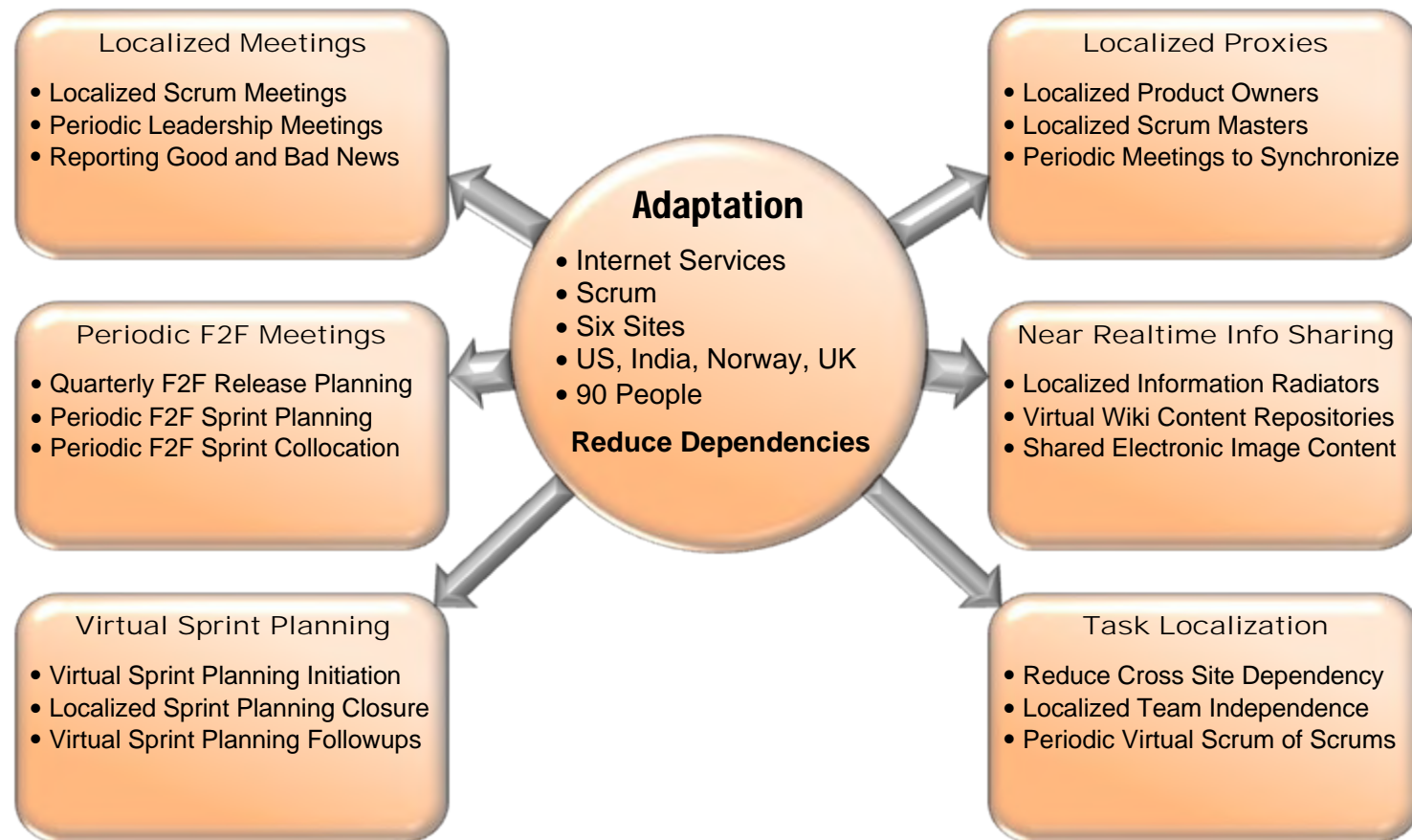
- ❑ Middleware products for phone call processing
- ❑ Goal was to obtain fast feedback with virtual teams
- ❑ Satisfied using intensive automation for fast feedback



# Yahoo!



- ❑ Development of commercial Internet services
- ❑ Goal was to adapt agile methods for virtual teams
- ❑ Satisfied by minimizing use of synchronous meetings



# ThoughtWorks

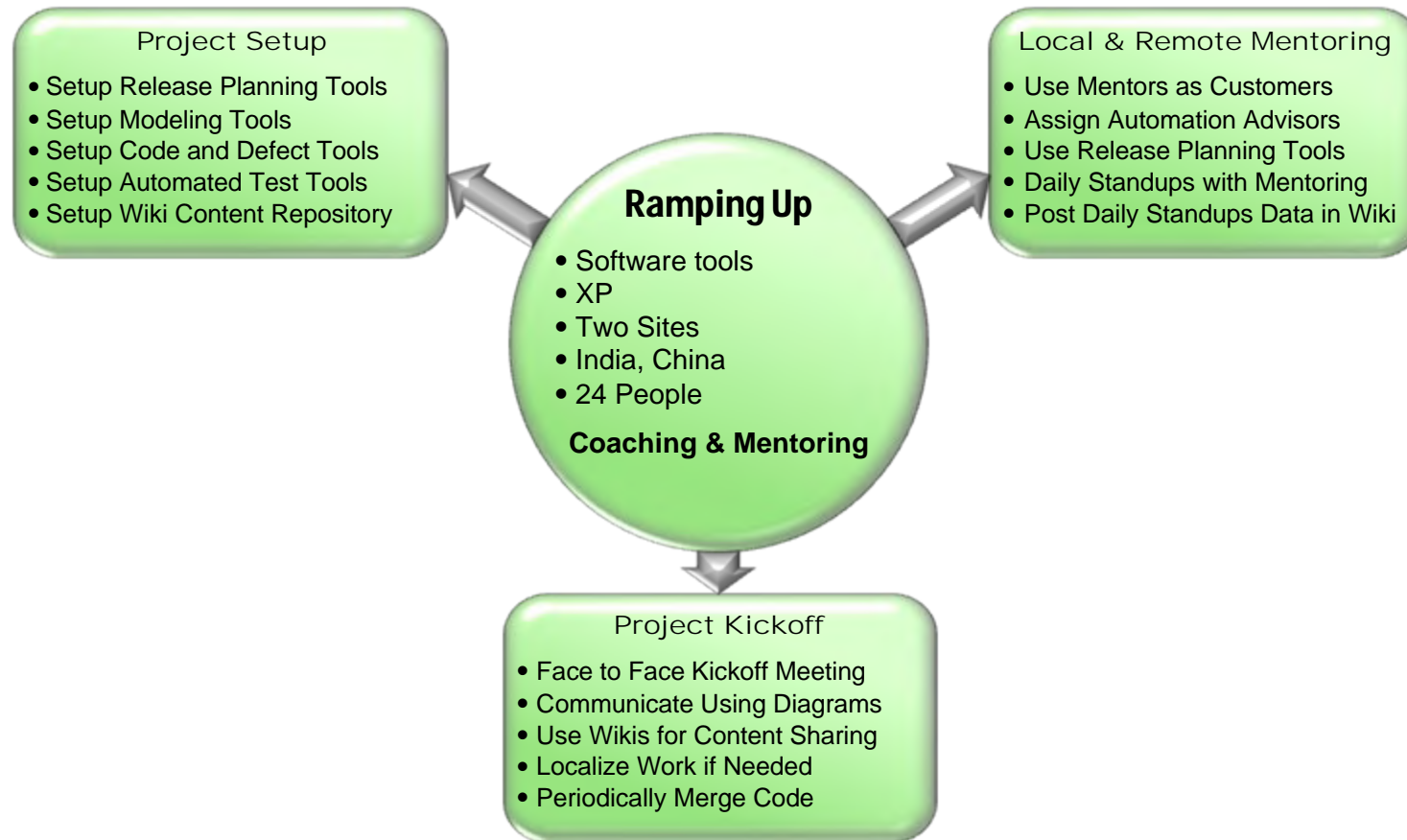


- ❑ Development of web applications for global clients
- ❑ Goal was to maintain high levels of communications
- ❑ Satisfied with F2F visits and detailed status reporting



# Wipro Technologies

- ❑ Development of software engineering products
- ❑ Goal was to be productive across different cultures
- ❑ Satisfied by use of intensive coaching and mentoring

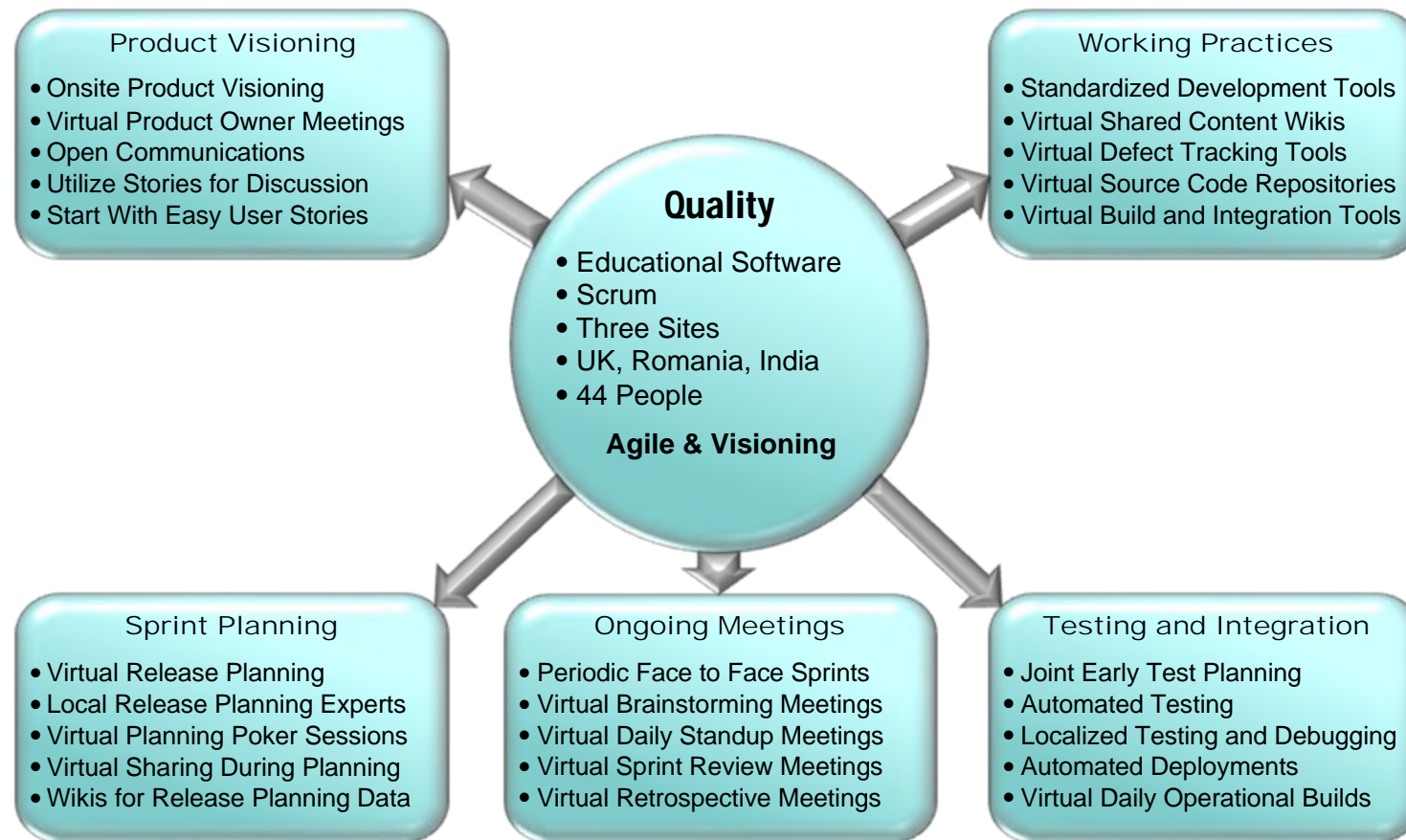




# CampusSoft

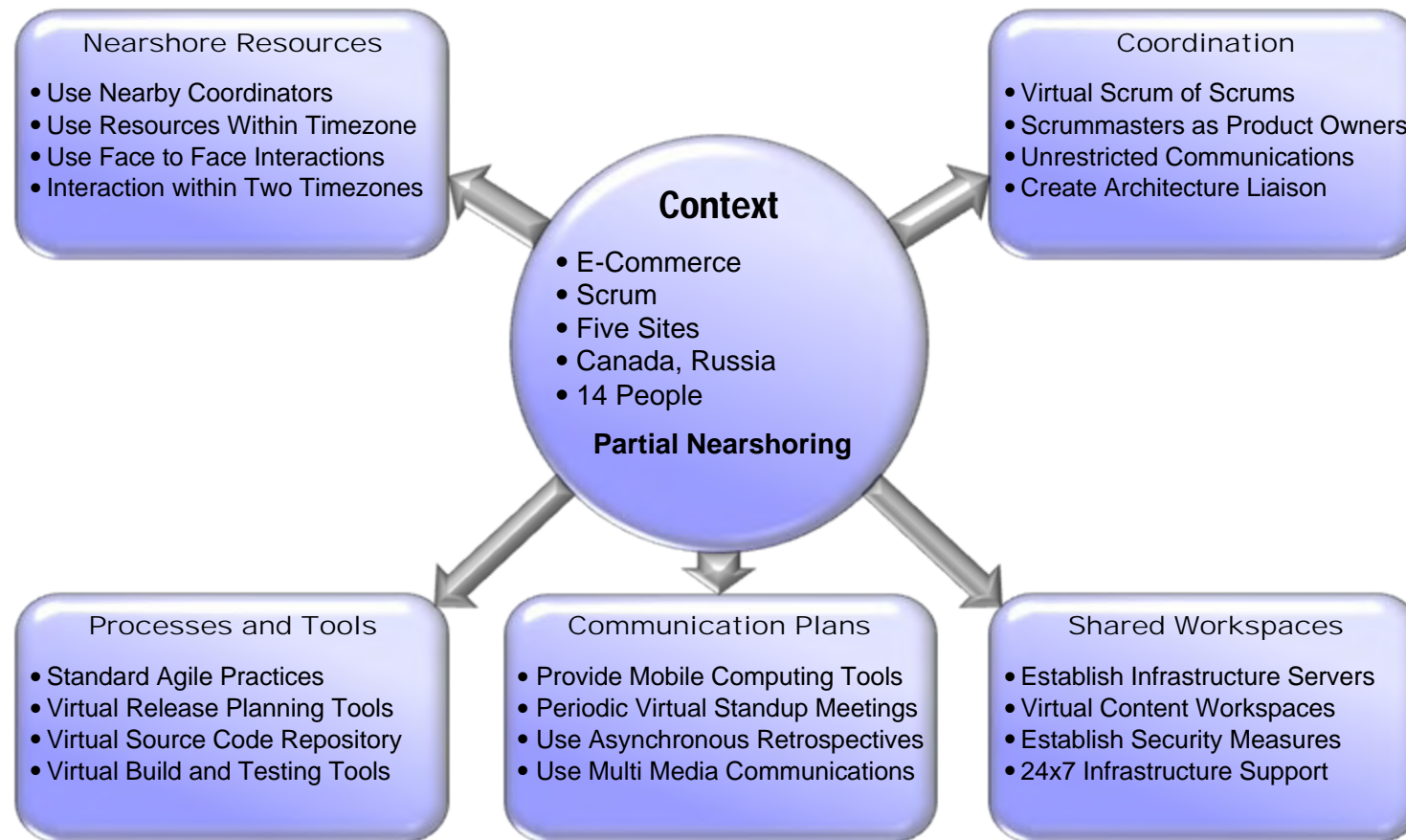


- ❑ Development of software systems for academia
- ❑ Goal was to improve quality results of global teams
- ❑ Achieved by using agile methods and onsite visioning



# Elastic Path/Luxoft

- ❑ Development of electronic commerce websites
- ❑ Goal was to maintain context with distributed team
- ❑ Satisfied with coordination in overlapping time zones

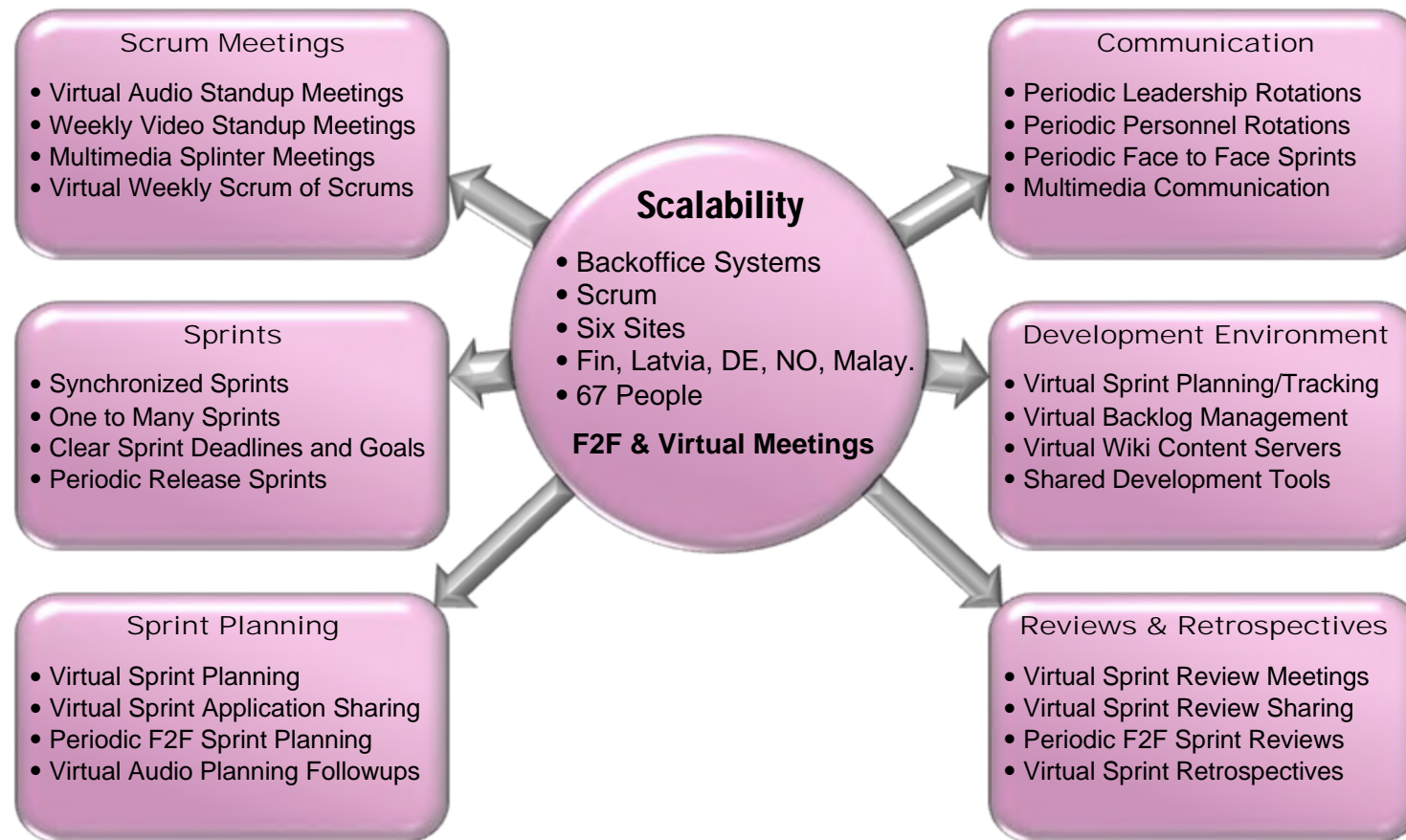




# Scandinavia



- ❑ Development of internal & external web applications
- ❑ Goal was to determine if agile practices are scalable
- ❑ Satisfied with routine face-to-face & virtual meetings



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Types of Virtual Teams

Key Practices & Techniques

Key Tools & Technologies

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 **Conclusions & Summary**

# Leadership Considerations



- ❑ Agile management is delegated to the lowest level
- ❑ There remain key leadership roles & responsibilities
- ❑ Communication, coaching, & facilitation are key ones

|   |                        |   |
|---|------------------------|---|
| 1 | Customer Communication | Facilitate selection of methods for obtaining and maintaining executive commitment, project resources, corporate communications, and customer interaction                         |
|   | Product Visioning      | Facilitate selection of methods for communicating product purpose, goals, objectives, mission, vision, business value, scope, performance, budget, assumptions, constraints, etc. |
|   | Distribution Strategy  | Facilitate selection of virtual team distribution strategy to satisfy project goals and objectives  |
| 2 | Team Development       | Facilitate selection of methods for training, coaching, mentoring, and other team building approaches   |
|   | Standards & Practices  | Facilitate selection of project management and technical practices, conventions, roles, responsibilities, and performance measures  |
|   | Telecom Infrastructure | Facilitate selection of high bandwidth telecommunication products and services  |
| 3 | Development Tools      | Facilitate selection of agile project management tools and interactive development environment  |
|   | High Context Meetings  | Facilitate selection of high context agile project management and development meetings  |
|   | Coordination Meetings  | Facilitate selection of meetings and forums for regular communications between site coordinators  |
|   | F2F Communications     | Facilitate selection of methods for maximizing periodic face to face interactions and collaboration   |
|   | Performance Management | Facilities selection of methods for process improvement, problem resolution, conflict management, team recognition, product performance, and customer satisfaction                |

Maholtra, A., Majchrzak, A., & Rosen, B. (2007). Leading virtual teams. *Academy of Management Perspectives*, 21(1), 60-70.

Hunsaker, P. L., & Hunsaker, P. L. (2008). Virtual teams: A leadership guide. *Team Performance Management*, 14(1/2), 86-101.

Fisher, K., & Fisher, M. D. (2001). *The distance manager: A hands on guide to managing off site employees and virtual teams*. New York, NY: McGraw-Hill.



# Lean & Agile Proj. Mgt. Metrics

- ❑ Agile metrics include trust/communication principles
- ❑ Lean metrics align lean principles & agile practices
- ❑ Flow metrics embody advanced lean principles

| Agile Values               | Agile Metrics  | Lean Pillars           | Lean Metrics  | Flow Metrics  |
|----------------------------|--|------------------------|---|---|
| Individuals & Interactions | <b>Empowered Teams</b> <ul style="list-style-type: none"><li>• Team competence</li><li>• Team motivation</li><li>• Team cooperation</li><li>• Team trust</li><li>• Team cohesion</li><li>• Team communication</li></ul>  | Respect For People     | <b>Relationships</b> <ul style="list-style-type: none"><li>• Customer relationships, satisfaction, trust, and loyalty</li><li>• Team authority, empowerment, and resources</li><li>• Team identification, cohesion, and communication</li></ul>                     | • Decentralization  |
|                            | Customer Collaboration   |                        | <b>Customer Interaction</b> <ul style="list-style-type: none"><li>• Interaction frequency</li><li>• Communication quality</li><li>• Relationship strength</li><li>• Customer trust</li><li>• Customer loyalty</li><li>• Customer satisfaction</li></ul>             | <b>Customer Value</b> <ul style="list-style-type: none"><li>• Product vision, mission, needs, and capabilities</li><li>• Product scope, constraints, and business value</li><li>• Product objectives, specifications, and performance</li></ul>                 |
|                            |  |                        |   | <b>Value Stream</b> <ul style="list-style-type: none"><li>• As is policies, processes, procedures, and instructions</li><li>• To be business processes, flowcharts, and swim lanes</li><li>• Initial workflow analysis, metrication, and optimization</li></ul> |
| Working Software           | <b>Iterative Delivery</b> <ul style="list-style-type: none"><li>• Iteration size</li><li>• Iteration number</li><li>• Iteration frequency</li><li>• Continuous iterations</li><li>• Operational iterations</li><li>• Validated iterations</li></ul>                            | Continuous Improvement | <b>Continuous Flow</b> <ul style="list-style-type: none"><li>• Batch size, work in process, and artifact size constraints</li><li>• Cadence, queue size, buffers, slack, and bottlenecks</li><li>• Workflow, test, integration, and deployment automation</li></ul> | • Control cadence<br>• Small batches  |
| Responding to Change       | <b>Adaptability &amp; Flexibility</b> <ul style="list-style-type: none"><li>• Organization flexibility</li><li>• Management flexibility</li><li>• Individual flexibility</li><li>• Process flexibility</li><li>• Design flexibility</li><li>• Technology flexibility</li></ul> |                        | <b>Customer Pull</b> <ul style="list-style-type: none"><li>• Roadmaps, releases, iterations, and product priorities</li><li>• Epics, themes, feature sets, features, and user stories</li><li>• Product demonstrations, feedback, and new backlogs</li></ul>        | • Fast feedback   |
|                            |  |                        | <b>Perfection</b> <ul style="list-style-type: none"><li>• Refactor, test driven design, and continuous integration</li><li>• Standups, retrospectives, and process improvements</li><li>• Organization, project, and process adaptability/flexibility</li></ul>     | • Manage queues<br>• Exploit variability  |

Womack, J. P., & Jones, D. T. (1996). *Lean thinking: Banish waste and create wealth in your corporation*. New York, NY: Free Press.

Reinertsen, D. G. (2009). *The principles of product development flow: Second generation lean product development*. New York, NY: Celeritas.

# Offshore Outsourcing Metrics

- ❑ Vashistha has complete guide to offshore outsourcing
- ❑ Strategic framework for evaluating offshore locations
- ❑ Offers metrics and data to support decision making

| Factors   | Subfactors                      | India | Phil | China | Canada | Lat Am | Ireland | Czech | Poland | Hungary | Russia |
|---|---------------------------------|-------|------|-------|--------|--------|---------|-------|--------|---------|--------|
| <b>Exogenous</b><br><br>Factors that define the characteristics of the country beyond influence of organization | <b>Geopolitical Environment</b> | ●     | ◐    | ◐     | ●      | ◐      | ●       | ●     | ●      | ●       | ◐      |
|   | <b>Government Support</b>       | ●     | ◐    | ○     | ●      | ●      | ●       | ●     | ●      | ●       | ○      |
|   | <b>Educational System</b>       | ●     | ◐    | ●     | ●      | ◐      | ●       | ●     | ●      | ●       | ●      |
|   | <b>Infrastructure</b>           | ◐     | ●    | ◐     | ●      | ●      | ●       | ●     | ●      | ●       | ◐      |
| <b>Catalyst</b><br><br>Factors that drive offshore service delivery in a country                                | <b>Cost Advantage</b>           | ●     | ●    | ●     | ◐      | ●      | ◐       | ◐     | ◐      | ◐       | ●      |
|   | <b>Language</b>                 | ◐     | ●    | ○     | ●      | ◐      | ●       | ◐     | ◐      | ◐       | ◐      |
|   | <b>Culture</b>                  | ◐     | ◐    | ○     | ●      | ●      | ●       | ●     | ●      | ●       | ◐      |
|   | <b>Timezone</b>                 | ○     | ○    | ○     | ●      | ●      | ◐       | ◐     | ◐      | ◐       | ○      |
| <b>Business</b><br><br>Factors related to direct advantages, supplier skills, and business issues               | <b>Labor Pool</b>               | ●     | ◐    | ◐     | ●      | ◐      | ●       | ○     | ◐      | ◐       | ●      |
|   | <b>Competency</b>               | ◐     | ◐    | ◐     | ●      | ◐      | ●       | ◐     | ◐      | ◐       | ◐      |
|   | <b>Quality</b>                  | ◐     | ◐    | ◐     | ●      | ◐      | ●       | ◐     | ◐      | ◐       | ◐      |
|   | <b>Attrition</b>                | ○     | ◐    | ○     | ●      | ◐      | ●       | ◐     | ◐      | ◐       | ●      |

Vashistha, A., & Vashistha, A (2006). *Offshore nation: Strategies for success in global outsourcing and offshoring*. New York, NY: McGraw-Hill.



# Costs and Benefits



- ❑ Unfacilitated virtual teams are less effective than F2F
- ❑ Offshoring saves about 25% due to lower labor costs
- ❑ Offshore savings vary based on leadership methods

| Variable        | F2F     | Virtual |
|-----------------|---------|---------|
| Team score      | 82%     | 78%     |
| Interactions    | 24.9    | 17.6    |
| Task effort     | 5.8 hrs | 7.1 hrs |
| Trust           | 84%     | 72%     |
| Cohesion        | 79%     | 66%     |
| Outcome sat     | 86%     | 78%     |
| Process sat     | 86%     | 76%     |
| Emergent leader | 60%     | 75%     |
| Free riders     | 2%      | 9%      |
| Deserters       | 0%      | 2%      |
|                 | 83%     | 74%     |

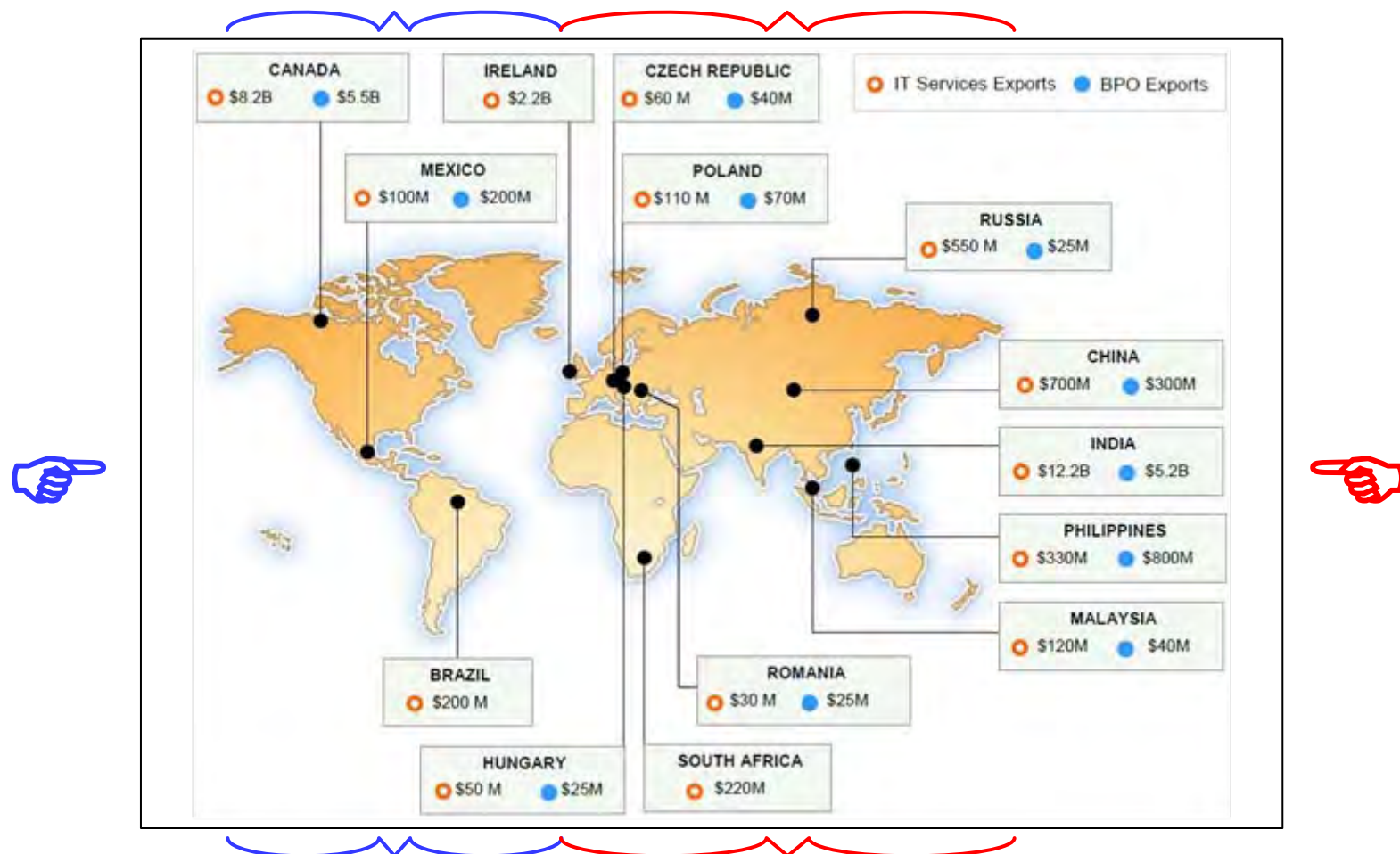
| Variable                  | %   | Cost    | Low    | Med     | High    |
|---------------------------|-----|---------|--------|---------|---------|
| Wage rate                 | 46% | \$17.5m | \$2.2m | \$4.8m  | \$8.7m  |
| Comm system               | 20% | \$7.6m  | \$1.0m | \$2.1m  | \$3.8m  |
| Infrastructure            | 7%  | \$2.7m  | \$0.3m | \$0.7m  | \$1.3m  |
| Transition and governance | 4%  | \$1.5m  | \$0.2m | \$0.4m  | \$0.8m  |
| Resource redeployment     | 1%  | \$0.4m  | \$0.0m | \$0.1m  | \$0.2m  |
| Training and productivity | 9%  | \$3.4m  | \$0.4m | \$0.9m  | \$1.7m  |
| Business continuity       | 3%  | \$1.1m  | \$0.1m | \$0.3m  | \$0.6m  |
| Advisory services         | 4%  | \$1.5m  | \$0.2m | \$0.4m  | \$0.8m  |
| Travel costs              | 3%  | \$1.1m  | \$0.1m | \$0.3m  | \$0.6m  |
| Currency fluctuation      | 3%  | \$1.1m  | \$0.1m | \$0.3m  | \$0.6m  |
|                           |     | \$38.0m | \$4.8m | \$10.5m | \$19.0m |

Vashistha, A., & Vashistha, A (2006). *Offshore nation: Strategies for success in global outsourcing and offshoring*. New York, NY: McGraw-Hill.  
 De Pillis, E., & Furumo, K. (2007). Counting the cost of virtual teams: Studying the performance, satisfaction, and group dynamics of virtual and face to face teams. *Communications of the ACM*, 50(12), 93-95.



# Current Trends & Directions

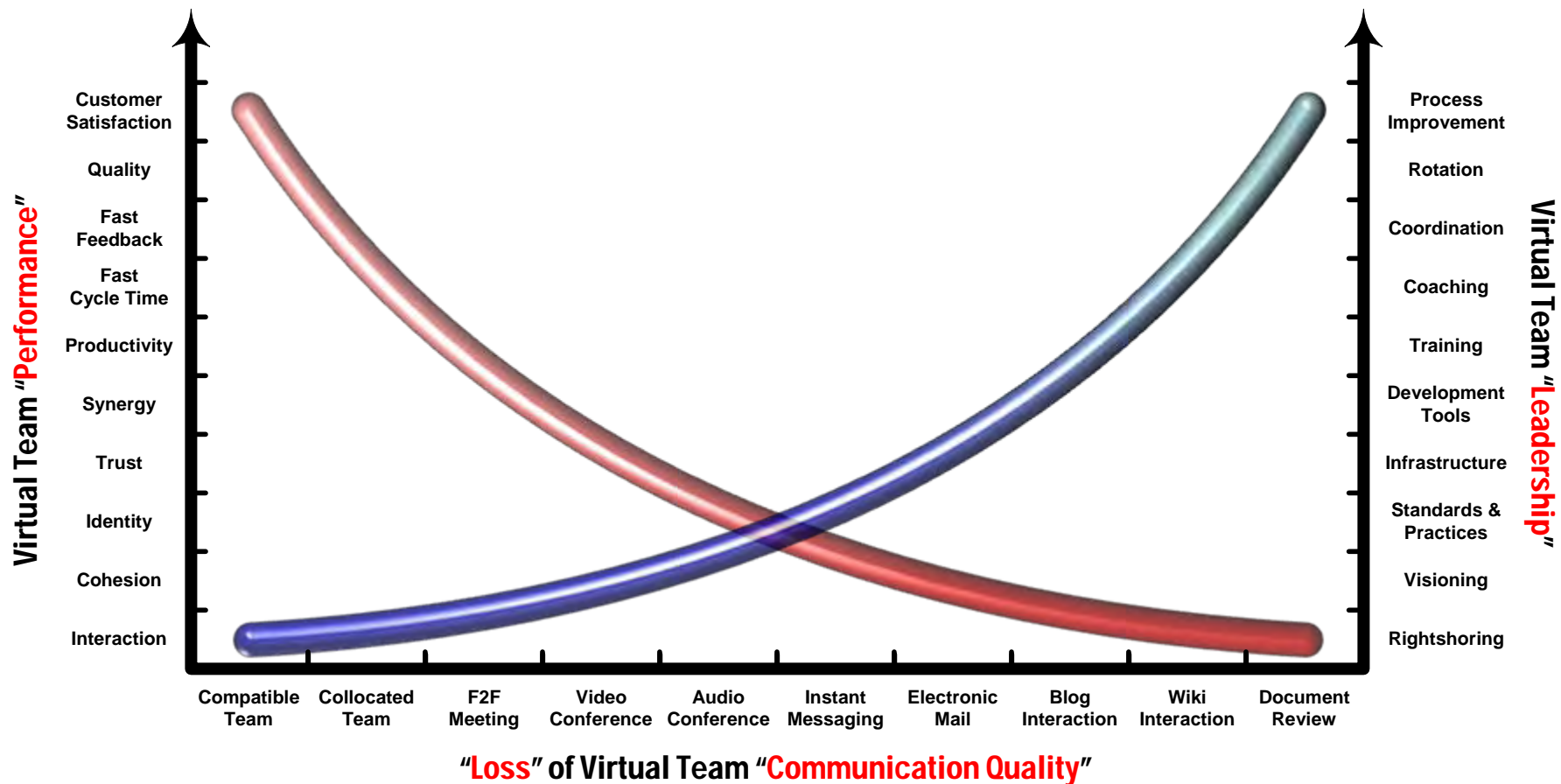
- ❑ Virtual teamwork is 21<sup>st</sup> century business model
- ❑ Opens the door to offshore/nearshore outsourcing
- ❑ Farshoring is normal but nearshoring is also popular



Gidwana, J. (2005). *Research summary: Mapping offshore markets update*. San Ramon, CA: NeoIT.

# Key Points & Takeaways

- ❑ Virtual teams communicate less undermining success
- ❑ A key is not to eliminate them in favor of F2F teams
- ❑ A better answer is to support them with leadership

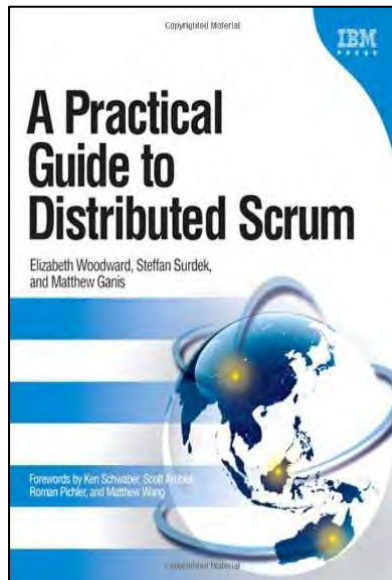


Rico, D. F. (2010). The paradox of agile project management and virtual teams. *Gantthead*.

Garton, C., & Wegryn, K. (2006). *Managing without walls: Maximize success with virtual, global, and cross cultural teams*. Lewisville, TX: MC Press.

# Books—Agile Virtual Teams

- ❑ Virtual teams are the last frontier in agile methods
- ❑ Numerous books emerging on agile virtual teams
- ❑ Books by Woodward & Eckstein among the best



Woodward, E., Surdek, S., & Ganis, M. (2010). *A practical guide to distributed scrum*. Indianapolis, IN: IBM Press.

Eckstein, J. (2010). *Agile software development with distributed teams: Staying agile in a global world*. New York, NY: Dorset House.

Upadrista, V. (2008). *Managing offshore development projects: An agile approach*. Oshawa, Canada: Multi-Media Publications.

Ambler, S., & Aguanno, K. (2010). *Adapting agile for use with distributed teams*. Oshawa, Canada: Multi-Media Publications.

Mite, D., Moe, N. B., & Ågerfalk, P. J. (2010). *Agility across time and space: Implementing agile methods in global software projects*. Berlin, Germany: Springer-Verlag.