Lean & Agile Project Management

for Large Distributed Virtual Teams

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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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What is Lean & Agile Proj. Mgt.?

- **Lean-Agile** (lēn-əj'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


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

Innovation Lifecycle

**Envision**
- Product Vision
- Product Architecture
- Project Objectives
- Project Community
- Delivery Approach

**Speculate**
- Gather Requirements
- Product Backlog
- Release Planning
- Risk Planning
- Cost Estimation

**Explore**
- Iteration Planning
- Technical Practices
- Team Development
- Team Decisions
- Collaboration

**Launch**
- Final Review
- Final Acceptance
- Final QA
- Final Documentation
- Final Deployment

**Close**
- Close Open Items
- Support Material
- Final Retrospective
- Final Reports
- Project Celebration

Iterative Delivery

**Technical Planning**
- Story Analysis
- Task Development
- Task Estimation
- Task Splitting
- Task Planning

**Development, Test, and Evaluation**
- Development Pairing
- Unit Test Development
- Simple Designs
- Coding and Refactoring
- Unit and Component Testing

**Operational Testing**
- Integration Testing
- System Testing
- Operational Testing
- Usability Testing
- Acceptance Testing

**Adapt**
- Focus Groups
- Technical Reviews
- Team Evaluations
- Project Reporting
- Adaptive Action

**Continuous**
- Standups, Architecture, Design, Build, Integration, Documentation, Change, Migration, and Integration

**Story Deployment**

## 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 vs. Lean Principles vs. Lean & Agile Practices vs. Flow Principles

<table>
<thead>
<tr>
<th>Agile Values</th>
<th>Lean Pillars</th>
<th>Lean Principles</th>
<th>Lean &amp; Agile Practices</th>
<th>Flow Principles</th>
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<tbody>
<tr>
<td>Empowered Teams</td>
<td>Respect for People</td>
<td>Relationships</td>
<td>• Customer relationships, satisfaction, trust, and loyalty&lt;br&gt;• Team authority, empowerment, and resources&lt;br&gt;• Team identification, cohesion, and communication</td>
<td>Decentralization</td>
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<td>Customer Collaboration</td>
<td>Customer Value</td>
<td>• Product vision, mission, needs, and capabilities&lt;br&gt;• Product scope, constraints, and business value&lt;br&gt;• Product objectives, specifications, and performance</td>
<td>Economic View</td>
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<td>Iterative Delivery</td>
<td>Value Stream</td>
<td>• As is policies, processes, procedures, and instructions&lt;br&gt;• To be business processes, flowcharts, and swim lanes&lt;br&gt;• Initial workflow analysis, metircation, and optimization</td>
<td>WIP Constraints &amp; Kanban</td>
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<td>Responding to Change</td>
<td>Continuous Flow</td>
<td>• Batch size, work in process, and artifact size constraints&lt;br&gt;• Cadence, queue size, buffers, slack, and bottlenecks&lt;br&gt;• Workflow, test, integration, and deployment automation</td>
<td>Control Cadence &amp; Small Batches</td>
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<td>Customer Pull</td>
<td>• Roadmaps, releases, iterations, and product priorities&lt;br&gt;• Epics, themes, feature sets, features, and user stories&lt;br&gt;• Product demonstrations, feedback, and new backlogs</td>
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<td>Perfection</td>
<td>• Refactor, test driven design, and continuous integration&lt;br&gt;• Standups, retrospectives, and process improvements&lt;br&gt;• Organization, project, and process adaptability/flexibility</td>
<td>Manage Queues/Exploit Variability</td>
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What are Virtual Teams?

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

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<tr>
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<th>Curseu 2008</th>
<th>Schlenkrich 2009</th>
<th>Ahuja 2010</th>
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<td>F2F vs electronic collaboration</td>
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<td>Similar vs different hours</td>
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<td>Similar vs diverse culture</td>
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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

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<td>Improved productivity</td>
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<td>Better work life balance</td>
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<td>Improved business advantage</td>
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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

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What is the Paradox?

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

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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

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

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

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.

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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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

SECURITY
Information security is established to protect project information

SUPPORT
24x7 infrastructure support is available

INTERNET
Broadband Internet is leased and utilized

SOFTWARE
Synchronous and asynchronous tools are selected

SERVERS
Dedicated servers are established for project information

LAPTOPS
Entire team is provided with laptops for office and home use

MOBILE
Entire team is provided with cell phones, smart phones, tablets, etc.

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

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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

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

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

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

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

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

Reporting and Analytics
- Program Dashboard
- Project Dashboard
- Iteration Dashboard
- Burnup/Burndown Reports

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

http://www.versionone.com
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

### 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

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

### 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

### Multi-Team Management
- Organization Chart Mirroring
- Multi Level Project Hierarchies
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- Program, Feature, and Resource Rollup

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

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

http://www.rallydev.com
ScrumWorks

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

<table>
<thead>
<tr>
<th>Product Management</th>
<th>Real Time Custom Dashboards</th>
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<tbody>
<tr>
<td>• Project Milestone Management</td>
<td>• Velocity Charts</td>
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<td>• Epics for Project Scope Goals</td>
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<td>• Categorization using Themes</td>
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<td>• Business Weighting and ROI</td>
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<td>• Coordination of Multiple Projects</td>
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<td>• Manage and Track Overlapping Goals</td>
<td>• Print to User Story Cards</td>
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<td>• Shared Component/System Modeling</td>
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<td>• Full Access Control</td>
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<td>• Release Date Forecasting</td>
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<td>• Basic Burnup/Burndown Reporting</td>
<td>• Open Source Environment Integration</td>
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<td>• Canned and Custom Report Generation</td>
<td>• Issue and Defect Tracking Integration</td>
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<td>• Analysis of Planned vs. Actuals</td>
<td>• Support for Tool Plugins</td>
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### Extreme Planner

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

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<th>Multiple Project Support</th>
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<td>• Create a Story from an Issue</td>
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<td>• Theme and Story Template Reuse</td>
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<td>• Track Customer Support Requests</td>
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<td>• Transition Issues to User Stories</td>
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<td>• Notification Capture and Management</td>
<td></td>
</tr>
<tr>
<td>• Notification Viewing and Filtering</td>
<td></td>
</tr>
<tr>
<td>• User Selectable Notifications</td>
<td></td>
</tr>
</tbody>
</table>

http://www.extremeplanner.com
Mingle

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

Program Management
- Support for Multiple Projects
- Multi Project Status Tracking
- Multi Project Report Generation
- Resource Allocation and Management

Test Management
- Visual Defect Workflows
- User Story and Defect Traceability
- RSS and Email Test Alerting
- Wiki Support for Screenshots and Reports

Project Management
- Multi Agile Method Support
- Customizable Dashboards
- Workflow Generators
- User Management and Access Control

Project Collaboration
- Virtual Drag and Drop Card Walls
- Integrated Wiki
- RSS Feeds and Email Alerts
- Murmurs, Queues, and Comments

Release and Iteration Planning
- Hierarchical Card Trees
- Prioritized Card Ranking
- User Story Searching and Recall
- Global User Story Updating

Enterprise Support
- Application Life Cycle Management
- Integration with IDEs
- Integration with Versioning Tools
- Integration with Build/Deployment Tools

Tracking and Reporting
- Customizable Templates
- Customizable Tabs, Favorites, and Views
- Advanced Filtering, Properties, and Tags
- Burndown, Velocity, and Ad Hoc Reports

External Interfaces
- I/O from Common Data Formats
- Integration with External Databases
- Integration with Workflow Tools
- Integration with External Software

http://www.thoughtworks-studios.com
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

**Agile Planning and Tracking**
- Backlog Management and Prioritization
- Release and Iteration Planning
- Task Boards and Personal To Do Lists
- Impediments and Blockage Management

**Quality Assurance**
- Test Plan and Test Case Generation
- Automated Test Initiation
- User Story/Test Case Traceability
- Defect Tracking and Management

**Lean Development**
- Value Stream Mapping
- Kanban Boards
- Cumulative Workflow Diagrams
- Work in Process Limits

**Reports and Dashboards**
- Customizable Dashboards
- Release and Iteration Forecasting
- Release and Iteration Burndown Charts
- Task, User Story, and Iteration Progress

**Customization**
- Customizable Development Process
- Customizable User Roles and Terminology
- Customizable Navigation and Lists
- Customizable Fields and Other Attributes

**Collaboration**
- Customizable Email Notifications
- Content Sharing and Management
- Support for Multiple Content Types
- Integration with Synchronous Tools

**Integration**
- Web Services API
- Visual Studio and Eclipse IDE Integration
- Subversion, Bugzilla, JUnit, and Selenium
- Single Sign On Support

**Product Support**
- Customer Help Desk Portal
- Ideas and Issues Tracking
- Bug Reports Traceable to User Stories
- Full Customer Email Integration

http://www.targetprocess.com
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

### SPECIFIC TOOLS CURRENTLY USED

- Excel [52%]
- VersionOne [36%]
- Microsoft Project [30%]
- Jira/Greenhopper [29%]
- Other [22%]
- HP Quality Center [17%]
- Microsoft TFS [17%]
- In-house/Custom [17%]
- Google Docs [16%]
- Vendor Y [14%]
- Bugzilla [13%]
- IBM ClearCase [9%]
- Rational [7%]
- Vendor X [5%]
- XPlanner [5%]
- IBM Rational Team Concert [3%]
- Mingle [3%]
- Target Process [3%]

### Average Cost Per Year Over 5 Years

- Mingle [15,000]
- Rally Ent [10,000]
- OnTime [7,500]
- V1 Ent [7,500]
- TargetProcess [6,000]
- XPlanner [5,000]
- JIRA [4,000]
- AcuNote [3,000]
- Write [2,500]
- V1 Team [2,500]
- BaseCamp [2,500]
- Rally [2,500]

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Key Practices & Techniques
Key Tools & Technologies

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

### Visits & Rotations
- Face to Face Kickoff Meetings
- Customer and Leadership Visits
- Developer and Tester Rotations

### Sharing Progress
- Virtual Timezone Standups
- Localized Standup Meetings
- Virtual Daily Leadership Meetings

### Communication
- Web Applications
- Scrum
- Three Sites
- US, India, HK, and China
- 115 People

#### Status Reporting
- Agree on Development Practices
- Setup Wiki Process Repositories
- Share Templates and Artifacts

### Common Understanding
- Infrastructure Needs
- Regional Accommodations
- Product Visioning
- Virtual Daily Leadership Meetings

#### Communications
- Periodic Reporting Between Sites
- Following Up Meetings with Notes
- Up To Date Wiki Content Sharing

#### Product Visioning
- Periodic Visioning Meetings
- Localized Prototypes and Models
- Recorded Expert Videos

#### Infrastructure Needs
- Supply Laptops to All Personnel
- Supply Mobile Computing Devices
- Supply Internet Services

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

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

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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Introduction
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# Leadership Considerations

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

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


## 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

**Empowered Teams**
- Team competence
- Team motivation
- Team cooperation
- Team trust
- Team cohesion
- Team communication

**Customer Collaboration**
- Interaction frequency
- Communication quality
- Relationship strength
- Customer trust
- Customer loyalty
- Customer satisfaction

**Working Software**
- Iteration size
- Iteration number
- Iteration frequency
- Continuous iterations
- Operational iterations
- Validated iterations

**Responding to Change**
- Organization flexibility
- Management flexibility
- Individual flexibility
- Process flexibility
- Design flexibility
- Technology flexibility

### Lean Pillars

**Respect For People**

**Continuous Improvement**

### Agile Metrics

**Value Stream**
- As is policies, processes, procedures, and instructions
- To be business processes, flowcharts, and swim lanes
- Initial workflow analysis, metrication, and optimization

**Continuous Flow**
- Batch size, work in process, and artifact size constraints
- Cadence, queue size, buffers, slack, and bottlenecks
- Workflow, test, integration, and deployment automation

**Customer Pull**
- Roadmaps, releases, iterations, and product priorities
- Epics, themes, feature sets, features, and user stories
- Product demonstrations, feedback, and new backlogs

**Perfection**
- Refactor, test driven design, and continuous integration
- Standups, retrospectives, and process improvements
- Organization, project, and process adaptability/flexibility

### Lean Metrics

**Relationships**
- Customer relationships, satisfaction, trust, and loyalty
- Team authority, empowerment, and resources
- Team identification, cohesion, and communication

**Customer Value**
- Product vision, mission, needs, and capabilities
- Product scope, constraints, and business value
- Product objectives, specifications, and performance

**Flow Metrics**

- Decentralization
- Economic view
- WIP constraints
- Kanban
- Control cadence
- Small batches
- Fast feedback
- Manage queues
- Exploit variability

---

### Offshore Outsourcing Metrics

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

<table>
<thead>
<tr>
<th>Factors</th>
<th>Subfactors</th>
<th>India</th>
<th>Phil</th>
<th>China</th>
<th>Canada</th>
<th>Lat Am</th>
<th>Ireland</th>
<th>Czech</th>
<th>Poland</th>
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<td>Geopolitical Environment</td>
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<td>Government Support</td>
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<td>Catalyst factors</td>
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</tr>
</tbody>
</table>

## 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

### Costs and Benefits Table

<table>
<thead>
<tr>
<th>Variable</th>
<th>F2F</th>
<th>Virtual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team score</td>
<td>82%</td>
<td>78%</td>
</tr>
<tr>
<td>Interactions</td>
<td>24.9</td>
<td>17.6</td>
</tr>
<tr>
<td>Task effort</td>
<td>5.8 hrs</td>
<td>7.1 hrs</td>
</tr>
<tr>
<td>Trust</td>
<td>84%</td>
<td>72%</td>
</tr>
<tr>
<td>Cohesion</td>
<td>79%</td>
<td>66%</td>
</tr>
<tr>
<td>Outcome sat</td>
<td>86%</td>
<td>78%</td>
</tr>
<tr>
<td>Process sat</td>
<td>86%</td>
<td>76%</td>
</tr>
<tr>
<td>Emergent leader</td>
<td>60%</td>
<td>75%</td>
</tr>
<tr>
<td>Free riders</td>
<td>2%</td>
<td>9%</td>
</tr>
<tr>
<td>Deserters</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>83%</td>
<td>74%</td>
</tr>
</tbody>
</table>

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

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

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

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