Lean & Agile
Enterprise Frameworks

Leading APM, Enterprise Scrum, LeSS, DaD, SAFe, & RAGE Programs

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Today’s Whirlwind Environment

- Overruns
- Attrition
- Escalation
- Runaways
- Cancellation
- Inefficiency
- High O&M
- Lower DoQ
- Vulnerable
- N-M Breach
- Reduced IT Budgets
- Obsolete Technology & Skills
- Overburdening Legacy Systems
- 81 Month Cycle Times
- Reduced
- Demand
- Customers
- Organization Downsizing
- System Complexity
- Technology Change
- Vague Requirements
- Work Life Imbalance


Global Project Failures

- Challenged and failed projects hover at 67%
- Big projects fail more often, which is 5% to 10%
- Of $1.7T spent on IT projects, over $858B were lost

- **Requirements defects** are #1 reason projects fail
- Traditional projects specify **too many requirements**
- More than **65% of requirements are never used at all**


What is Agility?

- Agility (ə-ˈji-lə-tē) Property consisting of quickness, lightness, and ease of movement; To be very nimble

- The ability to create and respond to change in order to profit in a turbulent global business environment

- The ability to quickly reprioritize use of resources when requirements, technology, and knowledge shift

- A very fast response to sudden market changes and emerging threats by intensive customer interaction

- Use of evolutionary, incremental, and iterative delivery to converge on an optimal customer solution

- Maximizing BUSINESS VALUE with right sized, just-enough, and just-in-time processes and documentation

What are Agile Methods?

- **People-centric** way to create innovative solutions
- **Product-centric** alternative to documents/process
- **Market-centric** model to maximize business value

Customer Collaboration
- Frequent comm.
- Close proximity
- Regular meetings
- Multiple comm. channels
- Frequent feedback
- Relationship strength

Contracts
- Contract compliance
- Contract deliverables
- Contract change orders

Individuals & Interactions
- Leadership
- Boundaries
- Empowerment
- Competence
- Structure
- Manageability/Motivation

Processes
- Lifecycle compliance
- Process Maturity Level
- Regulatory compliance

Working Systems & Software
- Clear objectives
- Small/feasible scope
- Acceptance criteria
- Timeboxed iterations
- Valid operational results
- Regular cadence/intervals

Documentation
- Document deliveries
- Document comments
- Document compliance

Responding to Change
- Org. flexibility
- Mgt. flexibility
- Process flexibility
- System flexibility
- Technology flexibility
- Infrastructure flexibility

Project Plans
- Cost Compliance
- Scope Compliance
- Schedule Compliance

What is Agile Project Mgt.?

- **A-P-M** (ā-pē-ēm): Light, flexible, collaborative, and adaptive; Market-centric project management model:
  - Sound, yet flexible process to manage projects under uncertainty, urgency, and a need for unique expertise
  - Values, principles, and practices to help project teams in coming to grips with a challenging environment
  - Managing the flow of human thoughts, emotions, and interactions in a way that produces business value
  - Rapidly and reliably creating value by engaging customers, continuously learning, and adapting
  - Lightweight, yet disciplined project management model for building high-quality technology-intensive systems

When to use Agile Project Mgt.?

- **Exploratory** or research/development projects
- **When fast customer responsiveness** is paramount
- **In organizations that are highly innovative/creative**

**Traditional Project Management**
- Predictable situations
- Low technology projects
- Stable, slow moving industries
- Low levels of technological change
- Repeatable operations
- Low rates of changing project performance
- Long term, fixed price production contracts
- Achieving concise economic efficiency goals
- Highly administrative contracts
- Mass production and high volume manufacturing
- Highly predictable and stable market conditions
- Low margin industries such as commodities
- Delivering value at the point of plan

**Agile Project Management**
- High levels of uncertainty and unpredictability
- High technology projects
- Fast paced, highly competitive industries
- Rapid pace of technological change
- Research oriented, discovery projects
- Large fluctuations in project performance
- Shorter term, performance based RDT&E contracts
- Achieving high impact product/service effectiveness
- Highly creative new product development contracts
- Customer intensive, one off product/service solutions
- HIGHLY volatile and unstable market conditions
- High margin, intellectually intensive industries
- Delivering value at the point of sale

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Dozens of Agile project management models emerged
Many stem from principles of Extreme Programming
All include product, project, & team management

APM - 2004 -
• Envision
• Speculate
• Explore
• Iteration
• Launch
• Close

eScrum - 2007 -
• Product Mgt
• Program Mgt
• Project Mgt
• Process Mgt
• Business Mgt
• Market Mgt

SAFe - 2007 -
• Strategic Mgt
• Portfolio Mgt
• Program Mgt
• Team Mgt
• Quality Mgt
• Delivery Mgt

LeSS - 2007 -
• Business Mgt
• Portfolio Mgt
• Product Mgt
• Area Mgt
• Sprint Mgt
• Release Mgt

DaD - 2012 -
• Business Mgt
• Portfolio Mgt
• Inception
• Construction
• Iterations
• Transition

RAGE - 2013 -
• Business
• Governance
• Portfolio
• Program
• Project
• Delivery

Agile Project Management (APM)

- Created by Jim Highsmith of Cutter in 2004
- Front-end visions and architectures and final QA
- Light project model wrapped around agile practices

Enterprise Scrum (eScrum)

- Created by Ken Schwaber of Scrum Alliance in 2007
- Application of Scrum at any place in the enterprise
- Basic Scrum with extensive Backlog grooming

Scaled Agile Framework (SAFe)

- Created by Dean Leffingwell of Rally in 2007
- Knowledge to scale agile practices to enterprise
- Hybrid of Kanban, XP release planning, and Scrum

Large Scale Scrum (LESS)

- Created by Craig Larman of Valtech in 2008
- Scrum for larger projects of 500 to 1,500 people
- Model to nest product owners, backlogs, and teams

Disciplined Agile Delivery (DaD)

- Created by Scott Ambler of IBM in 2012
- People, learning-centric hybrid agile IT delivery
- Scrum mapping to a model-driven RUP framework

Recipes for Agile Governance (RAGE)

- Created by Kevin Thompson of cPrime in 2013
- Agile governance model for large Scrum projects
- Traditional-agile hybrid of portfolio-project planning
Agile Performance Measurement

- **Burndown**
  - Work (Story, Point, Task) or Effort (Week, Day, Hour)
  - Time Unit (Roadmap, Release, Iteration, Month, Week, Day, Hour, etc.)

- **Cumulative Flow**
  - Work (Story, Point, Task) or Effort (Week, Day, Hour)
  - Time Unit (Roadmap, Release, Iteration, Month, Week, Day, Hour, etc.)

- **Earned Value Management - EVM**
  - Work (Story, Point, Task) or Effort (Week, Day, Hour)
  - Time Unit (Roadmap, Release, Iteration, Month, Week, Day, Hour, etc.)
  - CPI
  - SPI
  - PPC
  - APC

- **Earned Business Value - EBV**
  - Work (Story, Point, Task) or Effort (Week, Day, Hour)
  - Time Unit (Roadmap, Release, Iteration, Month, Week, Day, Hour, etc.)
Benefits of Agile Methods

- Analysis of 23 agile vs. 7,500 traditional projects
- Agile projects are 54% better than traditional ones
- Agile has **lower costs (61%)** and **fewer defects (93%)**

Agile vs. Traditional Success

- Traditional projects succeed at 50% industry avg.
- Traditional projects are challenged 20% more often
- Agile projects succeed 3x more and fail 3x less often

Benefits of Organizational Agility

- Study of 15 agile vs. non-agile Fortune 500 firms
- Based on models to measure organizational agility
- Agile firms outperform non-agile firms by up to 36%
### Who is Using Agile Methods

- **84% of worldwide IT projects** use agile methods
- **Includes** regulated industries, i.e., DoD, FDA, etc.
- **Agile now used for safety critical systems**, FBI, etc.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Org</th>
<th>Project</th>
<th>Purpose</th>
<th>Size</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Commerce</td>
<td>Google</td>
<td>Adwords</td>
<td>Advertising</td>
<td>• 20 teams&lt;br&gt;• 140 people&lt;br&gt;• 5 countries</td>
<td>• 1,838 User Stories&lt;br&gt;6,250 Function Points&lt;br&gt;500,000 Lines of Code</td>
</tr>
<tr>
<td>Shrink Wrapped</td>
<td>Primavera</td>
<td>Primavera</td>
<td>Project Management</td>
<td>• 15 teams&lt;br&gt;• 90 people&lt;br&gt;Collocated</td>
<td>• 26,809 User Stories&lt;br&gt;91,146 Function Points&lt;br&gt;7,291,666 Lines of Code</td>
</tr>
<tr>
<td>Health Care</td>
<td>FDA</td>
<td>m2000</td>
<td>Blood Analysis</td>
<td>• 4 teams&lt;br&gt;• 20 people&lt;br&gt;Collocated</td>
<td>• 1,659 User Stories&lt;br&gt;5,640 Function Points&lt;br&gt;451,235 Lines of Code</td>
</tr>
<tr>
<td>Law Enforcement</td>
<td>FBI</td>
<td>Sentinel</td>
<td>Case File Workflow</td>
<td>• 10 teams&lt;br&gt;• 50 people&lt;br&gt;Collocated</td>
<td>• 3,947 User Stories&lt;br&gt;13,419 Function Points&lt;br&gt;1,073,529 Lines of Code</td>
</tr>
<tr>
<td>U.S. DoD</td>
<td>Stratcom</td>
<td>SKIweb</td>
<td>Knowledge Management</td>
<td>• 3 teams&lt;br&gt;• 12 people&lt;br&gt;Collocated</td>
<td>• 390 User Stories&lt;br&gt;1,324 Function Points&lt;br&gt;105,958 Lines of Code</td>
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Agile Scaling at Google

- Google early adopter of agile methods and Scrum
- Google also uses agile testing at enterprise scale
- 15,000 developers run 120 million tests per day

- 440 billion unique users run 37 trillion searches each year
- Single monolithic code tree with mixed language code
- Submissions at head – One branch – All from source
- 20+ code changes/minute – 50% code change/month
- 5,500+ submissions/day – 120 million tests per day
- 80,000 builds per day – 20 million builds per year
- Auto code inspections – For low defect density
- 10X programming productivity improvement
- $150 million in annual labor savings (ROI as a result)

Micco, J. (2013). Continuous integration at google scale. Eclipse Con, Boston, MA.
Agile Leadership

- Power & authority delegated to the lowest level
- Tap into the creative nuclear power of team’s talent
- Coaching, communication, and relationships key skills

### Personal
- Don’t Be a Know-it-All
- Be Open & Willing to Learn
- Treat People Respectfully
- Be Gracious, Humble, & Kind
- Listen & Be Slow-to-Speak
- Be Patient & Longsuffering
- Be Objective & Dispassionate
- Don’t Micromanage & Direct
- Exhibit Maturity & Composure
- Don’t Escalate or Exacerbate
- Don’t Gossip or be Negative
- Delegate, Empower, & Trust
- Gently Coach, Guide, & Lead

### Project
- Customer Communication
- Product Visioning
- Distribution Strategy
- Team Development
- Standards & Practices
- Telecom Infrastructure
- Development Tools
- High-Context Meetings
- Coordination & Governance
- F2F Communications
- Consensus Based Decisions
- Performance Management
- Personal Development

### Enterprise
- Business Value vs. Scope
- Interactions vs. Contracts
- Relationship vs. Regulation
- Conversation vs. Negotiation
- Consensus vs. Dictatorship
- Collaboration vs. Control
- Openness vs. Adversarialism
- Exploration vs. Planning
- Incremental vs. All Inclusive
- Entrepreneurial vs. Managerial
- Creativity vs. Constraints
- Satisfaction vs. Compliance
- Quality vs. Quantity

Enterprise Continuous Delivery

- Created by Jez Humble of ThoughtWorks in 2011
- Includes CM, build, testing, integration, release, etc.
- Goal is “one-touch” automation of deployment pipeline

Agile Scaling Recap

- One must think and act small to accomplish big things
- Scaling agile projects up too large has consequences
- “Less” is “more” in the world of lean & agile methods

<table>
<thead>
<tr>
<th>What</th>
<th>How</th>
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<tbody>
<tr>
<td>Empowerment</td>
<td>Allow workers to help establish enterprise business goals and objectives</td>
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<tr>
<td>Alignment</td>
<td>Align and focus agile teams on delivering business value to the enterprise</td>
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<tr>
<td>Vision</td>
<td>Continuously communicate portfolio, project, and team vision</td>
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<tr>
<td>Size</td>
<td>Reduce portfolio, acquisition, product, program, project, and team size</td>
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<tr>
<td>Act Small</td>
<td>Act, behave, collaborate, communicate, and perform like small teams</td>
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<tr>
<td>Teamwork</td>
<td>Collaborate, communicate, and perform like a small highly-motivated team</td>
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<tr>
<td>Collocation</td>
<td>Act, behave, communicate, and perform like a collocated project team</td>
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<tr>
<td>Contracts</td>
<td>Collaborate and share responsibility instead of legal tripwires and punishments</td>
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<tr>
<td>Batches</td>
<td>Deliver the smallest acquisition batch possible and then reprioritize</td>
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<tr>
<td>Automation</td>
<td>Use Continuous Integration, Continuous Delivery, and DevOps</td>
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Conclusion

- Agility is the evolution of management thought
- Confluence of traditional and non-traditional ideas
- Improves performance by over an order of magnitude

Agile methods are ...
- Systems development approaches
- New product development approaches
- Expertly designed to be fast and efficient
- Intentionally lean and free of waste (muda)
- Systematic highly-disciplined approaches
- Capable of producing high quality systems
- Right-sized, just-enough, and just-in-time tools
- Scalable to large, complex mission-critical systems
- Designed to maximize business value for customers

“The world of traditional methods belongs to yesterday”
“Don’t waste your time using traditional methods on 21st century projects”