Agile vs. Waterfall

Why not both

Arnold Okkenburg PMP
Project Management

Agile Project Management

Traditional Project Management
Key Questions for Project Managers

1. Impact on Existing Project Methodologies:
   - How does agile impact existing project methodologies?
   - Is there still a need for traditional Waterfall approaches?

2. Finding the “Middle Ground”:
   - Is there a middle ground between agile and traditional Waterfall for companies that want to find a balance of control and agility?

3. Relationship to PMBOK:
   - How do I reconcile all the traditional PMI PMBOK knowledge that has been the foundation of project management for so long with many of the new ideas and principles that are the foundation of the agile movement?

4. Impact on the Future of Project Management:
   - What is the impact of the agile movement on the future of project management?
   - How does it change the project management role?
Agile Overview
Perceptions, Stereotypes and Reality
## Summary of Key Differences

<table>
<thead>
<tr>
<th>Requirements Definition</th>
<th>Plan-Driven (e.g., Waterfall)</th>
<th>Agile (e.g., Scrum)</th>
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</thead>
</table>
|                         | • Detailed Requirements Defined Upfront Prior to Starting Design/Development | • Only high-level Product Backlog Upfront,  
|                         |                               | • Detailed Requirements Defined as the Design Progresses |
| Planning Approach       | • Heavy Emphasis on Upfront Planning | • Rolling-wave Planning  
|                         |                               | • Defer Planning Decisions as long as possible |
| Scope Control           | • Scope Control is Essential to Controlling Costs and Schedules | • Scope is Expected to Change and Expand to Meet User Needs |
| Project Mgt Approach    | • Emphasis on Control of Cost and Schedules | • Emphasis on Flexibility and Adaptability to Satisfy Business Need |
Agile Perception vs. Reality

**Perception:**
- Traditional Waterfall Approach
- Typical Agile Approach

**Reality:**
- Plan-Driven Approaches
- Iterative Approaches
- Adaptive Approaches

**Increasing Agility**

**Common Perception:**
- Agile = Scrum or Some Other Standard Agile Methodology like XP
- If You’re Not Doing Scrum or another Standard Agile Methodology “by the book”, You’re Not Agile
Perception versus Reality – Process

**Perception**:
- TOO MUCH PAPERWORK
- LOTS OF CHECKLISTS
- CUMBERSOME PROCESSES
- THE PROCESS MANAGES YOU INSTEAD OF YOU MANAGING THE PROCESS

**Reality – You Can**:
- Define a Process that is Appropriate to the Level of Control Desired
- Design a Sufficient Level of Flexibility into the Process

**Perception**:
- NO PROCESS
- CHAOTIC, NO CONTROL
- WON’T WORK FOR COMPLEX PROJECTS
- UNPROFESSIONAL

*ADAPTED FROM BRIAN BOZZUTO’S PRESENTATION ON ALIGNING PMBOK AND AGILE – PMI WORLD CONGRESS 2009*
Perception versus Reality – Empowerment and Motivation

**PERCEPTION:**
- NO EMPOWERMENT
- UN-MOTIVATED TEAMS

**REALITY – YOU CAN:**
- Create a Level of Empowerment That Is Consistent With the Need for Control and the Capabilities of the Team
- Use Appropriate Management/Leadership Style to Maximize Motivation

**REality – You Can:**
- EMPOWERED TEAMS
- HIGHLY MOTIVATED TEAMS

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Perception versus Reality – Customer Collaboration

**Perception:**
- Emphasizes Documentation over Working Software
- Emphasizes Formal Contracts

**Reality – You Can:**
- Develop a Customer Collaboration Approach that Balances Customer Engagement Against Control of Requirements
- Use documentation to fulfill a real need

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Perception versus Reality – Planning

**Perception:**
- **Reset Focus on Following a Plan**

**Reality – You Can:**
- Use an Appropriate Level of Planning to Manage the Risks
- Combine Planning with an Appropriate Level of Change Control

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Agile Does Not Mean

1. • No planning
2. • No documentation
3. • No governance
4. • No process

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1. **Increased Focus on Successful Business Outcomes**
   - Development Approach is More Adaptive to Customer Needs and Customer is More Engaged

2. **Faster Time to Market**
   - Planning Process is Streamlined and Iterative Approach Accelerates Development

3. **Organizational Effectiveness and Employee Morale**
   - More Unified Approach to Product Development and Higher Level of Employee Engagement

4. **Higher Productivity and Lower Costs**
   - Eliminate Unnecessary Overhead and Bottlenecks and More Effective Utilization

5. **Potential for Higher Quality**
   - Testing is an Integral Part of Development and Early Validation of Customer Needs
Obstacles to Becoming Agile

1. Collaborative Cross-Functional Approach is Difficult to Achieve
   - Business Sponsors and Development Teams
   - Within the Development Organization

2. Significant Organizational Commitment May Be Required
   - Requires Active Participation by Business Sponsors
   - May Require Cultural Change
   - Training and Skill Level of Employees is Significant

3. Business Environment May Impose Constraints
   - Regulatory Requirements
   - Other Business Process Control Requirements

4. Project Management Approach Needs to Be Redefined
   - More Sophisticated Approach to Project Management
   - Design Methodologies to Fit the Business and Project Environment
Impact on Existing Methodologies

• How does agile impact existing project methodologies?
• Is there still a need for traditional Waterfall approaches?
Key Challenges

- Need to Rethink Project Management Approach to Provide an Appropriate Balance of Control and Agility for Each Project
  - A Large Percentage of Projects that Successfully meet Project Cost and Schedule Goals Fail to Achieve the Desired Business Outcome*
  - Excessive Emphasis on Control Creates Unnecessary Bureaucracy and Slows Time to Market

* FROM JAMIE CAPELLA CORPORATE EXECUTIVE BOARD STUDY – PRESENTATION TO PMI MASSBAY CHAPTER FEB 2010

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**Traditional Waterfall Approach**

**Define Requirements**

**Design/Develop Solution**

**Test/Implement Solution**

**Implement Change Control**

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**Control**

**Best**
- Controlling Changes to Requirements is Essential to Controlling Costs and Schedules

**Agility**

**Worst**
- Might be Unrealistic in an Uncertain Environment
- Inflexible and Not Easily Adaptable to Fit User Needs
- Unnecessary Overhead and Worst Time to Market

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Agile Approach

Limited High-level Requirements (Product Backlog)

Release Planning

Sprint (Iteration) Planning

Define Requirements

Design/Develop

Test

Sprint (Iteration) Planning

Define Requirements

Design/Develop

Test

Control

Agility

Worst

• Scope Creep - Encourages Customer to Define and Change Requirements as the Design Develops

Best

• Higher Quality - Customer is Directly Engaged Throughout the Design Effort as it Progresses
• Reduced Overhead and Faster Time to Market

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Finding the “Middle Ground”

- Is there a middle ground between agile and traditional Waterfall for companies that want to find a balance of control and agility?
Key Recommendations

**DON’T:**
- Force-fit your business and projects to a methodology
- Assume that you need to pick a single methodology

**DO:**
- Tailor the appropriate mix of methodologies and practices to fit your business and projects
**Key Recommendations (cont.)**

**DON’T:**
- DESTROY THE METHODOLOGY TO FIT A BUSINESS CULTURE YOU KNOW IS DYSFUNCTIONAL

**Do:**
- USE AGILE AS A CATALYST FOR POSITIVE BUSINESS CHANGE

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Where Will Your Company Wind Up?

**Business Environment and Culture**

- **Waterfall**
- **Agile**

**KEY QUESTIONS:**
- What’s the right balance of control and agility for our business?
- How much cultural change are we willing or able to undertake to create a more agile approach?
Relationship to PMBOK

- How do we reconcile all the traditional PMI PMBOK knowledge that has been the foundation of project management for so long with many of the new ideas and principles that are the foundation of the agile movement?
Relationship to PMBOK:

**KEY POINTS:**

- Both PMBOK and Agile Principles need to be adapted to fit the project.
  - One is a Tailor-Down Approach.
  - The other is a Tailor-Up Approach.
  - Figuring out how to mix the two together can require a lot of skill.

- Many of the perceived differences between PMBOK and Agile are in their interpretation and how they're applied, not in the principles themselves.

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**PMBOK**

- Over 500 pages of detailed guidelines.

**Business Project**

- "Tailor Down" Approach.

**Agile Principles & Practices**

- "Tailor Up" Approach.

- Broad Principles and very flexible and adaptive practices.
Relationship to PMBOK (cont.):

**KEY POINTS:**

- BOTH THE OVERALL PROJECT MANAGEMENT ASPECTS AS WELL AS THE DEVELOPMENT ASPECTS OF A PROJECT MUST BE ADDRESSED

- HOW WOULD YOU DECIDE ON THE APPROPRIATE DEVELOPMENT METHODOLOGY FOR THE SOFTWARE PHASE OF YOUR PROJECT WITHOUT FIRST CONSIDERING THE OVERALL INTEGRATION AND PLANNING APPROACH?*

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*ORIGINAL COMMENT FROM GLEN DELES ON LINKEDIN*
Impact on the Future of Project Management

1. What is the impact of the agile movement on the future of project management?
2. How does it change the project management role?
Impact on the Future of Project Management:

“In the past, some project managers may have acted as “cooks” – they know how to prepare a limited number of recipes (methodologies) and sometimes do it ‘by the book’.”

“In the future, being a good “cook” may not be good enough and more project managers may need to become “chefs”

They need to know how to prepare a much broader range of dishes and go beyond preparing standard recipes by the book to create highly customized and innovative “recipes” tailored to fit a particular business and project environment.

“The agile movement forces project managers to consider a much broader range of ‘recipes’ and ‘ingredients’ to ‘cook’ with and requires a much more customized and tailored approach.”

Original Cook vs. Chef Analogy from Bob Wysocki

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**Project Management Approach**

**Traditional Approach**
- Emphasis on Planning and Control

**Hybrid Approaches**
- Focus on Business Outcomes
- Ability to Mix-and-Match and Tailor Methodologies to Fit the Business

**Pure Agile Approach (e.g. Scrum)**
- Heavy Focus on Customer Value & Participation
- Emphasis on Team Facilitation
- Very Dynamic and Adaptive Approach

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Need to Rethink Definition of “Agile”

- Broader Definition of Agility*:
  
  - *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”*

*Definition of “Agility” from Dr. David F. Rico “Lean and Agile Systems Engineering”*
Some Common Questions of Agile?

Integration with Waterfall

Agile/Scrum Project Costs

Demand Management

Distributed teams vs. Co-location
Funding / Budgeting of Scrum Projects

- **Note:** Projects will still have the triple constraints of Schedule, Cost, Scope
  - Product backlog – provides your scope
  - Every team has a cost
  - 8 team members have avg cost of R300 per/hour
  - 80 hours in a 2 week sprint
  - Avg. cost per Sprint = R192,000
  - Dedicated team = predictable velocity (based on empirical evidence)
  - Velocity = How fast the team can go?
  - Amount of backlog that the team are getting through in an iteration
  - Budget and schedule can be worked out based on velocity
  - Product backlog = 200 Story points
  - Average is 20 Story Points per sprint
  - Therefore, 10 Sprints to complete project = 20 weeks or 5 months at a cost of R1,92 million
  - Based on your release plan, you can still price per deliverable
Integration with Waterfall Teams

- Requires high-level of collaboration
- Very similar to PMBOK – multiple phases
  - PMBOK requires a lot of up front planning
  - Agile, 5 levels of planning throughout the project
- Can set up Iteration 0:
  - Allocate teams
  - Determine iteration length
  - Review velocity
  - Dependencies
  - Risks
  - Scheduling and co-ordinating
- Reporting Progress
  - % complete
  - Burn-downs
  - Earned value
  - Parking lot diagrams

Figure 1 - PMI Project Management Processes

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Demand Management continued

**PLANNING**
- Unpack / Milestones
- Prioritization
- Do not worry about development resources
- You get 1 or more Scrum Masters

**BUILD**
- PM contracts work out to Scrum Master(s)
- Scrum Master and Team manages tasks
- Scrum Master provides PM with all needed / relevant information
- Scrum Master commits and manages deliverable timelines
- PM / BA – clarify / assist with requirements
- PM provides business communication
- PM enforces methodology
- Scrum Master enforces development processes and best practices

**IMPLEMENTATION**
- UAT – PM
- Deployment – PM & Scrum Master
- Release Notes – Scrum Master & Team
- Communication - PM
Distributed Teams vs. Co-location

- Co-location is a myth.
  - Collaboration is the key
  - Agile prescribes open communication – co-location facilitates this
- How do we manage challenges:
  - Increase collaboration through co-location. e.g.
  - Flying in key resources early as part of the team formation
  - Use of Technology
- Pure off-shore development models do not work – reduced level of collaboration

4 June 2012
Published by John Wiley and Sons publishing and was released in February 2011.

Biase De Gregorio – IQ Business