The Failure of the Off-shore Experiment: A Case for Collocated Agile Teams

Beth Cohen
Customers & Business Value Stage
1098 Experience report
Thursday 16:45-17:30
Work Experience Report Agenda

- The failure of off-shoring and distributed development
  - Real costs
  - Hidden dangers
- Case 1: Saving money by converting from a distributed to a collocated model
- Case 2: Using Agile to expose distributed team weaknesses
- Benefits of collocated Lean-Agile teams
Beth Cohen: Brief Biography

- President, Luth Computer Specialists, Inc.
- Consulting practice specializing in IT infrastructure strategy
- Over 25 years delivering IT infrastructure services
  - Software and computer research
  - Telecommunications
  - Manufacturing
  - Engineering and construction
- Currently teaching IT courses at several Boston area colleges
Beth Cohen: Brief Biography

- Hot Technology Thought Leader, The Advisory Council, an IT consultancy and think tank
- IT Operations Director for Dossia, a company building a portable medical record web portal
- IT Operations Director for Broadleaf Services, a data protection services company
- Director of Engineering IT for BBN Corporation, where she contributed to the initial development of the Internet
Mark Thias: Brief Biography

- Partner, Lean Agile Partners, Inc.
- 20 years of software engineering
- 8 years of Lean-Agile Project Management and Coaching
- Master Developer for BioNumerik Pharmaceuticals, Inc., where Scrum/XP practices were used to deliver a Clinical Trials Management System (CTMS) within the FDA regulatory guidelines
- Successfully incorporated Lean-Agile practices into large financial institutions seeking to improve time-to-market and software quality
Experience Report Takeaways

- Case studies do not support distributed teams as the most cost effective delivery model for IT projects.
- Collocated teams perform better on metrics such as:
  - Productivity
  - Quality
  - Performance
- Let’s rediscover collocated Agile teams for delivering real value for IT projects.
Distributed Development History

- Started in early 1990’s
- Originally used to offset shortages of local IT talent
- Used to cut IT development costs
- Chasing arbitrage rainbows
  - Canada, Ireland, Israel
  - Eastern Europe, Russia, India
  - China, Malaysia, Pakistan
Distributed Team Success Factors

- Improved global data communication networks
- Educated foreign workforces
- Lower wages
- English language skills
- Well defined and unchanging requirements – Waterfall development approach
- Strong company technical staff
Distributed Team Risk Factors

- Distance/number of time-zones crossed
- Number of team locations
- Size of the team
- Differing expectations for outcome
- Team members skill set mix
More Distributed Risk Factors

- Number of companies involved in project
- Unclear corporate loyalties
- Team organization
- Mixed messages about team leadership
- Sponsorship – who is paying the bills, and what are their objectives.

More than 75% of all distributed projects are considered failures
Case 1: 80 for 10

- Large financial institution
- High profile security application
- Aggressive delivery schedule
- Conversion of off-shore distributed team to collocated Agile team
- Results: 10% of the originally estimated FTE’s delivered project 75% faster
Original Project Team Estimate

- 80 developers distributed between three companies and two locations
  - 20 contractors on-site in England
  - 60 contractors in India
  - 1 full-time project manager
  - Part-time subject matter support from company staff analysts and architects
Project Barriers

- Uncooperative project sponsors invested in distributed approach
- Waterfall mindset
- Lack of knowledge of Lean-Agile methods by remote teams
- Agile project team was given “pilot” status but remote team was excluded
- Difficulty in committing project resources
Development Process - Before

Business/FA
Requirements -> Excel
Use Cases -> MS Word
Flows -> MS Visio

Developers
Excel, Visio, MS Word
Requirements -> Code

Testers
Test Scenarios -> MS Word
Tests
MS Word Tests -> QTP

FA
Excel, Visio, MS Word
Requirements -> DOORS

Maintenance
Code and Tests Updated
Requirements Repositories never updated
Final Team Configuration

- 10 full-time members
- 1 Scrum Master
- 5 software developers
- 1 functional analyst
- 1 Business subject matter expert
- 2 QA testers
Development Process -After

Business/FA Stories->QC

Business/FA Story->Test Scenarios->QC

Note: QTP is Quick Test Pro

Developers Test Scenarios->Code

Testers Test Scenarios->QTP Tests
QTP Tests->QC

Testers Story->Negative Test Scenarios->QC

Note: All requirements assets stored in Quality Center (QC)
Evangelizing Agile Methodologies

- Team includes customers, FA, developers and testers
- Maintaining close collaboration between product owners, developers and testers is essential
- Each team member is cross-functional
- Empower core team to make all decisions.
- Shared work space for maximum team communications
Evangelizing Agile Methodologies

- Shared access to tools
- Developers estimate the backlog
- Iteration planning a joint effort between all team members
- Deliver working software in 2-4 week iterations
- Continuous integration
Evangelizing Agile Methodologies

- Ensure test and requirements 100% in sync
- Do frequent customer project demonstrations
- Create opportunities to make changes before too much effort has been wasted
- Use automated unit level regression testing
- Incorporate automated functional testing
Evangelizing Agile Methodologies

- Capture delivery metrics during each iteration
- Display burn-down charts showing:
  - Team iteration speed (velocity)
  - Projected next release date
  - Projections for the overall work backlog
Case 2: Exposing Distributed Weaknesses

- Medical device company
- Embedded system for a medical device application
- Software needed to be extremely robust and reliable
- Results: 7 developers delivered 78% of the work and project was delivered on time
Original Team Configuration

- 50 developers distributed between two companies and three locations
  - 13 company architect employees in the US
  - 30 company developer employees in India
  - 7 collocated developers from independent consulting company
Project Barriers

- Eight months of work already with no working code to show
- Aggressive four month deadline to complete project
- No metrics or tracking of team productivity
- Uncooperative project sponsors invested in distributed approach
Approach to Reenergizing Project

- Identified stable requirements
- Broke the project into use cases with three week iterations
- All developers participated in estimation process based on ideal developer days (IDD)
- Created metrics to force accountability
Uncovering the Truth

- After the first iteration, team delivered less than 100 IDD’s
- 30 off-shore developers delivered less than 10% of their commitment
- Five developers delivered 0 IDD’s!
Uncovering the Truth

Lack of productivity of offshore team caused by:

- Limited hardware access
- Inability to integrate and test properly
- Untested code was checked-in
- Fewer than 15% of the offshore developers were competent in the programming language
Team Velocity Metrics

- Velocity improved over time

![Team Velocity](image)
Case 2 Results

- 7 developers delivered 78% of the work and project was delivered on time

<table>
<thead>
<tr>
<th></th>
<th>Manpower % of total team</th>
<th>IDD’s % of total team</th>
<th>IDDs delivered % of total team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot Shot, Inc. (7)</td>
<td>14%</td>
<td>18%</td>
<td>78%</td>
</tr>
<tr>
<td>On-shore Team (14)</td>
<td>26%</td>
<td>28%</td>
<td>58%</td>
</tr>
<tr>
<td>Off-shore Team (30)</td>
<td>60%</td>
<td>54%</td>
<td>27%</td>
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Results: Overall Team Performance

<table>
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<tbody>
<tr>
<td>Manpower % of total team</td>
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</tr>
<tr>
<td>% Total IDDs assigned</td>
<td>18%</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>% Assigned IDDs delivered</td>
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<td>58%</td>
</tr>
</tbody>
</table>

- **Hot Shot Inc**
- **On-shore Team**
- **Off-shore Team**
Distributed Team Weaknesses

- Attenuated team relationships
- Divided team loyalties between project sponsors and vendors
- Lack of project accountability from team members
Distributed Team Weaknesses

- Difficult communications
- Lack of transparency into team dynamics makes it difficult to track project progress
- Mismatched tools, skills and expectations
- Lack of training in Lean-Agile methodologies
Lean-Agile Best Practices

- Cooperation through collocation
- Close customer/developer partnerships are essential
- Short development iterations to identify issues before they become major problems
Lean-Agile Best Practices

- Maintain a focus on quality
- Continuous process improvement
- Create career growth and mentoring opportunities
Summary

- Distributed development has significant risks
- Lean-Agile methodologies minimize development risks
- Works best in collocated team environments
References


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Questions?