Distributed Agile: Growing a Practice Together

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Abstract

Elastic Path software and Luxoft present in this case study a successful distributed agile project using outsourcing (both near and off shore). Elastic Path and Luxoft are both experienced agile practitioners, which helped immensely insofar as neither client nor vendor had to learn how to do agile while trying to overcome the difficulties in implementing agile in a distributed manner. The case study describes how Elastic Path and Luxoft overcame the challenges of daily meetings, the lack of face-to-face interactions, rapidly changing requirements, and rapid team size scaling all across a fourteen hour time difference.

1. Introduction

We all know the payoffs that can result from employing the agile methodology and employing it well; from highly effective self-managed teams, increased flexibility, and real-time change management, to tight quality control and increased collaboration.

But what happens when you are already doing agile in-house and then want or need to expand your agile development circle to include an outsourcing partner that is 5,000 miles away?

Does the progress of the agile work get delayed, or even worse derailed? Does the spirit of team cohesion and collaboration shatter?

Elastic Path, a Vancouver, British Columbia-based company who is in the ultra competitive, fast-paced market of e-commerce software found that doing distributed agile with an outsourcing partner can do just the opposite. It can not only be a great shot in the arm to a project’s resource pool, but it can also provide true team scalability, pump-up expertise levels significantly, and heighten quality when you do it with the right team, tools and techniques.

2. Extending Agile To Meet Growing Business & Development Requirements

As a way of staying in step with a compressed time-to-market environment for new releases of their e-commerce platform, Elastic Path was already leveraging in-house agile development for maximum collaboration, heightened productivity and more flexible change management.

However, when they upped the ante by wanting to further accelerate a redesign of their web-based Commerce Manager product using agile, it became quickly apparent that they would need help beyond their in-house development team.

The mission at hand would include a pilot program to migrate Commerce Manager to the more advanced Eclipse RCP platform with the goal of giving online store owners a more flexible, feature-rich, and easily interfaced and maintained application for the management of product catalogs, sales orders, inventory, shipping, and customer profiles.

Now looking externally for help get the job done, Elastic Path wanted an outsourcing player with domain knowledge and Eclipse development expertise, as well as a seasoned partner in distributed agile.

3. Can Agile Do That?

Elastic Path’s set of requirements were not that easy to fulfill, as distributed agile resources are still relatively scarce despite the fact that agile can actually be even better suited to offshore project work as opposed to waterfall/sequential development.

Distributed development, especially outsourced projects, suffers from a number of challenges:

- Lack of visibility on project status
- Delay in feedback cycle
- Loss of business and technical contexts
- Lack of common infrastructure
- Decrease in communication bandwidth
- Higher documentation overhead
- Lack of trust
These challenges can be addressed using some common agile practices as you can see below:

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<tr>
<th>Practices</th>
<th>Benefits</th>
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<tbody>
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<td>Product demo at the end of iteration</td>
<td>Increased visibility</td>
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<td>Customer is Part of the team</td>
<td>Business Context</td>
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<td>Executable Requirements</td>
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<td>Short Sprints</td>
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<td>Test-Driven Development</td>
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In order to leverage these benefits and avoid potential pitfalls, it was critical for Elastic Path to have access to development and management talent that knew how to tackle the challenges that can come with distributed agile such as teams across multiple continents and time zones, the inability to meet face to face daily, language and cultural barriers, and a lack of trust that can result from an “out of sight out of mind” mentality if left unchecked.

4. Making Distributed Agile Work

While some standard in-house agile techniques could be successfully applied in the same way to a distributed agile environment, others required modification like information sharing, documentation levels, communication channels, status tracking & reporting and meeting frequency.

Starting off as a Pilot program to redesign the Commerce Manager product, Luxoft’s global team worked side-by-side with two Elastic Path groups sharing source code and a bug tracking system, and using the same iteration planning and daily status update processes. A Scrum based distributed agile development process was also used in the project with three week iterations.

Five tricks or techniques were developed to address the challenges derived from a distributed team:

i. Using Nearshore Resources
   Outsourcing in general and on an agile project in particular requires a lot of trust between client and vendor, nearshore resources onsite (or at least someone who can be contacted in the same time zone) that could meet regularly, face to face, were crucial to building trust quickly. A technical lead and Scrum Master were used to maintain both technical and organizational lines of communication open between Elastic Path and Luxoft at all times. These people worked slightly offset hours from the rest of the local team in order to provide crucial overlap communication time with a team that was fourteen hours ahead. The Scrum Master was also employed to coordinate manual acceptance and regression testing activities between the testing teams at Elastic Path and Luxoft.

ii. Strict Communication Plan:
   Daily scrums with the offshore team were reduced to three times weekly to reduce strain of late nights/early mornings for real time overlap and thereby allowing for longer overlap periods on those three days. E-mail was the last method of communication desirable but when necessary, feedback was always given within 12 hours even if only to say that they were working on the problem and would get back to them the next day. The networking and computing infrastructure was set up to enabled both offshore and local teams to work from home again to maximize overlap periods with instant messaging, VoIP teleconferencing and emails in the evenings.

iii. Shared Electronic Work Spaces:
   The team developed a customized SharePoint site for team contact information, status updates, announcements, discussions and documents. With a distributed team, there is a need for some information permanency which the shared workspace provided. In order to leverage shared workspaces and common code and bug systems, a common IT infrastructure was established between the Elastic Path and Luxoft networks, overcoming many technical and security hurdles. An offshore team on an agile project requires local support of shared development servers, essentially requiring 24x5 client development infrastructure support.
iv. **Dealing with Three Time Zones:**
Teams were located in Vancouver (Elastic Path Office), Vancouver (Luxoft Office), Moscow (11 hours difference), Dubna (11 hours difference), and Omsk (14 hours difference). It was quickly determined that having the same team across three time zones was difficult bordering on insane. As Vancouver based people need to do both early morning and late evening calls. We found that teams are more effective if only two time zones are involved and split work accordingly.

v. **Asynchronous Retrospectives**
Retrospective sessions were held in each location with the comments and results posted to SharePoint and brought to the Elastic Path retrospective by the nearshore Scrum Master and technical lead so that the views of the offshore team could be brought to the overall team by proxy.

5. **It Is All About Having the Right People—In the Right Places and Get Them Talking**

To keep things moving smoothly beyond these techniques and tools, and at the heart of the success of the program, was having the right people, in the right places, playing the right roles.

The project was implemented by three teams: two teams from Elastic Path and one from Luxoft. The Luxoft team included nearshore people from Vancouver’s office and offshore resources in Russia. Additional offshore resources from a second Russian location where added to work on a separate sub-project at a later date.

The nearshore Scrum Master in Vancouver served as the primary interface to the Elastic Path leadership team; driving the technical planning, business process plans and goals, training, testing and measurement efforts. The Scrum Master for the Luxoft nearshore team also served on the Elastic Path Scrum of Scrums team to bring the information and recommendations back full circle. With the communication tools and protocols put in place, the Vancouver Scrum Master was able to fulfill all the requirements of a Scrum Master; removing roadblocks, shielding the team from prying eyes, arranging all meetings and demos, being aware of the current state of tasks, and keeping a tap on the personal and technical interactions of the team.

Further, the nearshore technical lead provided a similar linking role, but interfacing through Elastic Path’s architectural team and collaborating in real time with the company’s in-house developers and Luxoft’s offshore resources.

The technical lead gets involved in all design discussions, peer reviews complex areas of code, and is a resource for the team for all questions for areas of the product outside the team’s scope. The technical lead is now the link to the other Scrum teams through informal discussions and the architectural team.

Having two channels of communication with status and task commitment coming through the Scrum Master, and design and technical communication coming through the tech lead ensures faster turn around and efficiency when dealing with issues and rapidly changing requirements.

These roles were not the exclusive mode of contact between Luxoft and Elastic Path, in addition, contact information for all team members was posted on the project site and communications on all levels were encouraged throughout the project. The Scrum Master and technical lead were there to provide a bridge when necessary but did not discourage inter-team communication.
6. What we would do differently

Unfortunately at the beginning of the project there was no travel budget and teams did not have an opportunity to meet face to face until much later. The team grew very fast and scaling the Luxoft team to twenty plus people in a short time was a challenge with little time to do comprehensive training for new people. A much more gradual scaling of the team would have been much better. When the third location was added it should have been done within the same time zone as the other Russian location, managing work between 3 time zones should be avoided by splitting work properly between different locations.

We have not found a way to split work between teams in a way that does not require modifications to the entire codebase due to an architecture that is not easily separable. A refactoring of the code base for more modularity would be advisable.

7. The Payoff

As a result of the successful pilot and the creation of an offshore development centre, Elastic Path has benefited extensively from distributed agile. During peaks in the development cycle, the ability to scale resources rapidly and in either direction has been essential to releasing leading edge software on time and on budget. In a period of four months Elastic Path was able to start at a team of six offshore, grow to a peak of twenty-two, and return to a steady level of ten.

Elastic Path was also able to control cost over runs and react to the competitive market requirements by being able to draw on experienced resources thus adding a new dimension to the planning meetings. The ability to scale at a relatively low cost while maintaining development agility all lead to a shorter time to market and a competitive advantage by allowing quick response to changing market requirements.

On top of the market and development agility, using distributed agile reduced the risks involved in outsourcing through continuous feedback and regular demonstrations, higher quality, and a reduction in upfront effort and investment by making smart choices on the functionality and tasks assigned to the team.

8. Continuing Innovation

After the successful release of Elastic Path version 6.0, Elastic Path and Luxoft have set their sights on an ambitious addition to their agile toolkit, executable requirements. The team has started a project whose purpose is to both document the current functionality of the product as well as provide automated verification of the existing code base through the use of Fit (Framework for Integrated Testing).

In parallel with continuing development activities, an initiative to add a number of functional tests written using FITpro (an open source Fit development toolkit, http://fitpro.sourceforge.net developed by Luxoft) and these tests have been added to Elastic Path’s continuous integration system in order to provide instant feedback for a large refactoring activities that are underway.
The initiative is being led by the near shore Luxoft development lead who is working with the architectural team at Elastic Path to determine the targeted areas. The offshore development and test teams pioneered creating Fit tests for existing code base. Then the Elastic Path team was trained on Fit framework and moved use of Fit to the next level by further increasing test coverage of legacy code and adding tests for new functionality.

Now Elastic Path is changing its development process to create Fit tests for new functionality prior implementation.

9. Conclusion

Extending agile to a distributed model is not for the faint of heart as it can be a challenge but if you can construct the right team with the right skills and expertise, and leverage proven tools and techniques you can reap tremendous benefits in terms of scalability, productivity, cost management, risk reduction, and improved quality.

If we could single out one area that was crucial for success, it was the creation of a strict communication plan. By maintaining multiple lines of communication and rules around asynchronous communication, we found that you could lessen the constriction on the communication bandwidth that many time zones put on.

So go ahead … go forth and distribute agile with confidence and success!