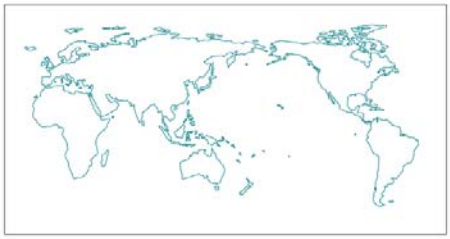
"WORKING IN DISTRIBUTED AGILE ACROSS THREE CONTINENTS"



This paper talks about the deployment of Distributed Agile best practices on a large globally distributed project for a large telecom vendor and the benefits such as better collaboration, Quality product and on time delivery that were realized in the process. The document also outlines the challenges and learning from this implementation of Distributed Agile for this team that was distributed across US, Europe and India.

WHITE PAPER

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1. PROJECT BACKGROUND

The product was based on unified messaging platform, which offered package of call answering and voice messaging capabilities. Messages could be accessed from a wide array of access devices including telephones, fax machines, or PC graphical user interfaces. The unified messaging product had been in existence for a decade and was developed with teams from US, Europe and India.
The total team strength, which included the product management, marketing and development teams, was about 90 people strong.

2. Before Agile adoption

The earlier releases of the project supported the finding of the Standish report [1], in terms of project delivery, projects were delivered, but they were delayed and had reduced features.

The product management team wanted improvement in the quality and the speed of the deliverables. At the end of the projects, the development teams normally had a long list of issues to be solved, and which had to be addressed during the support and maintenance phase.

3. Why Agile?

A general perception of Agile is that it is a process methodology that helps to mitigate the risks of volatile requirements. True, but agile helps much more than that; it helps teams in the following ways:

- To deliver software incrementally
- To cultivate lots of collaboration between teams
- To avoid wastage
- To deliver a high-quality product with some of the engineering practices such as Test Driven development, Continuous Integration and refactoring.

The project embraced Agile to improve the quality of the product by integrating early and having test early in the cycle with the focus on timely delivery and Improve collaboration between the team members across regions.

4. Transition from Waterfall to Agile

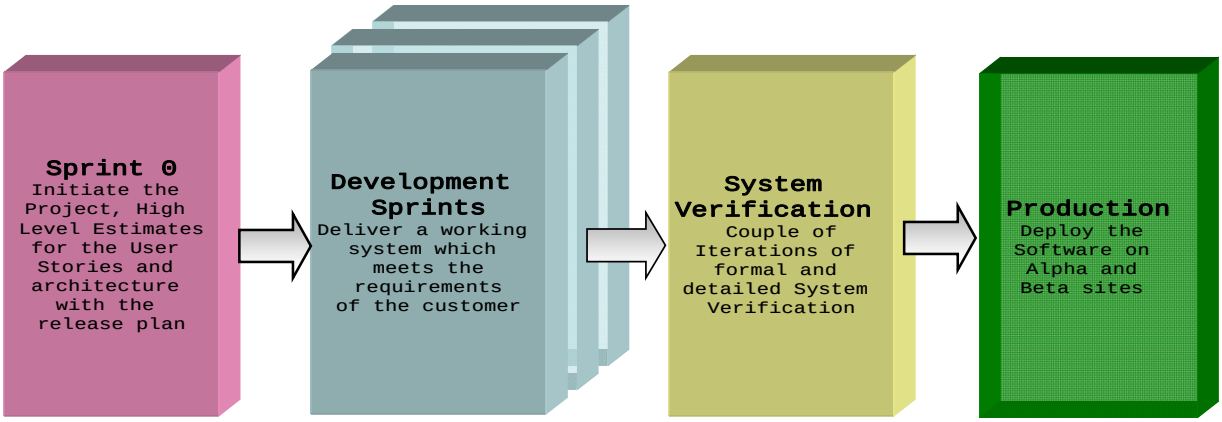
Changing the mindset of the team members from waterfall to Agile was a major challenge. Team members had to understand the principles of Agile such as shorter delivery cycles, Continuous Integration, Test first development and collaboration with team members.

Agile training sessions were organized for the teams in various locations; V-Con sessions were organized for the different locations so that all the teams understood the common agile execution approach.

Each team undertook Agile training sessions for getting the team members familiar with the nuances of Agile. The India team conducted a training program called the SCRUM week. This was a daily doze of agile sessions for 2 to 3 hours, which were dedicated to discuss important aspects of the agile execution process related to the project.

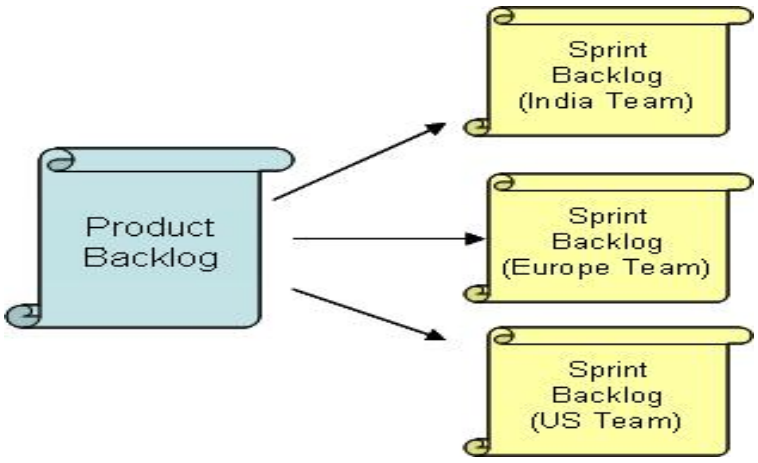
5. Agile approach for project execution

For the project, the execution model was formed based on SCRUM and some XP engineering principles such as TDD, Continuous Integration and Refactoring.



5.1 Sprint 0

During Sprint 0, there were discussions on the features with the product management team who acted as the customer for the development team. Visionlets were written which detailed out the understanding of the requirements and also had the high level architecture by the systems group. Dependencies with the other teams were also discussed, high level design with the high level estimates were defined for the features to be implemented. Based on the high level estimates and features, a release plan was created. The Release Planning meeting was held in the US, for which, key stakeholders from India and Europe traveled to the US and other team members from different regions joined them via a T-Con.



The product backlog was created based on the overall features of the unified messaging product rather than sub features for each team. Every team was a self independent team, which owned a part of the product independently. This was done to reduce dependencies with the other teams to a minimum. The sprint backlog for each team would be the part of the feature to be developed.

5.2 Development Sprints

The development sprints length was selected to be of 4 weeks and doneness criteria was defined which stated that all selected features would be implemented, unit tested, integration tested and acceptance tested with design and user technical documentation updated.

To sort out feature level dependencies pre sprint planning meeting was organized by the Scrum Master of the teams. After 2-3 sprints a demo of the completed features was conducted with business partners who were the end users in US and their feedback was added to the product backlog and prioritized appropriately as per the business value. These demos were done to engage the business partners in the development effort through feedback.

5.3 System Verification

There were 2 sprints allocated for system verification, this was done so as to perform a thorough regression testing of the system and to test the system for performance and stability factors keeping in mind the overall complexities. The system verification was done after the completion of the development sprints since.

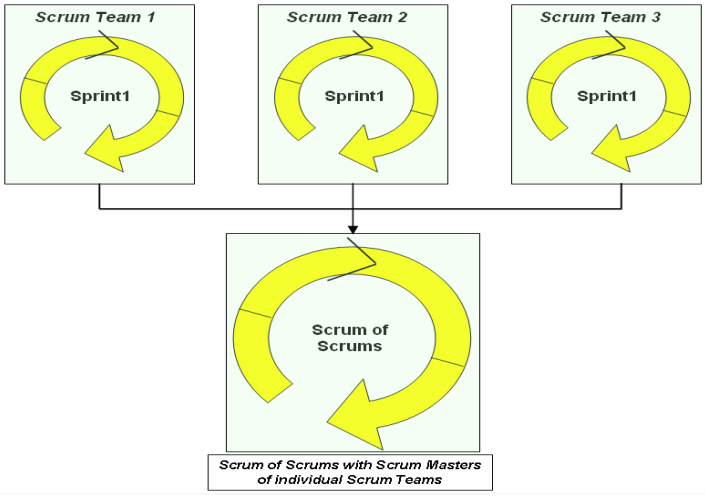
Agile was being done for first time and the product had huge inter dependencies within the teams. Compared to the duration of the system verification in the traditional approach, this was much smaller with better results.

5.4 Production

In the Production phase, the software was deployed on the Alpha and Beta sites so that the team could get feedback from the end customers on the product functionality, performance and stability of the software. After suitable results, the product was launched into the market.

The teams used XPlanner for Agile Project Management, which was used to track the project. Burn down charts was used to check on how much effort was remaining to meet the sprints goals. The user stories were uploaded during the start of the sprints, they were broken down into tasks and daily update by the task owners was done.

Each team was functioning as a Scrum team and was conducting its daily standup meeting. The agenda of the meeting was to answer the usual 3 questions. To synchronize with the different teams a Scrum of Scrum or Meta Scrum was conducted which was held thrice a week at the following timing: 9:30am MST (US), 2:30pm GMT, 8:00pm IST (India)



This meeting had all the Scrum masters from the various teams, product owner; project manager for the project and members from the product management.

The agenda of the meeting was the following:

- What has your team done since we last met?
- What will your team do before we meet again?
- Is anything slowing your team down or getting in their way?
- Are you about to put something in another team's way?

have an overlap of about 2-3 hours with the US team, the US team in return started coming early to office to have an overlap time with the India team. The Europe team had a good overlap period with both India and the US teams.

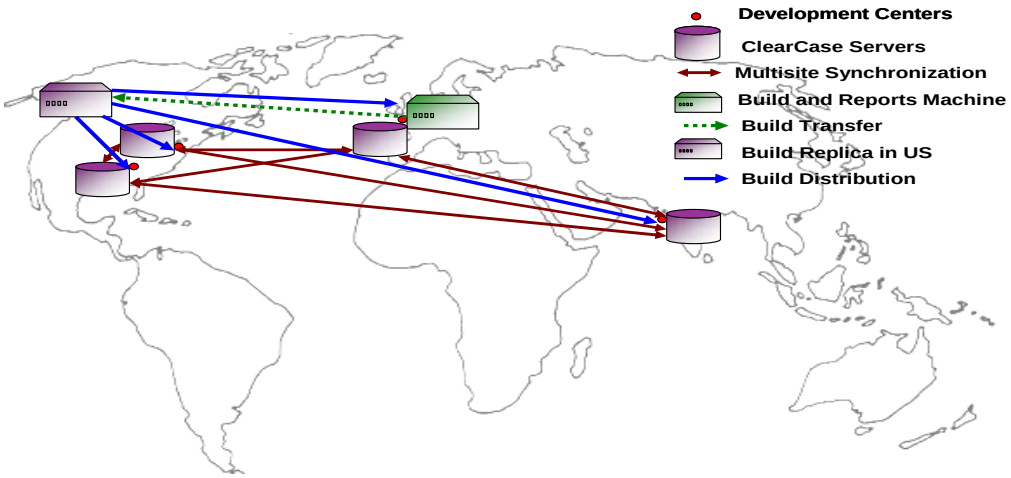
An overview of Scrum and XP practices adopted in the project

Practices	Extent Followed	Remarks
Product Backlog	Complete	Prepared by product management in consent with the end user and enhancement change request from previous release.
Product Owner	Complete	Representative from the management team
Daily Scrum Meeting	Complete	Scrum meetings were held every day.
Sprint Backlog	Complete	
Sprint Planning Meeting	Complete	Done at the start of the sprint with the representative of the product owner.
Sprint Review and Retrospective Meeting	Tailored	Review meeting with the product owner after every second sprint, Acceptance testing report was discussed with the product owner at the end of the sprint.
Scrum of Scrums	Complete	Used for cross functional team communication.
Release planning	Tailored	Held in US in which key stakeholders from India and Europe, other team members from different regions joined them on a T-Con.
Short releases	Complete	Duration of sprints was 4 weeks
Sustainable pace	Complete	Team's bandwidth is utilized for planned work hours.
Refactoring	Tailored	Followed on a need basis.
Test first development	Tailored	Parallel unit testing is performed. IT coverage is kept minimum 95% for sprint functionality.
Pair programming	None	Not Followed, though code reviews before check-in was preformed.
Coding standards	Complete	Uniform C++ and .Net coding standards followed.
Continuous Integration	Complete	Build performed on daily basis and manual testing of the build was done on at least thrice a week basis.
Collective Ownership	Complete	Team adapted to self disciplined manners. Interest towards ownership is exhibited throughout from sprint planning to execution.
Onsite customer	Partial	Product owner stayed in touch with development team through alternate day Scrum calls and phone calls. Product owner has direct access to XPlanner for real time update at any moment.

From the perspective of distributed Agile the two important aspects which need to be addressed are good communication and build infrastructure.

6. How was the build environment set up?

All the distributed teams used to access one source code base through Clear Case in the multisite mode, all the teams had a local clear case server which synced up with the main server located in Europe at an interval of every 5 minutes. Due to the large existing code base and enhancements over it, building code on every check-in was not possible since every build would take about 6 hours to finish. Based on this the team planned for a single build which was triggered at 4.00 am GMT so that when the build was completed,



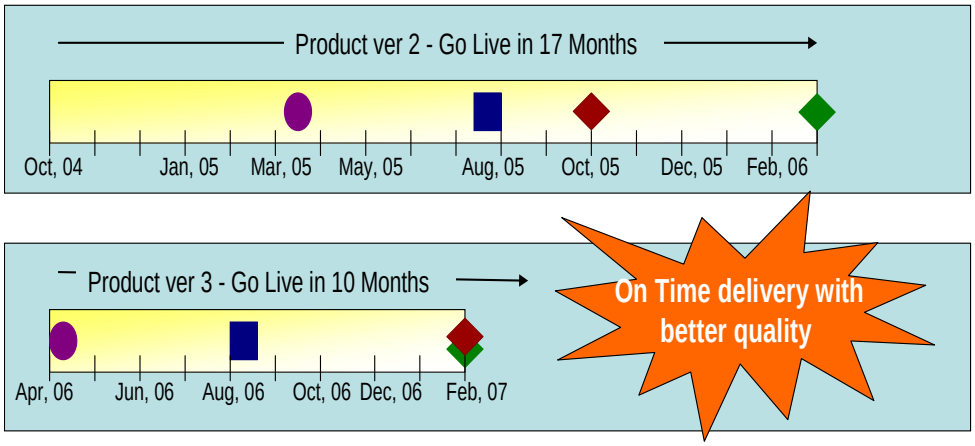
India based team would be in the middle of their day, Europe team would have just started their day and the US team would be getting the build and test results by the time they reached office in the morning. Once the build was completed the respective teams did a sanity testing on the builds for checking the integration issues

If there was a build break an email went to the team who had broken the build to fix it as soon as possible.

7. Benefits derived from the Agile adoption

After the Agile adoption there were a number of qualitative and quantitative benefits, some of them are as given below:

- Incremental productivity benefits reported by various teams, one team reported in the range of 16% to 51% with an average productivity increase of 30 %
- No slippage in deliver date as compared to nearly 50% slippage in previous release through traditional approach
- Lesser number of defects reported in the system verification as compared to the earlier releases
- Improved communication among the team members.
- Improved estimation from developers.
- Improved confidence and commitment among developers.
- More managed and organized project management.
- Higher motivation level of team as each day tasks are clear and dependencies are resolved in faster manner.



Legend:

●	Starting of Dev Test/FT	◆	Date for 'Go Live'
■	Starting of System Verification	◆	Go Live

8. Challenges

During the Agile project execution there were challenges which the team faced and addressed, some of the challenges are listed below:

- Communication with the different teams
- Empowerment or Self organizing
- Cultural - Get over with Waterfall
- Breakdown the stories into tasks and estimate the effort required to complete the stories for each sprints.
- Feature dependencies on the other teams
- Time Zone differences

9. Conclusion

This Agile adoption helped showcasing that distributed Agile can work and achieve benefits like on time delivery, better quality product and better collaboration within teams but to be successful there has to be commitment from all the team members and the stake holders for changing the style of working. The project teams should have good communication and build infrastructure which is of paramount importance for to the successful delivery of working software in short iterations. This Agile adoption has sown seeds for giving more agility to project execution.

10. References

[1] Chaos Report (1995), Standish Research Group.

11. About the Author

The Author has 10 years of experience in the software industry in various roles. Adept at defining customer-centric project management methodology drawn from agile methodologies such as XP and SCRUM.

He is a certified Scrum Master and Prince2 Practitioner; he also has cleared the exam on Rational Object Oriented Analysis and Design (OOAD) with UML

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