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# AGILE DISTRIBUTED DEVELOPMENT WITH DIFFERENT TIME ZONES

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Wipro had recently completed a Distributed agile transformation of a one hundred person team within a four month window. The engagement was a managed services model based where in this experience paper confers why agile process was chosen; how transformation was accomplished and what challenges came across and how retrospectives helped them to take over in a Distributed Multi located teams in BFSI sector situated at UK, US, Germany and India.



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WHITE PAPER



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## Abstract

Wipro had recently completed a Distributed agile transformation of a one hundred person team within a four month window. The engagement was a managed services model based where in this experience paper confers why agile process was chosen; how transformation was accomplished and what challenges came across and how retrospectives helped them to take over in a Distributed Multi located teams in BFSI sector situated at UK, US, Germany and India.

## Background

Client’s system worked on Single Settlement Engine - new generation(SSENG), a clearing and settlement system that aims to auto perform all the tasks associated with the settlement of a trade, ensuring its smooth settlement by performing actions like validating the trade, reconciling it with the counterparty, instructing to the appropriate settlement agent and getting its final settlement status. SSE (Single Settlement Engine) has been a reliable and robust system, sitting on a mainframe and handling large volumes of trades in European markets for IB Equities Operations. It is capable of handling products like equities, convertible bonds and warrants. In spite of its stellar performance over the years, lately there have been some concerns over its ability to handle large volumes at a reasonable cost. Changing of the market dynamics and increased competition adds to the pressure of building up an alternative platform that can deliver larger volume capacities at lower costs with better processing efficiency. It will be used for reporting securities trading system based in Frankfurt, Germany) and International Trades (all European markets excluding UK/Ireland) to FSA - Financial Services Authority.

## Problem Scenario

SSE NG - Short Service Engine New generation, was the outcome of this strategic decision to build the alternative. In spite of SSNG stellar performance over the years, lately there had been some concerns over its:

- Ability to handle large volumes at a reasonable cost.
- Changing of the market dynamics and
- Increased competition adds to the pressure of building up an alternative platform that can deliver larger volume capacities at lower costs with better processing efficiency.

Wipro was tasked by one of the major Banking and Financial sector company to deliver the IT services in a managed services mode. As part of a Managed Service, Offshore Working would have leveraged to the full. Each project/service request undertaken by a Managed Service would aim to deliver an identified set of objectives. The program consisted of 80 to 100 people onshore – offshore team. The client wanted Wipro to be its strategic partner in creating the direction by Point of excellence in Securities Settlement area to enable new business opportunities and drive ongoing business growth and inspire new ideas. Apart from being strategic partners, the call also included to develop core competencies across multi locations by creating managed services model incorporating AGILE Distributed fashion, creating bank for domain and technical knowledge and improvising operation through lean principles.

## Derivative behind Agile

An Agile company building a large product and facing time-to-market pressure, needs to quickly double or triple productivity within a constrained budget. The different demographics and their existence gives well option to the companies in terms of saving the expansion cost and getting multi dimensional teams. Distributed Agile was only the solution if Agile practices are enhanced by capabilities of the outsourced

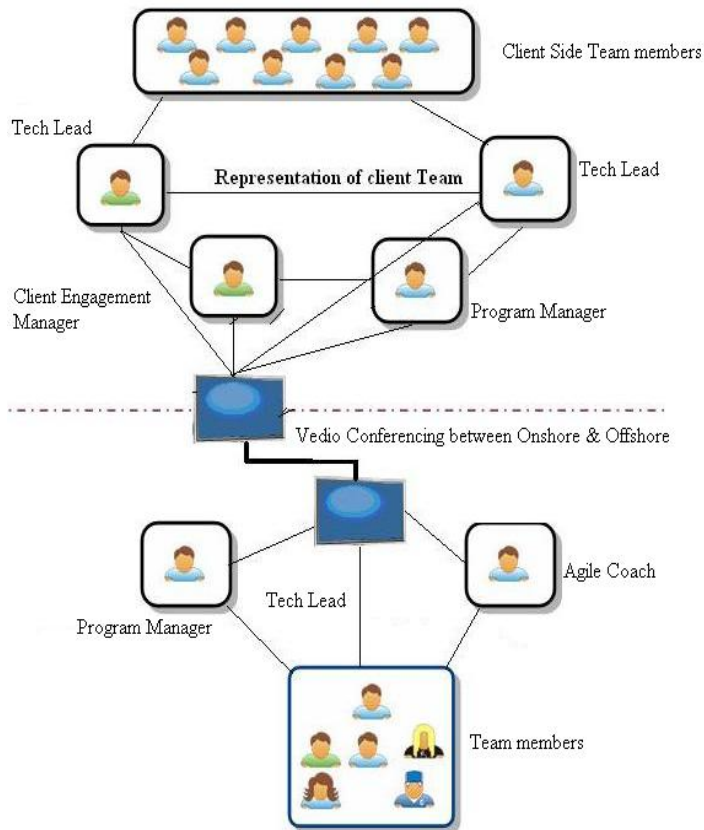


teams. The primary driver was enhanced by technical capability resulting in dramatically improved throughput of new application functionality. Cost savings are a secondary driver. The objectives perpetuated the following Agile principles substantiating value earned for the whole program:

- Significantly ramping up the team for distributed and complex environment
- Making it more efficient and effective
- Creating mature architecture by making more componentized
- Fully functioning and stabilized off shore Managed Service deliveries
- Solution to be implemented to both on and off shore users
- Significant increase in the amount of organizational and business change driven through focus on clients and controls
- Couple the application delivery with the Optimal Process Model
- Controlled cost factor and increase in ROI

The above objectives worked as a catalyst to go for Onshore/Offshore model in a distributed Agile way. The Managed Service model was expected to allow the programme to scale delivery faster, lead to a cost effective solution and also build closer links between SSENG delivery and offshore teams. The company was already using Agile at the client location but was very keen to percolate the same practice to Indian and then run successfully to other locations well. Bring synergies with in IT, Support & Operations to become a role model for the future engagement models at Wipro.

### Multi located teams in the Distributed Agile environment





## The Agile transition strategy

The transition from Onshore to Offshore was implemented in quartile drops with in the 2 stages:

### Stage One

- Managed Services Project
- Process Definition Mode
- Institutionalization of the process

### Stage Two

- Sustenance mode
- Improvisation of process with Quantitative Analysis

Milestones in the Project according to the Agile Flow

**Stage – One:** This was piloting of AS-IS process done in client location so as to get the team aware and accustomed with real Agile processes and its run in projects.

- Definition of the Process in the Program : Requirement gathering Agile projects, Planning ,Estimations in Iteration planning, Requirement/Design Workshop, coding Standards (Continuous Integration), Testing - ATF ( Automated Testing Framework), Pre release process, Release process, Standup Meetings (Distributed Agile)
- Training program for awareness and introduction to the process instantiated for Process related activities taking one project as the pilot and cascading the applicable processes and practices to other projects thereafter

**Stage – Two :** Scaling the Agile processes from to program level in distributed environment showcasing the Value earned through Agile by making it more effective and efficient from PMO orientation. The game plan included - Follow ups and Process Checks, Compliance Checks, Process Measurement, Surveys – questionnaires, quizzes, and Process Improvisations and Quantitative realization.

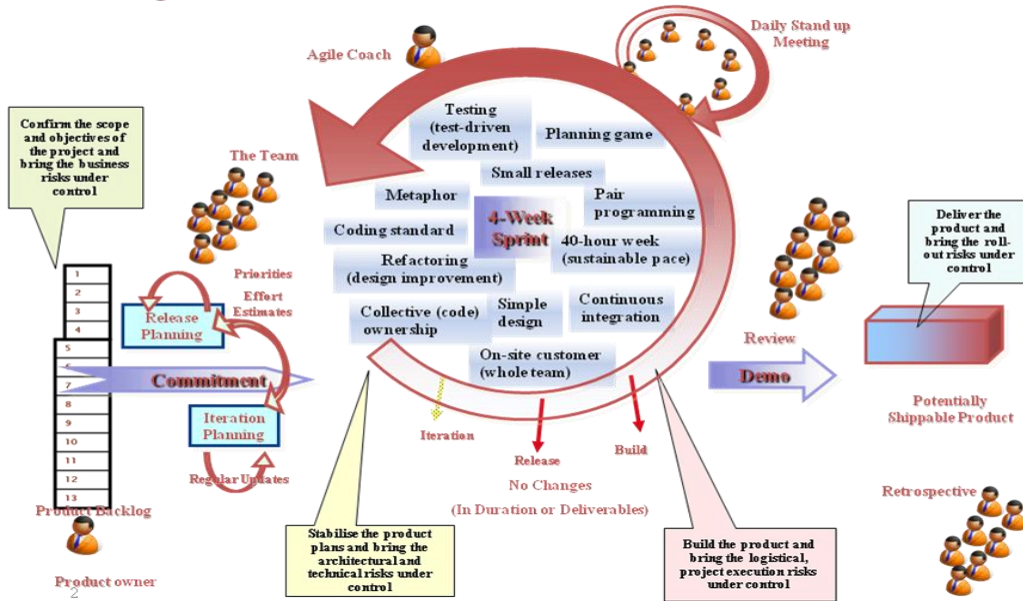
Agile principles and pattern followed:

The practices followed in the project were Scrum@XP so as to get maximum benefit at project management and engineering practices. Scrum teams were isolated across geographies and integrated by a Scrum of Scrums that means regularly across geographies. The thumb rule was pretty simple, as all projects adhered to the following key principles:

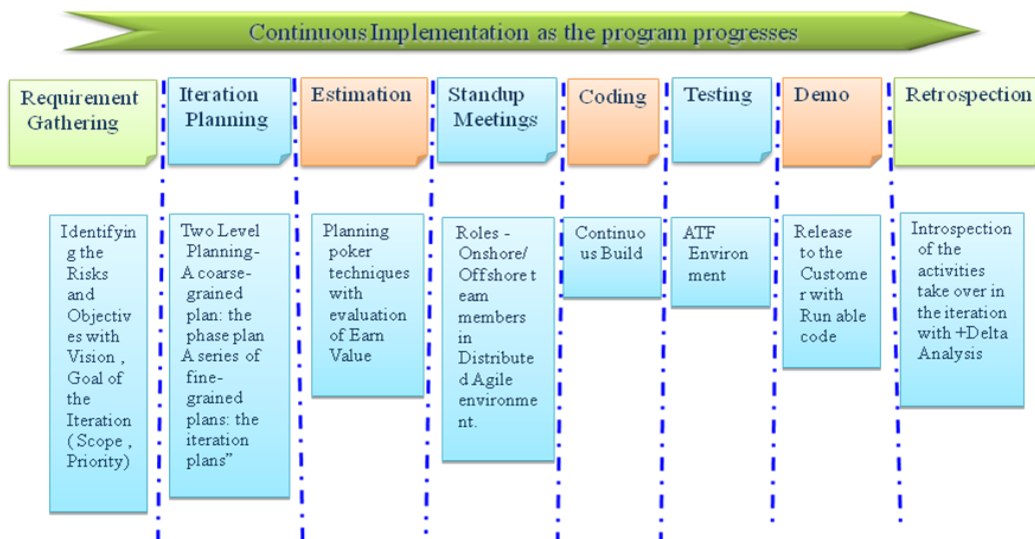
- Effort was organized into iterations
- The business process drives the delivery
- The development method was use case/scenario driven
- Iteration planning was risk based/collaborative
- Technical approach was architecture-centric



## The Agile Flow



The customer gives commitment at this level to work with development and testing teams multicoated avoiding any type of additional exertion pushed by client. All stake holders in the project were identified and assigned at multi location in accordance to skill matrix with their location coordinator (Project coordinator, BA, Tester, Architect, Developer, so on). The SPOC was maintained due to multi located teams for functional, technical and project management issues keeping in view the Distributed dependencies and cross functional operations. The multi located teams tackles with risk elements at the earliest in the projects so that the goal was hampered. The itemized list of features which has come out of extensive monthly grinding by the team was prioritized in the planning meeting and the task are taken among the multi located teams. The product owner and scrum masters keep an eye so as to avoid redundancy and keep the focus on maximum productivity.





Two levels of planning was done from client site to other locations from complexity estimation to task level estimations both are mapped and consolidated in product backlog drilling it to iteration backlogs subsequently. The teams work in feasible hours to accomplish the task taken by them. The issues, impediments and road blocks are discussed in the daily stand up meetings, posted on WIKI and other collaborative tools like JIRA so that speedy recovery can be ensured. The introspections were held in collocated teams and then the action points were taken in the main teams for Retrospectives by using the 5Y's technique in a collaborative way.

### **Practices followed**

Practices followed in the program were specific to the Onsite/offshore team environment mentioned below:

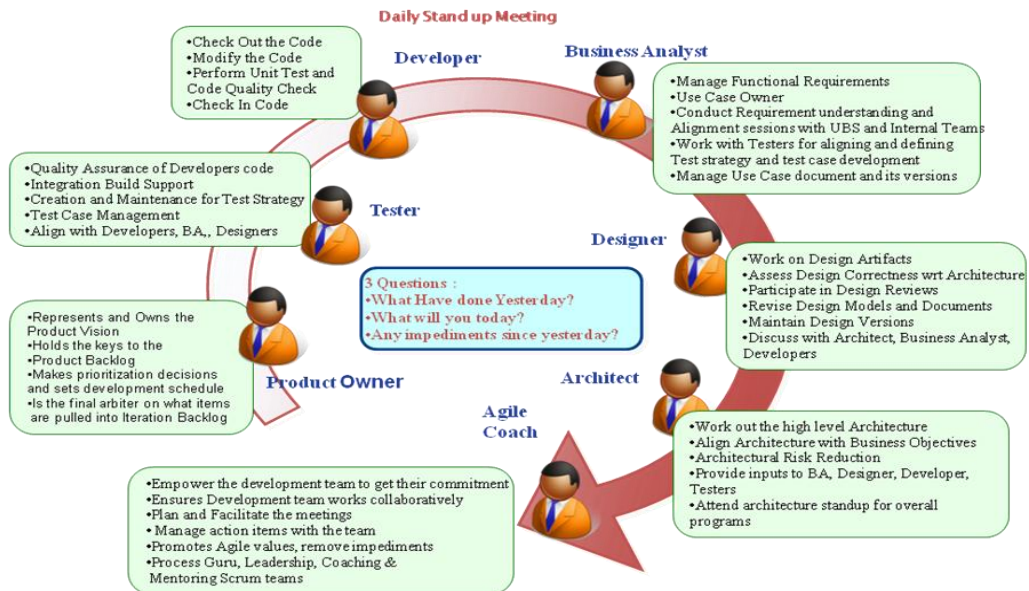
- *Requirement/Design Workshops in a distributed Agile model*
- *Poker planning at two levels for Iterative and Incremental development*
  - Complexity based estimation
  - Efforts based estimation
- *Test case driven development approach*
- *Collection of Key Metrics like velocity, slippage etc.*
- *Co-location of Project Team and business (where possible)*
- *Continuous- Test-driven development, Continuous Integration, Improvement*
- *Simplicity, focus with adaptive planning*
- *Require good mediators/coordinators*
  - To solve communication issues due to language and cultural differences
  - To suggest improvements continuously
  - To act as “harmonizers” - Ex: prevent productivity measurements and associated disastrous communications
- *To shield teams from the wearing effect of working from a distance*
- *Lots of travels/exchanges*
  - Hard to work with someone you haven't seen - Leads to misunderstandings
  - Help share knowledge at all levels
- *At all levels - Managers, Project Leads, Lead Developers/Gurus, Developers*
- *Lots of discipline*
- *To follow development methodology - JIRA issues and update, The Build Must Pass! (requires developing a build culture)*
- *Share activities between onsite/offshore*
  - Business Conception, Detailed Design, Testing, etc
  - Improve team spirit/job satisfaction
  - Allow offshore people to progress
  - Share the global knowledge and thus improve efficiency
- *Write functional test cases before development starts*
  - Helps transfer business knowledge
  - Easy way to know requirements have been understood
  - Can then be scripted/automated by testing team
- *Dedicated offshore support persons in each team*
  - To minimize question round trips

### **Pair Programming**

In the program locally available pairs were formed as per the availability of resources, the production coding was done with 2 programmers at 1 machine. The pair was coupled with tactical and strategic role with the dynamic pairing. This use to facilitate a continuous code review, continuous requirements & domain knowledge, reinforcement and continuous skills training which was shared at multi locations through communication channels.

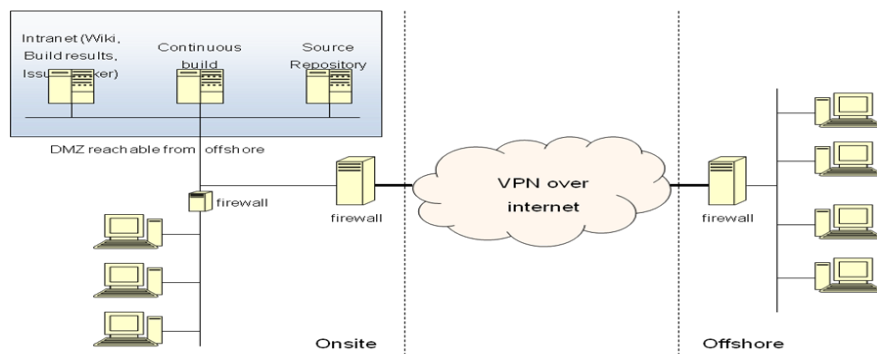


## A Day's life of Agile Team



## Continuous Integration

This practice encouraged members of the development team to integrate their work frequently. Each integration was verified by automated build tool (Eclipse) in order to detect any integration error as quickly as possible and show up on the Lava lamp and broadcasting on the WIKI and JIRA. Refactoring was strictly followed in the features teams so to improve the code structure while preserving its behavior. Productivity gains were substantial (10-30% is typical)



## Test Driven Development

The focus was on quality. Unit Test cases are developed in parallel with source code. Unit and System Tests are automated via test framework, and integrated with Continuous Integration script.

- Developers created tests first - before code
- Break a test, then write some code
- Developer used write unit tests
- Unit tests focused on basic unit of code - class/method.
- This made difficult tasks easier.





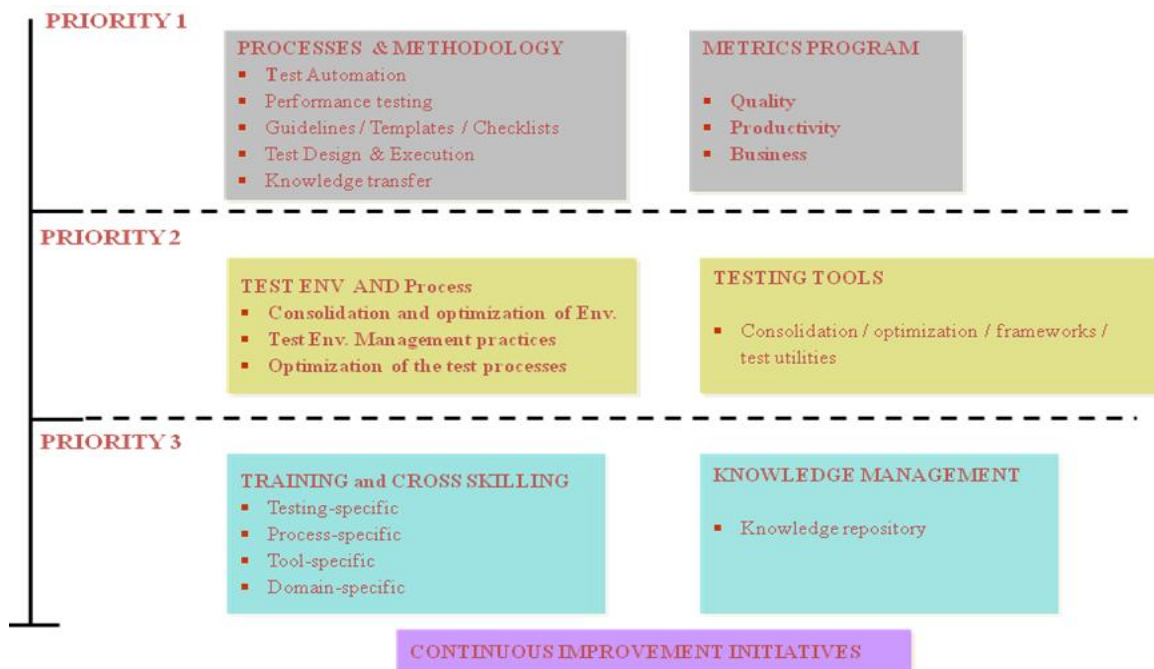
ATF was used for automation and performance with objective to automate the functional test, regression test cases conforming to business expectations in terms of performance for server side transactions and complex GUI transactions testing was used.

### Onsite Core Team

- Comprises Automation / Performance specialists / Technical specialists
- Performs knowledge transition, requirements gathering, analysis & validation for new projects/releases
- Was the point of contact for all clarifications (technical / functional) and business needs

### Offshore Core Team

- Mentors offshore flexible team on technology, testing techniques, applications, and domain
- Strategizes, plans and architects the testing activities for the applications under test
- Acts as shadow for another application to minimize the risk and knowledge loss
- Collects metrics reported and perform a causal analysis



### Key learning in the Project

- Active participation from client in the stand ups and SPOC was important.
- Limited and controlled changes in the scope of the project
- Proper impact analysis of the changes and change should come from SPC only.
- Once the change was accepted, reprioritize the scope so that it's not impacting the delivery dates.
- Proper planning of the detailed tasks of the iteration should be always be a religion.
- Team should have buffer of around 5% of the iteration capacity to tackle with the unknown issues/problems.
- As the iterations of 2 weeks each so have the risk mitigation for the non-availability of at least one team member.



- Onsite team should brief about the discussion at the end of the meeting as several times off shore team was unable to follow the discussion due to various reasons.
- Reviews should be part of the plan and around 10 - 15% of the construction time should be given to review and closure of the review findings.
- Sufficient lead time should be given for any new resource requirement.
- Proper induction of the new joiner.
- Training of the team in terms of the process what was being followed and different best practices.
- Daily Updation of the backlog by each team member

## Benefits of Agile Distributed Approach:

- **Trust Feedback and strong Communication:** Agile techniques actually helped to address and mitigate the usual challenges of a distributed / off-shored project: lack of visibility on project status, delay in feedback cycle, loss of business and technical contexts, decrease in communication bandwidth, higher documentation overhead, and mistrust.
- **Quick response to Changing Market:** Distributed Agile provides a competitive advantage by allowing quick response to changing market requirements
- **Creates Visibility and with the feedback for adjustments:** Short iterations, with a product demo and retrospective at the end, increase visibility of the project status and provide instant feedback as well as an opportunity for process adjustment.
- **Business context, visibility and Strong communications:** Customer involvement facilitates both a shared understanding of business context and communication between business people and the development teams.
- **Less Documentation and Trust:** Frequent team meetings with customers (clients) helps to build trust and improve communication on all levels and across different groups.
- **Instant feedback and Common infrastructure:** Continuous test and integration cycles tell you where you are in the project
- **Common Domain Language Better Quality:** Functional Test Driven Development helps in removing ambiguity from requirements and clearly communicating them to distributed teams. Fit (Framework for Integrated Testing) is a great open source tool.

## Conclusion

Distributed agile with little adaptation to Agile practices for multi located serves the key solution in implementing the managed services model by giving straight benefits like Information sharing, Level of documentation, Coordination between multiple teams, Communication channels, Status tracking & reporting and Frequency of meeting. Software Development is 80% communication and 20% software skills, milestones, and everything else. Get the communication right. By determining the target level for a project and then assessing the organization to determine the extent to which it is ready to achieve that target level of agility, the distributed agile manages to provide and coach with a realistic set of agile practices for the project to adopt. In this engagement for managed services model to sustain successfully, Distributed agile leveraged Rapid Business Value delivery.

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## About the Author

Gauravdeep is a practitioner of AGILE (SCRUM, XP, TDD) for more than 3 years now. Presently he is working for Wipro Consulting Services (WCS) as a Consultant, in India. Gauravdeep has worked with Craig Larmen (the lead Agile consultant) in Valtech, company in Bangalore, India where he was part of transformation of Valtech (India) from traditional company to Agile Valtech India, what is known today. He has more than 3 years of experience doing nothing but learning and implementing an Agile practices. He has attained the Certified Scrum Master Training from Pete Deemer (Vice President Product, Yahoo) last year (2007). He is member of Scrum Alliance community. He has done consulting and implemented scrum in the financial industry like Bank of Nigeria, Bank of Ghana, UBS, and Microsoft too. He has worked on distributed/outsourced Scrum and on implementing Scrum in a CMMI Level 5 company. Basically Gauravdeep is Masters in Information Technology with majors in Quality and Reliability from Latrobe University, Melbourne, Australia in 2002- 2004. He hails from Chandigarh, Punjab, India.

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