

## Chapter 96

# Agile Team Measurement to Review the Performance in Global Software Development

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### **ABSTRACT**

*This chapter is aimed at studying the key performance indicators of team members working in an agile project environment and in an extreme programming software development. Practitioners from six different XP projects were selected to respond to the survey measuring the performance indicators, namely, escaped defects, team member's velocity, deliverables, and extra efforts. The chapter presents a comparative view of Scrum and XP, the two renowned agile methods with their processes, methodologies, development cycles, and artifacts, while assessing the base performance indicators in XP setup. These indicators are key to any agile project in a global software development environment. The observed performance indicators were compared against the gold standard industry benchmarks along with best, average, and worst-case scenarios. Practitioners from six agile XP projects were asked to participate in the survey. Observed results best serve the practitioners to take necessary course corrections to stay in the best-case scenarios of their respective projects.*

### **INTRODUCTION**

The software organization has completely moved on to Global Software Development(GSD) (Chamundeswari, Srinivasan & Harini, 2018) as it tends to improve the productivity, in spite of the risk they undergo in terms of the practitioners, environment, culture, etc. Organization gives more priorities to these mainly for cost reduction. Practitioners also on their part has many risk to undergo to take up assignment in this GSD, but in spite of it they take up the assignment because of the money, relocation,

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etc. This software development practice undergo four stages (Pressman, 2005), such as forming, storming, norming and performing. Stage by stage the project progresses as a team for the product delivery. Due to agile approach the project team members can also progress in their skills to produce the best in them.

Though agile practices are many, taking the widely used aspect into concern, scrum and extreme programming is concentrated in this work. Agile, a Scrum process model (Bertrand, 2018) follow sprints or iteration to deliver a product. As the iteration flows it enables the customer to update their feedback and gets linked to next iteration delivery. Thus the incremental delivery for each iteration or sprint is achieved by this model. The team members co-operate to deliver the product in sprint as the project progress. Scrum has many key role members to execute a project development. It includes product owner, scrum master and team members. Each member has a role and task to be get committed on based on onsite or offshore project.

Extreme Programming (XP) is another agile framework that is widely used to produce high quality software by ensuring ease of development and quality of life for the team. XP is suitable when software requirements change dynamically, new technology is involved in a definitive timeline projects, team needs to be collocated for extended development, the selected technology lends itself for automated tests. It revolves around simplicity, communication, respect, courage and feedback. From a communication perspective, XP stresses on face to face communication through collocated teams. Simplicity involves keeping the design, coding simple so as to maintain easier support and revisions. Courage denotes bold decisions to doing what is right in the face of fear. Respect means demanding respect among the team members to freely give and accept feedback. In the feedback principle, teams identify areas of improvements and implement best practices.

The focus of the proposed work is inclined to analyze the key performance measure team members working in an Agile project environment in a Global Software Development(GSD)environment. Vital parameters that are important for the practitioners in various projects were chosen to survey the analyzes. Software production divisions follow many methodologies for GSD. Some organization follow scrum 100% while other follow extreme programming. Still it is open to follow any approach as far as the organization has the culture and practices deployed for ease of the productivity. Now, in this chapter, the two popular agile approaches scrum and extreme programming is taken up for discussion in the context of GSD practitioners. In this work, influencing parameters taken up to measure team member performance in XP is discussed.

## **BACKGROUND**

Diane et al. (2012) proved agile model increases co-ordination effectiveness. Meghann et al. (2012) worked on decision making principles in agile software development. Emily et al. (2013) investigated the team performance using the team factors. Fabian et al. (2014) suggested few factors to improve the developer's performance. Mikko et al. (2014) identified five communication wastes in global agile projects and how to mitigate them to increase development. Srikrishnan et al. (2014) highlighted the risk culture and practice in agile software development. Ashay et al. (2014) worked on the virtual team member contribution towards global projects. Georgieos et al. (2015) observation states agile improves employee and customer satisfaction.

Paul et al. (2015) concentrated on various aspects beyond technical skill sets for the project team members and listed 53 attributes to assess their performance. Rafael et al. (2016) proposed guidelines

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