Chapter 7
Conclusion

It is possible to tap into new global markets and make best use of the globally available talent, while potentially reducing the cost by using distributed agile development (DAD) approach. However, these benefits come with various risks like reduced likelihood of project success, increased delivery time, reduced team performance and increased dysfunction (Miller, 2008). Software development fraternity has to be exceptionally apt to find the solutions to the difficulties that have been created or enhanced by DAD approach.

The study explored the risk factors impacting DAD projects and the most appropriate risk management methods which can be used for controlling them. In order to facilitate DAD teams to perform effective management of related risks, a risk factor classification was created. The related risk factors were grouped to form risk areas and further broad risk categories namely, Group Awareness, External Stakeholder Collaboration, Software Development Life Cycle, Project Management and Technology Setup. These risk categories were then related to the Leavitt’s model of organizational change, in order to give an organizational perspective to our findings. The study further identified the risk factors which are most significant for DAD projects and the risk management approaches which are most frequently used in practice.

Along with creating a comprehensive risk factor classification and identifying the most important risk factors for DAD projects and the respective risk management methods, this study also gives an in-depth account of the conflicting properties of agile and distributed development, which eventually, instrumental in producing those risks. Spatial Distance (Geographic separation), Temporal Distance (time-zone differences), Language Barrier, Work/Development Culture and Large Project Scope are inherent to distributed development. These characteristics, when combined with principles and practices of agile approach like face-to-face communication, short iteration, continuous integration, customer involvement and others, create unique adversities in DAD projects. It was observed that spatial distance between the project stakeholders is responsible for maximum number of risks in DAD projects. Moreover, the risk factors which are
having higher ranks are also the ones which are related to spatial distance. Temporal distance also causes risks, since they lead to poor communication and coordination between the teams and the customers. Differences in work/development culture also causes some important risks which arise due to uncommon processes, standards or understanding of definition of done of features being developed by multiple agile teams. Few of the risks are due to language barrier or due to large scope of the project. Hence, DAD teams need to adopt practices to reduce the impact of spatial distance between the stakeholders. Besides, geographic dispersion other properties including temporal distance, work/development culture, language barrier and large project scope, which impact DAD project with lesser impact must also be considered for controlling the risks.

Most frequently used risk management methods which can reduce the impact of this contradiction between agile properties and distributed software development are suggested as part of the risk management framework. The practices suggested by this study, focuses on reducing the communication gap between the teams and increasing the interaction between the teams and the customer for product development. We suggest that enhancing collaboration between the teams and even other stakeholders like, vendors, third parties will lead to better results. In case of multiple customers or vendors, having a single person to take the responsibility and interacting with the team would help. Besides this, a strong release planning done by DAD teams can help them to overcome the challenges which may occur due to delays caused by external stakeholders like vendors, third parties etc. Following good engineering practices, like continuous integration, pair programming, backlog management, having a common definition of done becomes absolutely necessary for DAD teams. Regular team meetings like scrum-of-scrums, daily stand-ups and periodic collocation of teams help in removing the impediments in project success. Distribute teams should be preferably long-lived feature teams with minimum inter-dependencies, which helps in having increased trust, team-spirit and productivity. DAD teams must be supported with dedicated business analyst and they should be provided with appropriate communication infrastructure and tools. The recommendations for risk management are based on the views of the practitioners and hence may not represent the ideal set of practices for managing the identified risk.
Further, the study also suggests those risk factors which impact the ‘Time’ of project delivery, those which impact ‘Cost’ and those which impact the ‘Quality’ of the project. These results can be used by the practitioners to take into consideration those risk factors which impact a particular constraint (Time/Cost/Quality) which is most important for a particular project.

We contend that the findings of this study have rendered some very important insights on DAD projects. Complexity of DAD approach has many layers contributed by the difficulty of software development, agile and then distributed development. Traditional view of managing risks will be inapt to deal with this complexity and so, software engineering community has a mammoth work to understand, organize and formulate the mechanisms that can rule over this new world of software development.