A Scrum-based process to distributed projects in multidisciplinary teams

A Case Study

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ABSTRACT

It is a usual practice for software companies to develop their products using Distributed Software Development (DSD). Moreover, many times the software companies work with multidisciplinary teams to satisfy their customer demands. These multidisciplinary teams are composed of IT professionals and professionals from multiple areas not related to software development or IT. There are several problems associated with communication and information dissemination that severely compromise the software product development. This work presents a case study of a company that uses DSD. The Scrum-based process shown in this work promotes a communication improvement between the client company functional areas.

CCS CONCEPTS

• **Software and its engineering → Software development process management**; **Programming teams**; *Software development techniques*;

KEYWORDS

Scrum-based Process, Distributed Software Development, Multidisciplinary teams, Communication improvement.

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1 INTRODUCTION

Prikladnicki [2] characterizes Distributed Software Development (DSD) as a scenario in which people working on a software project are geographically and/or temporally distant. Moreover, according to Ehrlich [1], when working with DSD, the communication management is considered one of the predominant factors for the product success.

In distributed projects it is usual that work teams are not only formed by IT professionals. Therefore, the teams involved in this scenario are characterized as multidisciplinary.

This study illustrates how a company makes use of a Scrum-based process to develop distributed software projects working with distributed multidisciplinary teams. The Scrum-based process of this case differs from regular Scrum on the addition of a new role: the **Integration Owner**. The section Case Description explains this new role.

The scenario of this study assumes that functional areas of the client organization (such as logistics, strategy, marketing, executive) also operate in a distributed way.

2 CASE DESCRIPTION

The brazilian company studied in this case is specialized in software development. This software company performs integrations between systems (ERP, CRM, Marketplaces, APIs, etc.), develops tools and customized softwares. The Figure 1 represents how the communication flow in a DSD with multidisciplinary teams occur. The arrows express interactions between stakeholders of the project.

The communication scenario identified in the company and presented in the Figure 1 is composed by the following stakeholders: development team, Scrum master, Product Owner, and the Integration Owner.The roles development team, Scrum Master and Product Owner are from the regular scrum.

The Integration Owner role was created to fulfill the communication needs between teams involved in a distributed scenario. This professional is responsible for mediating the interactions between the company internal teams and external teams, integrating internal and external stakeholders. The person in charge of this role must have communication and people management skills, and familiarity with dissemination and documentation of information

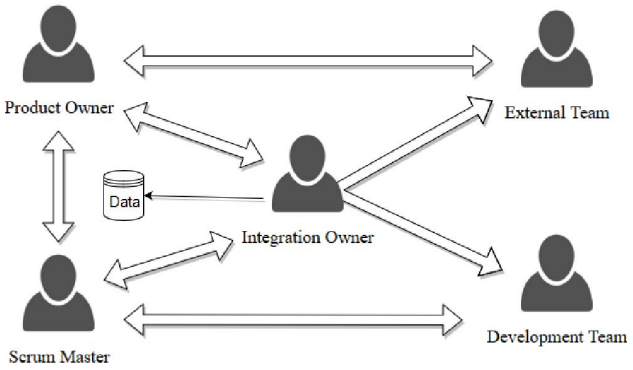

Figure 1: The communication scenario.

and processes. The professional in question has to deal with all the stakeholders communication issues, regardless of language, culture, and timezone. In addition, this role is effective for formalizing information from less formal interactions (telephone, for example).

In this case, this role not only generates history and documentation, but also agreements between those involved in a particular project or requirement development.The Integration Owner participates actively in the conception of the business rules because this role integrates information about the software development and business rules that were not well established for the client.

In distributed projects it is common that work teams are not only formed by IT professionals, for example, a team can contain professionals in the marketing, strategy, and logistics area. Therefore, the teams involved in this scenario are characterized as multidisciplinary because the stakeholders not always have equivalent opinions or think exactly the same way.

In the scenario of this case, internal and external teams were identified. The internal teams were composed of stakeholders directly contracted by the company. Regularly, teams associated with the software development and the customer were internal teams. The external teams were composed of people whose participation and contract were temporary. For example, the client hired a marketing team that only acted on the project according to the identified demands. Similarly, the logistics teams have a significant influence on the requirements of the project. At the moment of requirements elicitation, this external team can make the client realize that a certain requirement should be modified or become unfeasible. Another example of external team occurred in a specific project in which, a specialized front-end team was hired.

3 RESEARCH METHOD AND APPROACH

This case study, based on Yin [3], uses mainly six sources of information: documents, records in archives, interviews, direct observation, participant observation and physical artifacts. The data analyzed in this research was collected from interviews in the company and direct observation.

During the case study execution, fifteen people including developers, project managers, the client and the marketing director were interviewed. The communication between the stakeholders was monitored using tools for approximately two months to generate a record and perform analysis to detect problems. Besides, three) stakeholders created individual records related to the communication made by video or webconferences and telephone calls, such records were analyzed, and communication problems were detected.

This information sought to verify how multidisciplinary teams interact and how problems related to communication between them were solved.

The following research question was developed for this work: **How can a Scrum-based process support multidisciplinary distributed teams to develop software?**

4 CONCLUSION

During the case study, the researchers noted that Scrum did not fulfill the software development needs of the studied company. However, the company in question made a customization in the Scrum process and, with the addition of the Integration Owner, it was possible to improve the productivity.

As reported by the company, before the implementation of the Scrum-based process to improve the communication in distributed projects, three problems were noticed: (I) the direct communication causes constant interruptions on the development process; (II) there is an excessive number of informal communication, and (III) the information centralization in specific members makes it impossible to disseminate knowledge.

After the Scrum-based process was established, the communication was centralized on the Integration Owner, and, consequently, the development teams suffered little interruptions, not jeopardizing their tasks execution.

Finally, the proposed process can be established or adapted in other companies with similar communication and development scenarios that use agile methodology and distributed multidisciplinary teams to perform their tasks in order to deliver a software product.

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