Impact of Developer Experience in the outcome of Software Projects

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Abstract

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Preface

I want to thank Professor Pirjo Professori and my instructor Dr Alan Advisor for their good and poor guidance.

Otaniemi, Date to te announced

Anders Nylund

Contents

Thesis dictionary

DX	Developer Experience
UX	User Experience
IDE	Integrated Development Environment

1 Introduction

Create a much clearer and better foundation of what software development is, why it is complex etc.

A software project is a project where a group of people share a common goal what can for example be to create a product or service. In a software project there is a developer or multiple developers that have the responsibility of implementing the technical product itself. The developers are the ones writing the executable source code for the program or service, so that it can by it's functions and features achieve the requirements set to it.

Software developers are in a crucial role when considering the success of a software project.

In this thesis the term *Developer Experience* is examined and studied. Developer experience is a rather new concept in the scene of software engineering.

Developer experience can be divided into three different sub areas – cognitive (How do developers perceive the development infrastructure?), affective (How do developers feel about their work?), and conative (How do developers see the value of their contribution?) [2].

1.1 Intrinsic Motivation

1.2 Programmer Experience

Programmer Experience (PX) can be defined as *The result of the intrinsic motivations and perceptions of programmers about the use of development artifacts* [4].

A programmer can be seen as person who gives exact instructions on how a program should behave and function.

1.3 Developer Experience

Developer Experience (DX) is a bigger construct than PX. DX includes also the motivation of developers, and not only the artefacts like the programming environments [4]. Developer Experience is considering more of the social

A developer is a person with a bigger responsibility than a programmer. If a programmer is following instructions, requirements, and guidelines, the developer is also finding out what the instructions, requirements and guidelines should be (find other source than https://devskiller.com/programmer-vs-developer/). Therefore DX is also considering more of the surrounding context than what PX is considering.

1.4 Motivation

Currently sections Introduction and Motivation are intertwined. It should be made more clear that what should go where.

Developers in software projects are in a crucial role when considering the success of software projects.

The same way as User Experience (UX) is considering the user of a system or tool, Developer Experience (DX) can be seen as the experience that developers have as users of a system. Here the system however includes the tools, frameworks, processes that the developer is the user of when developing software.

Developer experience has not been studied that much previously. There has been a doctoral thesis published about the topic recently [1]. In this thesis

DX has been studied previously, but research on it is still lacking the connection to practical applications. This is one the biggest motivators for this thesis, as the topic is novel and there is huge potential in improving software development processes, and thereby also potential to improve the outcome of the projects.

There is possibly huge value that can be gained from studying Developer Experience and learning about how it works. A better experience can help organizations

Currently a quick search with the keyword *"Developer Experience"* on google gives as a result mostly articles on how framework and library authors should consider their users (developers) experience with using the product (tool, library, framework). However, DX is something more and includes also the feelings and perceptions of the developers. In some research the term *Developer Experience* with the abbreviation of DE^x is used, and in some other research the term *Programmer eXperience* and abbreviation *PX* is used [2] [4].

It is also apparent that most results when searching with the term *Developer Experience* gives results about the experience level of a developer, and not the experience of being part

1.4.1 Selection of tools

Perceived choice is a perception of that the choice has already been made. Selecting tools in software development projects is in a crucial role, as it can significantly improve the Developer Experience in software projects.

One study of Integrated Development Environment (IDE), and how it is connected with state of flow, intrinsic motivation, and user experience revealed that if the developers have a high perception of choice, the also are overall more satisfied with the tools [3]. They also concluded that if the selected tools are selected without their input, (they perceive it chosen already), the developers will have a worse developer experience with it, as e.g. their frustration with the tool will be more common.

1.5 Research questions and problem

The research problem is finding out *How the developer experience in software projects can affect the outcome.*

1.5.1 Alternative research problems:

– "How Developer Experience affects the productivity of developers in software projects"?

Table 1: The research questions

RQ 1	How is Developer Experience defined in software projects?
RQ 2	What aspects of Developer Experience are currently being considered in software projects? What aspects of Developer Experience do developers see as valuable?
RQ 3	Can the results of software projects be improved by investing in a better developer experience?

– "How the cognitive Developer Experience can affect the outcome of Software Projects". This would allow to restrict the scope of the thesis significantly, as the cognitive Developer Experience takes only into account the *"technical"* parts e.g. Platform, techniques, process, skill, procedures (How developers perceive the development infrastructure?) [2]

There could be some hypotheses that will be tested in the thesis.

1.6 Scope and focus

1.7 Structure of the thesis

1. Background and literature review

2 Background and literature review

This section includes the background and literature review of the topic. The background of the topic should be covered equally from all points of view.

The Developer Experience can be divided into 2 different environments, a social and a technical environment [1]. This thesis might focus more on the technical environment.

A common terminology and understanding of Developer Experience is part examining a project's Developer Experience.

2.1 Performance Alignment Work

3 Research material and methods

What material will be used in the research and what methods/methodologies will be used to study the problem. What kind of approach to research will be used in the thesis.

The developer experience can be both short term impulsive, or related to one event in software development, but it can also be a long term experience over a period of time [1]. The research in this thesis will use a longer time-frame of developer experience.

4 Results

Answer the research questions and problem.

4.1 Validity of results

Tässä osassa on syytä myös arvioida tutkimustulosten luotettavuutta. Jos tutkimustulosten merkitystä arvioidaan »Tarkastelu»-osassa, voi luotettavuuden arviointi olla myös siellä.

5 Summary

6 Conclusions

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