Chapter 8
Software Effort Estimation for Successful Software Application Development

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ABSTRACT

The recent advancements in information and communication technology (ICT) have inspired all the operational domains of both public and private sector enterprise to endorse this technology. Software development plays a crucial role in supporting ICT. Software effort estimation serves as a critical factor in software application development, and it helps application development teams to complete the development process on time and within budget. Many developmental approaches have been used for software effort estimation, but most of them were conventional software methods and therefore failed to produce accurate results when it came to web or mobile effort estimation. This chapter explains different types of software applications, software estimation models, the importance of software effort estimation, and challenges faced in software effort estimation.

INTRODUCTION

The current age is the era of information and communication technology (ICT). The diverse ICT enabled modalities has inspired almost all the operational domains of both public and private sector enterprise to endorse this technology. All these advancements made in the field of Information and Communication Technology is deployable when there is an appropriate underlying software framework to make it functional. In real essence, it is this software component that has revolutionized the modern age and has also facilitated humankind with its sophisticated serviceability at every corridor of humanity.

The Merriam-Webster dictionary defines software as a set of programs, procedures and related documentation associated with a system known as a computer program (Merriam-Webster). The most critical and challenging aspect is to design a mechanism to develop these computer programs. The design

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and development of these computer programs remain a challenging aspect in the software development industry. Identification, selection, and implementation of a particular development strategy have a direct relationship with quality and successful development and deployment of these computer programs more broadly the software application. The identification and selection of a particular development process solely depend on the overall experience and understandability of the developer in specific and software project management in general.

Diverse people in the development industry have different opinions related to various models available to develop software applications, and some were optimal; some were contradictory; some were localized, and some were lacking specific parameters. To streamline this development process and to design a benchmark standard with universal acceptability, a collaborative deliberation among various individuals related to software development was he, and the outcome was an approach that can guarantee to deliver versatile, scalable and quality products. This improvised software development approach is now a systematic sequence of various processes known as software engineering (Mills H. D., 2010). Fritz Bauer defines software engineering as; “A systematic design and development of software products and the management of the processes (Fritz, 1968). The main objective of Software Engineering is to meet the specifications & demonstrate accurateness in completing the development process of a software system on time and within budget”. The main practice of various fundamentals prescribed through software engineering as a discipline was to development conventional or traditional standalone software applications. With the advent of time, the cost of hardware technology drastically came down and subsequently, the usage of soft systems increased. The conventional software applications also saw evolutionary changes in both nature and scope. Therefore, in addition to traditional software applications, web-based and mobile based software applications came into existence. The introduction of these soft variants has almost redefined both horizontal and vertical dimensions of software engineering practices and principles.

The fundamental approach defined by software engineering to develop software based applications is known as “software development life cycle (SDLC)”. SDLC describes the more lucid and systematic procedure to guide successful software development on time and within resources. With time the popularity of these soft variants increased and therefore, the use also shown exponential trends. This popularity resulted in increasing demand for software applications in general and application features & functions in particular. This rapid demand for both application and the features/functionality has made the software development process more and more complex. This growing complexity and to manage the successful development became challenging for software project management as many times project management failed to deliver the project on time or sometimes failed to develop within the allotted budgets or even were unable to understand and management development positively and progressively.

TYPES OF SOFTWARE APPLICATIONS

Software-based applications are broadly categorized into three types: traditional or conventional software applications, web-based applications, and mobile based application. All these application variants do share certain similarities, but holistically are different from one another in their nature, scope, and dimensionality. The brief description of these types in mentioned as under.