

CSU33012 Software Engineering

Measuring Engineering

How Software Engineering is Measured and Assessed

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# 1 Introduction

This report will provide an analysis on the effect of these areas following and in turn how they impact the analysis of Software Engineering.

1. Measurable Data
2. Computational Platforms
3. Algorithmic Approaches
4. Ethics

According to Laplante (2007) “Software Engineering is the systematic application of the engineering approach to the development of software”. Following this, software production consists of the following four steps applied in a systematic way.

1. Deciding on the specifications of software.
2. Design and implementation of the software.
3. Testing and verification of the validation of the software.
4. Maintenance of the software.

Hence, when creating a system that is designed to measure the discipline of software engineering, it is important to account for these four crucial activities.

In turn, the system must account for the application of these activities as there are a multitude of different approaches that organisations apply when developing software for use. These include the waterfall, incremental and agile development methods. The Agile development method seems to be the most popular type of development strategy at the moment and is an iterative approach that keeps pace with the dynamic development requirements of the modern age and mainly splits into extreme programming and scrums (Ahmed et al, 2010). As a result Agile Development processes will be the focus of measurement methods throughout this report.

Timeline

Description automatically generated

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*Figure 1: An example of how an Agile Development Procedure may occur during the development of a piece of software.*

Since the term ‘Software Engineering’ was coined by Margaret Hamilton in the 1960s the industry has experienced an explosion of exponential growth. Similar to all industries, many quality control and improvements have been implemented in order to increase productivity and efficiency. However, despite much research and experimentation into the matter a valid and trustworthy measure for the industry has been difficult to produce and in turn many different corporations have implemented their own measure, but struggle to find an exact measure that covers everything (Kaner & Bond, 2004). Finding a suitable metric would allow companies to better distribute their limited resources wisely, and this is of growing importance as more companies embrace software development methods as a more vital element of their business practices.

# 2. Reference List

Laplante, P. (2007), *“What every engineer should know about software engineering”,* Boca Raton: CRC.

Ahmed, A., Ahmad, S., Ehsan, N., Mirza, E. & Sarwar, S., Z. (2010), “*Agile Software Development: Impact on Productivity and Quality”*, Published in 2010 IEEE International Conference on Management of Innovation &Technology.

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