Chapter 14

The Applicability of Process-Orientation to Software Development Projects:
The Applicability of Process-Orientation to Software Development Projects

Viktorija Ponomarenko
Riga Technical University, Riga, Latvia

ABSTRACT

The progress in the digital single market (DSM) has been acknowledged as one of the 10 political priorities by the European Commission since 2015. It could contribute € 415 billion per year (GDP) to the economy of the 28 EU Member States and create hundreds of thousands of new jobs. Nowadays, the ICT sector and the European Digital Agenda have declared it as one of the seven pillars of the Europe 2020 strategy. In order to speed up the development of new information technology and its commercialisation, it is necessary to increase software quality aimed at accelerating and improving technology transfer, taking into account process quality management. The aim of this article is to give an overview of a new approach to producing an additional value of the software development projects to improve the technology transfer process.

INTRODUCTION

ICT industry is rapidly developing all over the world and in Europe, and progress directly depends on a technological solution that solves the issue better by saving time, money and energy. Many software developers are struggling to find customers for their developed prototypes. In most cases, they keep a lot of prototypes in laboratories and their documents, but they don't about their position in the market, opportunities and future direction. Usually, it is difficult to check when the software complies specification and is ready to move on the market. At the same time every day many software components are

developed that could be used again and save developers time. In order to speed up the development of new information technology and its commercialization, it is necessary to increase the software quality aimed at accelerating and improving the technology transfer taking into account process quality management. The aim of this study is to give an overview to a new approach to producing an additional value of the software development projects to improve the technology transfer process.

For this purpose, were conducted an investigation of three information technology standards, six-sigma method, and process-oriented method.

The paper consists of 6 parts and conclusions. The first section is devoted to materials and methods. The second section represents process-oriented approach that is known as knowledge management approach to the development of software projects. Next parts describe this approach implementation, including the definition of software development processes, self-assessment systems development. The last section of the paper presents the results of the proposed approach and future work.

BACKGROUND

This paper is devoted to help the software developers set the best operation plan and make a right decision in their projects. It is applied to:

- Checking, analysing and improving existing projects;
- Set the improvement plan;
- Increase the quality of the projects.

Within the framework of this article, authors offer an evaluation of software quality with knowledge management, which combines knowledge about software development processes, asset protection, and marketing activities with the aim of creating an added value for research organization. For knowledge management is applied process-orientation method (Yin & Xiong, 2016). For process assessment and decision making was used information technology process assessment standard ISO/IEC 333020:2015 (ISO/IEC, 2015) and Capability Maturity Model (Mark et al., 1993) combined with six-sigma method (Montgomery & Woodall, 2008). For defining software development processes IEEE information technology standard 1517 – 2010 (IEEE, 2010) was chosen.

PROCESS-ORIENTED APPROACH TO DEVELOPMENT OF SOFTWARE PROJECTS

Process orientation is known as knowledge management approach where knowledge is considered as a set of process to help managers to set the best operation plan and make right decisions. It is possible to give out six phases of process management:

Step 1: Processes have to be clearly set and documented.
Step 2: Process's performance has to be checked by using quantifiable metrics.
Step 3: Process performance has to be analysed with the help of graphical images, diagrams, causal relationship analysis or others.

Related Content

Software Engineering Security Based on Business Process Modeling

Joseph Barjis (2010). *International Journal of Secure Software Engineering (pp. 1-17).*

www.irma-international.org/article/software-engineering-security-based-business/43923

Building Sustainable Smart Cities: Integrating Cloud Technology and Intelligent Parking Systems

Monika Sharma, Manju Sharmaand Neerav Sharma (2024). *The Convergence of Self-Sustaining Systems With AI and IoT (pp. 104-129).*

www.irma-international.org/chapter/building-sustainable-smart-cities/345508

Language-Agnostic Knowledge Representation for a Truly Multilingual Semantic Web

Sarika Jainand Anastasiia Kysliak (2022). *International Journal of Information System Modeling and Design (pp. 1-21).*

www.irma-international.org/article/language-agnostic-knowledge-representation-for-a-truly-multilingual-semantic-web/297045

Towards Method Component Contextualization

Elena Kornyshova, Rébecca Deneckèreand Bruno Claudepierre (2011). *International Journal of Information System Modeling and Design (pp. 49-81).*

www.irma-international.org/article/towards-method-component-contextualization/58645

Decoupling Computation and Result Write-Back for Thread-Level Parallelization

Hiroaki Hirataand Atsushi Nunome (2020). *International Journal of Software Innovation (pp. 19-34).*

www.irma-international.org/article/decoupling-computation-and-result-write-back-for-thread-level-parallelization/256234