



4th Information Systems International Conference 2017, ISICO 2017, 6-8 November 2017, Bali, Indonesia

The Use of Analytic Hierarchy Process for Software Development Method Selection: A Perspective of e-Government in Indonesia

Melisa Helingo, Betty Purwandari*, Riri Satria, Iis Solichah

Faculty of Computer Science, Universitas Indonesia, Depok 16424, Indonesia

Abstract

Information Technology (IT) has played an important role at the Ministry of Foreign Affairs of the Republic of Indonesia (Kemlu). It provides e-government services to cut long bureaucracy and achieve priorities in foreign policies. As the organization grows, there are needs to develop new software in this e-government context. In general, it requires a software development standard procedure to meet software quality assurance. In Kemlu the standard procedure in software development becomes more critical due to frequent changes among IT team members. It is the nature of this organization to send their staffs to foreign countries for several years. Then they are back to home country for another couple of years, and get ready for their next assignments abroad. A fundamental step in a software development standard procedure is determining the most suitable software development method. However, there was lack of investigation for this selection. To address this problem, a study using Analytic Hierarchy Process (AHP) is conducted. The factor variables are personnel, requirements, applications, organizations, businesses, operations, and technology. The alternatives of software development methods are Waterfall, Incremental, Prototyping, Extreme Programming, Scrum, and Rational Unified Process. The results show that Prototyping is the fittest software development method for Kemlu.

© 2018 The Authors. Published by Elsevier B.V.

Peer-review under responsibility of the scientific committee of the 4th Information Systems International Conference 2017.

Keywords: Software Development Process; Software Development Method; Analytic Hierarchy Process; e-Government

1. Introduction

Kemlu has been developing and using e-government services as an implementation of good IT governance and bureaucratic reformation in Indonesia. Its Communication Center (Puskom) has developers and managers of

* Corresponding author. Tel.: +62-21-786-3419; fax: +62-21-786-3415.

E-mail address: bettyp@cs.ui.ac.id

Information and Communication Technology (ICT) in Kemlu. It was stated in the 2015 Puskom’s Annual Report that software development standard procedures are needed in Kemlu. Hence, the activities of Puskom in 2016 would focus on preparing the procedure. The Head of Puskom highlighted that these procedures could help the development team to understand their work despite the team changes.

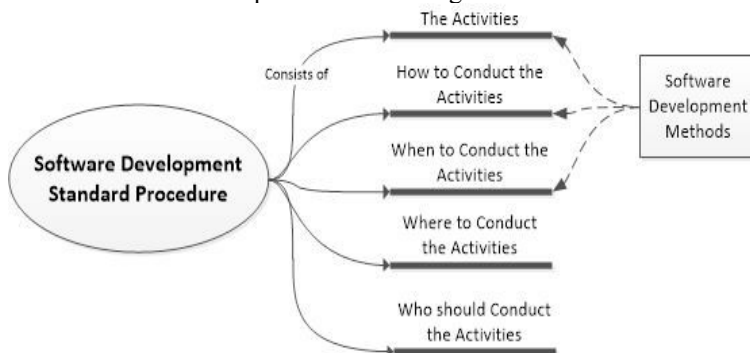


Fig. 1. Mind map of software development standard procedure [1].

Fig. 1 provides a framework of software development standard procedure. It shows detailed activities or processes based on a specific method for completing a task [1]. Meanwhile, the chosen software development method would determine the software development activities and its sequence [2]. It would also affect the process sequence in the software development standard procedure. Hence, the research asked, “What is the most suitable software development method for the Ministry of Foreign Affairs (*Kemlu*)?”

The scope of this research is the software development process to provide the e-government services in Kemlu, which includes software for public services, administration and management, legislation administration, development administration, finance, and human resource. The purpose of this study is to determine the most suitable software development method for e-Government in Kemlu. The results of this study would be an input in preparing the software development standard procedure in Kemlu.

2. Literature review

2.1. Software development method

Software development methods address the categories and ways of developing software by modeling the software development process. The software development method term has several synonyms, such as process models [2, 3], software development methodologies [4], and software development strategies [5]. This paper uses the term: software development method.

Table 1. Software development methods in the government organizations of some countries.

Software development methods	USA	UAE	Malaysia	Korea	Indonesia
Waterfall	✓	✓	✓	✓	✓
Incremental			✓		✓
Prototyping			✓	✓	
XP	✓				✓
Scrum		✓			
RUP					✓

The case study on software development methods used in government institutions also conducted in several countries, as summarized in Table 1. This study discusses all methods mentioned in the first column of Table 1.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات