Chapter 39
Application of a Composite Process Framework for Managing Green ICT Applications Development

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ABSTRACT

This chapter presents the use of Composite Process Framework for Green ICT Applications Development. This framework for software development, as its name suggests, integrates different elements of software development processes such as waterfall, iterative-incremental and agile approaches to software development. The chapter explains and provides details on what comprises a Composite Processes Framework and how it can be applied to develop a Green ICT application.

INTRODUCTION

This chapter presents a Composite Process Framework that comprises elements of each of the process life-cycles concurrently from software processes such as Waterfall, Iterative-Incremental or Agile, to enable project managers adopt the best processes for managing development of Green ICT systems. A composite Process Framework, as envisaged here, retains the flexible aspects of the agile approach and, at the same time, facilitates exchange of information about Green ICT Strategies, and Green ICT Business Requirements between project stakeholders (such as senior business managers and ICT managers) during the project life-cycles.

The aim of this chapter is to provide an insight on the background of implementing a business process and the potential use of a composite process framework for the development of Green ICT systems. The chapter is organized as follows. The next section provides a background about Green ICT Systems; it is followed by another section that highlights the definition of a composite process framework. Next it provides details of using the

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composite process framework for Green ICT solution and finally the conclusion and future direction.

COMPOSITE PROCESS FRAMEWORK

Overview

The Composite Process Framework is a standard procedure for adopting a combination of software development approaches. The composite process framework model illustrate how to adopt elements of various software development processes in a single project within an organization, in such a way that help resolve some of the issues and problems associated with the implementation of these processes in developing solutions such as Green ICT system.

Composite Process Framework Model

The composite process framework model as shown in Figure 1, consists from three distinct layers making the three System Development Life Cycles that are categorized as Waterfall (Royce, 1970), Iterative-incremental, and rapid (Martin, 1991) life cycles. The rapid life cycles can be said to encompass an "Agile" approach.

While the composite process framework consists from three layers, it does not require having all the three layers in place to operate. The composite process framework could use a composition of two or more processes that are "Waterfall and iterative approach" or "Waterfall, iterative and agile approach" (Maharmeh & Unhelkar, 2009b).

The process framework utilizes the high-ceremony aspects of the Waterfall approach at the top layer for taking care of planning and project management tasks. In the next layer, it uses the Iterative and incremental approach aspects for taking care of implementation and testing of each increment. Finally, it utilises the extreme flexibility, fast delivery, high quality and collaboration aspects of agility within each iteration of the project at the third layer of the model.

Figure 1. Composite Process Framework Model (Maharmeh & Unhelkar, 2008, 2009a)