Chapter 5
Approach of Modelization and Management on Software Components

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ABSTRACT

The complexity of information systems leads to poor data management and therefore bad decisions. The advantage of using component-based software engineering is to divide an information system into subsystem blocks with less complexity. In fact, a component is intended to provide specific services as management of the combination and communication between the units of the system. This chapter addresses this problem by developing information systems, proposing a component identification approach and the management pattern for data management. In this work, three developed views are taken into account, which include modelization and the design to achieve the purpose of defining and building the components and how they can be assembled. A component is intended to provide specific services, as a combination and communication management between the system units, and the manager component is the important and complementary paradigm pattern and added value for the development of software systems.

INTRODUCTION

Using information systems for strategic decision use many approach to meet the needs and expectations of services required, but systems with large numbers of elements, describes a complexity difficult to understand and maintain. In fact, decision making is a complex cognitive process based on criteria of choice and analysis, and the observation of the behavior can lead to the state of the decision process, as for (Chennoufi and al, 2018) with the addition of behavioral criteria of several individuals in order to arrive at decision-making strategies of a complex system, and (Wang and al, 2016) for the ANFIS generating processes included for features extraction.

DOI: 10.4018/978-1-5225-6164-4.ch005

Or appropriate for a good decision-making represented in an intelligent way towards the multidirectional analysis of the query server including the base OLAP (Selmane and al, 2015), or Aggregation Operators for Medical Diagnosis (Ngan and al, 2016). The decision process leads to chain modelization, selection, and evaluation. As a result, in the context of software consistency and quality, the software industry is moving towards component-based development and is aiming to use evolution and persistence methods, which have recently been devoted to the development orientation of component-based software.

The interest behind the use of component-based software engineering is to divide an information system with less complexity, faster development, and improved performance into reliable and efficient software components. As a result, the component paradigm provides a good representation of high-level complex systems, and can help in the decision process. The essential role of component-based development is the component model that defines how components can be built and how they can be assembled.

The resolution of the issue provides an overview of the main directions, proposing an approach. An approach is the way of approaching and treating a subject or a problematic through the use of adaptable systems such as the approach for document clustering (Karaa and al, 2016), the approach to diminish imbalance parameters for the big deoxyribonucleic acid dataset (kamal and al, 2016), and Crohn's disease classification by a neuro-fuzzy-based approach (Ahmed and al, 2017).

So the component-based software development approach is currently one of the solutions that differ from the traditional approach, in which software systems can only be implemented from scratch. Hence the idea is that software systems can be developed by the appropriate components, then to assemble them with well-defined software architecture (ACCORD project, 2002).

The idea of the component was firstly proposed in 1968 by Douglas McIlroy (McIlro, 1968). This new era of component-oriented started to grow 30 years later in: Sun EJB (Sun), OMG (OMG), CCM (CORBA), Microsoft ".NET / COM" (Microsoft. NET), etc. The design of the component-based software development approach is that software systems can be developed by appropriate components and then assembling them with a well-defined software architecture (Cai, 2000).

Software systems are developed by assembling component units that provide a set of exposed services. A component is intended to provide specific services such as combination, management, connection and communication between system units. Managing the communication between the system components requires taking into consideration the users of this system. From the principle the same world observed by several users can produce different viewpoints (Rehioui and al, 2014). Therefore, it is necessary to integrate the user in action.

The viewpoint concept is an effective means to improve the consistency of modeling and control system complexity, the main purpose of taking into account all the views and viewpoint modeling designers.

The behavior and state of an object have been reviewed by the perspectives (Bobrow, 1977), contexts (Debrauwer, 1998) and viewpoints, and therefore the viewpoint is like an advanced mechanism for object-oriented technology. The method based on viewpoint increases the participation of multiple stakeholders from different areas in the collaborative modeling process (Krumeich, 2014).

The objective of this work is to identify software components by approach representing the modelization of components, and to propose a pattern that ensures the combination and communication between software components, and offering the central element of approach of "Management Component" as a solution to facilitate the optimization of operations.

This chapter is organized as follows: