COMPARATIVE STUDY OF THE ACTUAL IMPLEMENTATION OF OBJECT-ORIENTED MODELING PARADIGMS

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ABSTRACT

Software Development is currently being necessitated more and more in business organizations to achieve productivity and effectiveness in their performance. That's why; appropriate requirements for operation are essentially needed in order to successfully achieve satisfactory results on the organization's output. This includes the best application software for the job. This, however, also provides system analysts and designers a great deal of responsibility in fulfilling necessary application requirements that are being demanded and established by business organizations, especially, and individual users.

To resolve these predicaments, Object-Oriented Modeling Paradigms are introduced to assist analysts and designers in creating a system that would support an organization's day-to-day business operations, providing system designers a simplified methodology for a system's framework while still maintaining easiness in developing it.

Nevertheless, as programming requirements changed, both languages and the techniques used for writing programs evolved. As a result, subsequent evolutions of multiple programming methodologies are produced, confusing designers what methodology should be implemented and would prove to be effective. Thus, it is apparent to point out certain object-oriented paradigms, perform a study on each then settle on an integration of the concepts based on the performed study that would eventually prove to be effective in the course of its implementation.

Hence, An Integrated Object-Oriented Methodology of Systems Analysis and Design attempts to present an integrated systems design technique that would manage enormous complexity by reusing software components and team up data with the tasks that manipulate that data. Typically, it has become important to design a system for such kind of functionalities. This research, therefore, aims to initiate an integrated systems design methodology by implementing a comparative study of various object-oriented paradigms. Such integration of systems design would then be executed by means of a sample prototype, through the use of an object-oriented programming language. In this regard, the research team opted for the Visual C++ programming language.

CHAPTER I
INTRODUCTION

I. Background Of The Study

At any given time, a new paradigm or collection of modeling paradigm is usually poised to change the next generation of methodologies. Today, that new direction is being set by the object-oriented modeling paradigms. Like many new modeling paradigms, they are being touted as methodologies; they are truly the ones that will slowly be incorporated in tomorrow's methodologies.

The Object-oriented approach creates a well-defined object library, once implemented, will contain reusable objects and code. Objects will be self-contained and, thus, easily maintained. Object oriented modeling paradigms promise to achieve the benefits that structured design techniques sought to attain.

The object-oriented revolution has already begun. Its historical roots are in object-oriented programming, which is dependent on good analysis and design.

The Comparative Study Of the Actual Implementation of Object-Oriented Modeling Paradigm will focus on the different paradigms that are being used and would come up with one modeling paradigm that could be the overall look of the different researches and that would show simplicity.

II. Statement Of The Problem

In this growing phase of the object-oriented analysis and design methods, organizations that are planning to adopt object-oriented technology as well as schools that are offering courses in object-oriented technology face one crucial question: *which method should be adopted and* *how should such method be implemented?* Therefore, there is a need to develop a common framework for Object-Oriented Modeling Paradigms and implement a software prototype based on the said framework. And since most of the object–oriented modeling paradigms used have each of their own advantages and disadvantages, why not come up with one paradigm which would be the combination of the chosen modeling paradigm that highlight all of their good points and features.

III. Objectives Of The Study

The main objective of this study is to come up with a common framework and to implement its prototype of the said framework. The following are the specific objectives:

- To come up with a comparison, which would eventually be the basis of the framework's design, then provide conclusions and recommendations based on the criteria derived.
- To research and adopt a comparison criteria.
- To select a modeling Paradigms that could be the basis of the theoretical study.
- To be able to have a programming language that would serve as a platform in Implementing a prototype based on the said framework.

IV. Significance Of The Study

We are already seeing several first-cut object-oriented analysis and object-oriented design techniques from experts such as Yourdon & Coad, Martin and Rumbaugh. The transition to these new methods is complicated by the "revolutionary" change as opposed to "evolutionary" change. In other words, object-oriented techniques require a radical change in thinking that is slowed by our knowledge of current methods.

This study would be able to come up with a one Object-oriented Modeling Paradigm that in some way would summarize all different kinds of OO techniques and a prototype that would support its concepts. This study would be very useful for people who seem to have a hard time choosing which OO technique would support their system the best. And lastly, this study would be able to encourage people, especially students, to use the object-oriented approach.

V. <u>Scope And Limitations Of The Study</u>

The study only focuses on the UML, the BON, Coad & Yourdon's OOA/OOD and the OOA/OOD based on Martin. UML is the emerging standard for object-oriented analysis and design interoperability, while BON is the only method that challenges the standardization. The OOA/OOD of Coad and Yourdon, on the other hand, is an Object-oriented approach consists of classes, objects, inheritance and communication with messages. And lastly, the OOA/OOD by Martin is a method that has a main background idea that manages the complex world by abstraction, generalization and composition.

This study primarily focuses on the modeling paradigm of the four different modeling paradigms mentioned. Nevertheless, all processes discussed are relevant. As discussed in the definition of key terms, a method consists of both a modeling language and a process.

But this study limits its scope on the modeling paradigm, design, analysis and implementation processes of the four object-oriented modeling paradigms. In other words, without lessening the importance of the modeling language, in many ways the processes involved in the design, analysis and implementation is the most essential part of the method to achieve its output.

The study will ultimately generate several outputs as follows:

1. A clear understanding of the Object-oriented approaches.
2. A differentiation of the four selected Object-oriented modeling paradigms.
3. A modeling paradigm that would be the simplest and most effective to implement.
4. A prototype based on the proposed Object-oriented Modeling Paradigm.