

## Chapter IX

# UML 2.0 in the Modelling of the Complex Business Processes of Reporting and Control of Financial Information System

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### ABSTRACT

*The General Inspectorate of Financial Information is instituted under the Ministry of Finance. Its duty is to counteract bringing into financial circulation pecuniary assets derived from illegal sources and to intercept any possible signs of money laundering. The procedure requires institutions such as banks and insurance companies to forward information of “over-the-limit” transactions in which the amounts involved exceeds the value specified by the Ministry. The efficiency of collecting information about these transactions is actually working, and is determined to a large extent by the speed and efficiency of the information systems in particular institutions responsible for those issues. The chapter discusses and analyses problems associated with the sending information about such transactions by the institution under such obligation. It lays out the range of possibilities opened up by the **Unified Modeling Language (UML)**, which constitutes a universal tool for exchanging information within IT groups and specifying complex business processes. The potential of the language lies in its numerous extensibility mechanisms, which allow the application of various stereotypes, depending on the area given. The chapter also emphasizes significance of the **CASE tool**, which makes it possible to control and create **UML diagrams**. Programs of the CASE type are also able to generate a skeleton code used subsequently by programmers during implementation. This chapter includes an analysis and design of a system with a task of improving the efficiency of the information forwarding process by the institutions under obligation so that the criteria laid down by law are met. The description of the system has been created in accordance with the specifications of **UML 2.0** and - based on many diagram types and the architecture - the business processes that it extends to and the database structure required to collect*

*information about transactions are set forth. Thanks to the application of use cases the main functionality of the system is defined: searching for and bringing together particular transactions followed by transformation and the dispatching of reports. Complex business processes are presented by corresponding activity and interaction diagrams. The architecture and the placement of the system within the structure of the organization, however, are depicted with the help of structure diagrams such as class, component and deployment diagrams. The use made of the extensibility mechanisms of UML merits attention here. The database stereotype presented in the work made it possible for the database to be designed at the level of implementation, and the functionality of the CASE tool enabled the complete software script to be compiled on this basis.*

## 1 INTRODUCTION

Unified Modeling Language(UML) is a successor of object- oriented methodologies of analysis and design of informatics systems which was invented at the turn of the 80ties and 90ties. Conception of UML was elaborated in Rational Corporation as the result of cooperation so-called ‘three musketeers’: Grady Booch, Jim Rumbaugh, Ivar Jacobson (1999). UML is graphical notation which is applying to present varied problems into models and assuring good communication in IT teams with sharing ideas. Natural language can not be precise and cause lack of understanding in complicated problems. UML is irreplaceable in designing large systems and helps in illustrating its elements and correlations (Wrycza S., Marcinkowski B., & Wyrzykowski K., 2005).

UML has become primary standard in specification of projects and architectures of object- oriented systems and still receives wide recognition in IT professionals. Although initially conceived as a language for software development, UML may be used to model a wide range or real world domains. For example, UML can be used to model many real world Processes (in business, science, industry, education and elsewhere), Organizational Hierarchies, Deployment maps and much more.

Modeling informatics systems requires different view of analyzing problem, because many people are included in project (users, programmers, analysts or specialist of integration). Each of mentioned above group of people uses different

perspective of system and is interested in different stage of its life time. Specification of UML 2.0 provides many possibilities in presenting systems with emphasizing each main element. Therefore multi-perspective nature of UML could help controlling iterative and evolutionary development of system (Maciaszek L., 2005). Usefulness of UML is also common in modern software methodologies (RUP, Agile, XP).

This chapter also emphasizes the use of tools for object modeling, which give abilities to produce fragments of skeleton programming code and facilitate communication in IT team.

All diagrams which define system of reporting and control presented in this article are created in Enterprise Architect. EA has comprehensive support for UML 2.0 standard. It has all 13 UML 2.0 diagrams in the tool. Intuitive visualization of UML is a part of strength of EA. Thanks to modeling tools often called CASE programs (Computer Aided Systems Engineering), designing such solution and improve use of UML become more effective (Maciaszek L., 2005).

Using UML Profiles, UML Patterns and other extensions, UML with EA may be tailored to address a particular modeling Domain not explicitly covered in the original UML specification. EA makes extending the UML simple and straightforward, and best of all, the extension mechanism is still part of the UML Specification (Enterprise Architect Home Page). The UML database profile presented in this chapter enables defining in the model such elements as keys on tables (primary, foreign), indexes or even users of database. Ad-

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