

ABSTRACT

INCORPORATING BUSINESS RULES IN AN OBJECT-ORIENTED SYSTEM

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Object-oriented software development has traditionally been weak in its support for business rules in terms of architectural design, implementation and process. In recent years there has been a growing interest in business rules with several workers contending that business rules should be the focus of a software development process. Since object-oriented software development is now part of the mainstream of computing, ways have to be found for handling business rules in each phase of a development process. These techniques should allow flexible maintenance of the business rules in response to changing business conditions.

The most common way to deal with business rules is to code the rules procedurally in the methods of relevant objects. This makes it difficult to find and modify the rules. Another approach involves using an expert system where an inference engine is responsible for enforcing the business rules stored in a monolithic knowledge base. This approach requires a special rule specification language and rule maintenance is difficult. Still another approach involves using an enhanced object-oriented database with trigger facilities. This approach limits the architectural design of the system and requires commitment to special database systems.

The thesis puts forward an architecture where domain objects are completely separated from business rules, simplifying rule maintenance. With a few modifications, this architecture works equally well in a distributed object-oriented system. In the design, rules are treated as objects in their own right and a rule language composes complex rules from simpler ones. The thesis provides much needed implementation guidelines for a representative set of business rules and enhances the Unified Process to deal with business rules in each phase of the software development cycle. Overall, the material presented in the thesis is a comprehensive attempt to deal with business rules in object-oriented systems.

Keywords: Permanand Mohan; Object-oriented; business rules; distributed objects; CORBA; Object Constraint Language; software engineering; expert systems; active database systems.