Introduction

Business rules can be defined as statements about how the business is done, i.e., about guidelines and restrictions with respect to states and processes in an organization [1996]. Originally, the term was used with reference to integrity conditions in Entity-Relationship-Models or in NIAM. More powerful business rules can be described according to the Event-Condition-Action (ECA) paradigm developed for active Database Management Systems. From this point of view, business rules trigger an action of the IS, send an alert to a human actor, or define the feasible space for human actions. Therefore, the rules are not necessarily prescriptive but may also be semi-structured or “soft”. Recently, the important role of business rules in understanding the real system and, thus, in system analysis was stressed [1995,1996,1994].

Process and workflow modeling

Many methods for describing business processes have been developed, ranging from the mathematically well-defined, clear, but in user-communication widely unaccepted Petri nets (PN) to less rigorous but in practice successfully applied “Event-oriented Process Chains” (EPC) [1992,1998]. PN use states and transitions, EPC employ events, functions and logical connectors (AND, OR, XOR) as base constructs.

In practice, the rough, global models of business processes are often not transformed in a systematic way to IS and their control mechanisms provided by workflow management systems (WFMS). A systematic refinement of models is a main paradigm in system development. However, refinement concepts found thus far only limited interest in process modeling methods.

Business rules as components of process and workflow descriptions

The main components of processes and workflows can be described by business rules. These components may be refined in several steps, leading from a process
to a work-flow description. The components of different granularity can be stored in a rule repository [1997] which supports the “single point of definition”-concept [1997].

4 Business rules layer

One can think of business rules as a standardized representation of business processes. The process models eventually obtained by employing different process modeling tools in decentralized or virtual enterprises or along a supply chain may be transformed to a rule-based description of the business processes [1997]. This business-rule-model may be stepwise refined until the system is represented by elementary rules (Fig. 1). This rule layer should be sufficiently detailed to allow an automatic generation of the specifications for the workflow model.

5 An object-oriented view

In the data-model of the object class one can define the events and provide the basis for checking conditions. In the method part of the object class one has to care for the detection of certain types of events, checking conditions, and the execution of actions. The rules or its components may be re-used at several levels. However, the encapsulation goal cannot be fulfilled because business rules very often reference 2 and sometimes even more than 2 context objects. Thus, a rule-object-model showing these dependencies is important. It has been proposed to treat business rules as first class objects [1993, 1998] and to relate them to context objects.