IDEA GROUP PUBLISHING
701 E. Chocolate Avenue, Hershey PA 17033-1117, USA
Tel: 717/533-8845; Fax 717/533-8661; URL-http://www.idea-group.com
ITB8126

## Chapter VI

# Supporting Modeling Structured Analysis and Design



The first case study focuses on evaluating the capability of the CAME environment of supporting a problem area that requires a structured analysis and design method. The specific problem lies in the financial and administration sector of the example problem, Dutch flower auction (see Chapter 3). Financial administration is an activity that is required frequently within organizations, and the analysis, design, and development of such an information system are normally supported by a structured analysis and design method. This case investigates the modeling process and techniques required for a popular structured analysis and design method known as the YOURDON method.



The financial and administration sector's problem is used as the problem area of this case study based on the following considerations: a problem preferably of a general nature, meaning that development of similar information systems is common, is the object of investigation. The Dutch flower auction's financial and administration sector's problem is one of a typical data processing nature, and this is clearly a frequently occurring problem area in information systems development. The problem area has to be such that a structured analysis and design method would be adopted during information systems analysis and design. Otherwise it could not be considered to be information systems modeling support according to a structured analysis and design method. The YOURDON method (Yourdon, 1989) is particularly well known for its support of the problem area of data processing and real-time systems analysis and design. This means all clones of the YOURDON method described in literature include the real-time

analysis and design. The selection of the YOURDON method to investigate this particular problem is based on the preference of students who worked with this particular example problem based on the course "Information Systems Analysis and Design Methodologies" at Delft University of Technology.

The various versions of the YOURDON method give varying interpretations of its modeling techniques Data Flow Diagram (DFD), Entity Relationship Diagram (ERD), and State Transition Diagram (STD). The automated support must provide not only the required modeling techniques, but also the different variations of these techniques as required to deal with the problem area.

The automated support required for the YOURDON method at the analysis and design stage comes in a number of forms in conventional CASE tools such as SDW, Excellerator, Teamwork, Cradle, as well as in MetaCASE tools such as MetaEdit+. Conventional tools give only modules of the above-mentioned UpperCASE tools and do not provide different variations of the techniques as required for the problem situation. MetaCASE can be used to generate the above tools using the components of the technique, but does not provide a way to adopt the modeling concepts to shape the UpperCASE tool to the problem area. This is due to the fact that MetaCASE tools are based on ERD or OPRR (Welke,1988) concepts combined with Standardized CASE Interchange Meta-Model (CDIF) standards (CDIF, 1991), and the number of modeling concepts is limited and is based on simple constraint definitions. Therefore the two main groups, conventional tools and MetaCASE tools of automated modeling support offered for YOURDON's way of modeling, are not satisfactory with regard to required flexibility levels.

The goal of this experiment is to test how far the CAME environment could support the modeling techniques of a structured analysis and design approach. Further, the proposed theory and the supporting technology will be evaluated using a number of tests to base a judgment on its flexibility in supporting structured analysis and design methods. As the first step, an evaluation of the strength of the CAME environment in supporting the three main modeling techniques DFD, ERD, and STD will be conducted. Second, the CAME environment will be evaluated for its strength in specifying tight controlled behavior of DFD by adding constraints to the DFD meta model. Third, the addition of modeling concepts and the subsequent behavior will be evaluated using the ERD. Finally, the integration of tools at information architec-