

Intelligent Support System for Structured Modeling

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- ABSTRACT -

Structured modeling provides a unified framework for model management and decision support. Its benefits mainly stem from the integration of conceptual modeling constructs with mathematical dependencies and characteristics. Despite its contributions, the environments based on the structured modeling framework have the following drawbacks: (i) mathematical characteristics such as generic rules are not explicitly and declaratively modeled, (ii) indexing properties of attributes and modular structures are defined by the modelers. The former degrades the utilization of functional relationships between (derived) attributes in interpreting problem types, determining indexing properties of (derived) attributes, and checking consistency between (derived) attributes. The latter overloads the modeler with duplicate modeling. This paper presents a structured modeling environment which derives indexing properties and modular structure automatically based on the generic structure with declarative modeling of functional relationships. Specifically, the intelligent support system is a part of efforts to develop an automatic modeling process which will eventually eliminate the chores of the model-related work. As an illustration, intelligent support for linear programming (LP) modeling is demonstrated.