

[0019] FIG. 35 is a block diagram illustrating a component integration engine server according to one embodiment of the present invention;

[0020] FIG. 36 is a block diagram illustrating service contexts of a component integration engine server according to one embodiment of the present invention;

[0021] FIG. 37 is a block diagram illustrating a certificate_store manager of a component integration engine server of the present invention; and

[0022] FIG. 38 is a block diagram showing a customizer manager of a component integration engine server according to one embodiment of the present invention mapping a type of component to the customizer responsible for customizing that type of component.

DETAILED DESCRIPTION

[0023] It is advantageous to define several terms before describing the invention. It should be appreciated that the following definitions are used throughout this application.

[0024] Definitions

[0025] Where the definition of terms departs from the commonly used meaning of the term, applicant intends to utilize the definitions provided below, unless specifically indicated.

[0026] For the purpose of the present invention, the term “method” refers to a named section of code within a model that performs a specific action. A method might take data as arguments and might return data. A method that returns data is called a function. A method that does not return data is called a procedure.

[0027] For the purposes of the present invention, “ODBC” is an abbreviation for Open Database Connectivity.

[0028] For the purposes of the present invention, “SQL” is an abbreviation for Standard Query Language.

[0029] For the purposes of the present invention, “CIE” is an abbreviation for Component Integration Engine.

[0030] For the purposes of the present invention, “DDL” is an abbreviation for Data Definition Language (part of SQL).

[0031] For the purposes of the present invention, “DML” is an abbreviation for Data Manipulation Language (part of SQL).

[0032] For the purposes of the present invention, “MVC” is an abbreviation for Model View Controller pattern.

[0033] For the purposes of the present invention, the term “abstraction” refers to the removal of uninteresting or unimportant details from a software definition to create a model.

[0034] For the purposes of the present invention, the term “attribute” refers to a named data value held by an object.

[0035] For the purposes of the present invention, the term “indirection” refers to the use of an intermediate object placed between the primary object and the entity using that the primary object object. An indirection buffers the entity using the primary object from the primary object, allowing

changes to be made to the behavior or functionality of the primary object without the entity using the primary object noticing the change.

[0036] For the purposes of the present invention, the term “accessor” refers to an indirection between a descriptor and an implementation. An accessor behaves as if it was an implementation, but delegates to a real implementation. An accessor allows implementations that are not fully self-describing to be contained by the accessor to add the missing details.

[0037] For the purposes of the present invention, the term “aggregation” refers to a relationship between a model and one of its attributes in which the attribute is one part of the larger whole. An example of an aggregation is automobile components. The automobile aggregates the engine, tires, and other components into a larger object. The object performing these aggregations is referred to as an “assembly.” A “composition” is a special type of aggregation in which the attribute parts are created exclusively for the larger whole and are not shared with any other object. In this case the “assembly” is also a “composite object”.

[0038] For the purposes of the present invention, the term “association” refers to a relationship between two independent models.

[0039] For the purposes of the present invention, the term “association model” refers to a model containing one or more attributes for each model participating in an association relationship. An example of an association is a business and its employees. Each employee would exist and have purpose outside of the business. The business relationship provides an association between these people and may provide benefit to each person and the business participating in this association. An example of an association model is a cross-reference table in a database. A cross-reference table defines a many-to-many relationship between two entity tables, neither of which contains any reference to the other. Each entity table contains objects that are independent and complete. The cross-reference table serves solely to establish the relationship between these tables. A cross-reference table might be used to track which employee works at which business.

[0040] For the purposes of the present invention, the term “base model” refers to a model that defines features and functionality that are inherited by other models.

[0041] For the purposes of the present invention, the term “categorization” refers to a process of grouping similar models. Categorization makes it easier to refer to multiple models that share common characteristics. Models of the present invention that extend from the same base model fit into the type defined by that base model. Models that participate in the same interface fit into the type defined by that interface.

[0042] For the purposes of the present invention, the term “class” refer to an object type; a group of objects that have the same features and functionality. Classes are blueprints or definitions used to create software instances called objects. Software models are implemented in classes.

[0043] For the purposes of the present invention, the term “classifier” refers to an element in a metamodel which is not a feature of another element and which participates in the