

structure independent of folder location, 3) version binding rules, 4) and the ability to save snapshots of the composite object. For example, a smart container can be used to implement a loan file including in the composite object: loan application, customer information (e.g., credit history, status of customer's services), and the circumstances behind the request (e.g., property loss, home purchase). The smart container also enables rules or policies to help during the processing of the loan—for example, a home loan application cannot be considered for approval unless customer income information and home appraisal information are present in the smart container. In some embodiments, smart containers provide the ability to configure a composite object that is completely or partly defined through custom relationships: A composite object can include not only hierarchical structures but also structures represented by associated objects—for example, if document “X” exists, documents “Y”, and “Z” must also be included in the composite object. In the case of a finished goods specification smart container, the smart container includes a bill of materials with multiple objects where each of the multiple objects is required to have a corresponding itemized components/raw materials object that indicates the makeup of each of the objects in the bill of materials. In some embodiments, a smart container provides the ability to specify typing for objects and associations within the structure—for example, a smart container provides the ability to prevent the wrong type of document from being placed in a particular location within the structure. Specifically, in an insurance claim file “bodily injury” documents are not allowed to be filed in the “property damage” sub-folder. In some embodiments, the smart container is configured to automatically place an object in an appropriate place in the smart container structure, e.g., based on data comprising and/or metadata associated with the object. In some embodiments, the smart container includes placeholder objects and/or data intended to be replaced at runtime, e.g., in an appropriate point of the lifecycle of the smart container and/or one or more objects associated with it, with another object.

[0016] FIG. 1 is a block diagram illustrating an embodiment of a content management system. In the example shown, a computer or terminal, such as one of those represented in FIG. 1 by the computers 100 and 102, is used to interact with a content management system. In some embodiments, the content management system is configured to enable related content to be managed by defining a smart container and associating the related content with the smart container. Computers 100 and 102 are coupled to network 104 and interact via network 104 with content management server 106 and content repository 108 comprising the content management system. In various embodiments, network 104 includes one or more of the Internet, a local area network, a wide area network, a wired network, a wireless network, and any other network that can enable a user to access stored system content. Content management server 106 includes applications that are used when accessing content stored in repository 108 or includes mechanisms to interact with or process content associated with smart containers. Content management server 106 also includes applications used for creating, maintaining, and operating a smart container. A smart container allows for structuring or defining the relationships between content objects in a defined manner as well as associating user roles when interacting with the content and policies to the content objects including

policies related to viewing, retaining, operating on, storing, security, versioning, and/or behavior. In some embodiments, content management server 106 and content repository 108 comprise a content management system. In various embodiments, content management server 106 comprises one or more processors, one or more memories, and one or more storage devices and can be implemented using one or more physical box units. In various embodiments, content repository 108 comprises one or more storage devices and/or one or more processors or one or more memories and can be implemented using one or more physical box units. In some embodiments, content management server 106 and content repository 108 are combined in one physical unit or system.

[0017] FIG. 2 is a block diagram illustrating an embodiment of a smart container. In the example shown, smart container 200 includes composite object 202 and metadata 212. Composite object 202 includes a plurality of objects represented in FIG. 2 as object 204, 206, 208, and 210; the objects are related in a defined manner as represented in FIG. 2 by links 211. In some embodiments, objects are directories, files, or other content, that have links or relationships such as files within folders, shortcuts to files, files pointed to by other files (for example, an email with an associated attachment), or any other appropriate relation between content objects. Metadata 212 includes information such as policies 214 and roles 216 that are associated with the objects and/or the composite object. Policies 214 include information related to viewing, retaining, operating on, storing, security, versioning, and/or other appropriate behavior. In some embodiments, business logic, work flows, and other processing are implemented by one or more policies and/or are stored separately as methods associated with or called or otherwise invoked or initiated by the smart container based on data comprising or associated with the smart container. Roles 216 includes information related to interactions and/or services that are allowed and not allowed for user when associated with a given role. In some embodiments, the smart container comprises an instance of a logical structure the attributes and methods of which are defined at least in part by a template or other definition, such as a model, configuration file, or Java or other software object class. In some embodiment, the objects comprising composite object 202, their relationship to each other, and the policies and other rules and operations to be applied to them are determined and/or implemented at least in part by attributes and/or methods of the instance of the logical structure.

[0018] FIG. 3 is a flow diagram illustrating an embodiment of a process for enabling a smart container. In some embodiments, the process of FIG. 3 is executed on a content management server such as content management server 106 of FIG. 1. In the example shown, in 300 a smart container template is designed including defining one or more policies. A smart container template allows for the design of smart containers by providing a model of a smart container that is perhaps close to the user desired smart container. In some embodiments, a user interface, such as an API, GUI, configuration file, or other interface, is provided to enable a non-programmer to define for a type of smart container rules for membership; the structure of the container, including the relationship between members; whether and if so what placeholder objects will initially be included in nodes within the smart container structure at instantiation; default/initial values for smart container attributes, as applicable; roles and