Using Web Portals to Model and Manage Enterprise Projects

Sergey Zykov, Higher School of Economics, National Research University, Moscow, Russia
Alexey Kukushkin, Moscow Aviation Institute, National Research University, Moscow, Russia

ABSTRACT

Enterprise content management is quite an issue because of heterogeneity, complexity and size. Moreover, this burden is exponentially growing. In order to efficiently handle the enterprise content, a systematic approach is required, which embraces object-based models and software engineering tools. The paper outlines the approach, and gives the primary attention to the formal models for content management. The formal models are fully supported by problem-oriented languages and CASE level tools. The proposed approach has been extended for application in project integration management. The paper also suggests the method of dynamic modeling of planning and change management processes taking into account particular project constraints, priorities, environment etc. This method is based on ER-model of project structures (WBS, OBS, TRM, network etc.) and the Selective-function Linear resolution for Definite Clause. The resolution procedure defines the sequence of the project structures determination i.e. the management process including inputs and outputs on the basis of specified initial conditions. This method was applied in a consulting project in public management domain. It could be implemented as a web-service for another web-based Enterprise Project Management Systems or as a stand-alone solution with GUI. The approach has been approved by a number of successful enterprise-scale implementations in oil-and-gas industry, public management, trading and banking enterprises, nuclear power plant construction and other areas.

Keywords: Change Management, Data Modeling, Enterprise Content Management, Enterprise Portal, Heterogeneous Data Management, Logical Deduction, Project Integration Management, Selective-Function Linear Resolution For Definite Clause, Semantic Network

INTRODUCTION AND RELATED WORKS

Big data management is a critical issue for state-of-the art enterprises. However, not only size, which is exceeding petabytes in some cases, does matter. Global distribution, and variable degree of structure complicate efficient data management for complex business objects in the globally distributed environment. Generally, such collections of versatile data objects used in strategic corporate activities are often referred to as the enterprise content. Thus, an innovative set of data models is required for efficient management of enterprise content, which would embrace the versatile data and metadata objects used in mission-critical software products and applications. The models to

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Another weak point of the approaches existing is their focus on severe problem domain uncertainties rather than partial instance inconsistencies. In general, the enterprise software resource management problem domain is well-defined due to a number of standards adopted. However, certain objects of well-defined classes may remain undefined for quite a long time. Thus, the models developed should be focused on well-defined class associations rather than on the large dictionaries with uncertain items (i.e., semantic networks rather than ontologies).

THE APPROACH OUTLINE AND BACKGROUND

The approach suggested is based on rigorous mathematical models and it is supported by software engineering tools, which provide integration to standard enterprise-scale CASE tools, commonly used with software development methodologies. The approach eliminates data duplication and contradiction within the integrated modules, thus increasing the robustness of the enterprise software systems. The technology involves a set of interrelated enterprise software development levels, such as data models, software applications, “industrial” methodologies, CASE, architecture, and database management.

The approach elements include: conceptual framework of enterprise software development; a set of object models for ESS data representation and management; engineering tools, which support semantic-oriented ESS development and intelligent content management, i.e., the ConceptModeller tool and the intelligent content management system (Zykov, 2010, 2005); portal architecture, enterprise software prototypes and full-scale implementations (Sushkov & Zykov, 2009; Zykov, 2010, 2011).

The model set is based on creative synthesis of fundamental postulates of the following theories: finite sequence (Barendregt, 1984), variable domains (Scott, 1981), categories
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