COLLABORATIVE GENERIC MODULING WITH OBJECT PROCESS MODELING METHODOLOGY

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ABSTRACT:

Object process modeling Methodology (OPMM) Provides a Collaborative modeling environment that can fit and relies on generic modeling OPMM, a holistic, bi-modal textual visual approach to the study and development of systems, integrates the object – oriented and process oriented paradigms into a single frame. These refine abstract Mechanism combines with characteristics, makes OPMM ideal for process modeling; this is based on client server architecture. The Server holds a single OPMM model for each system is a central level. For OPMM model there are three access levels: workgroup, OPMM model and diagram. The diagram level is unique for OPMM, aims to reduce the conflicts between updates (concurrent) and preventing modelers from affecting shared elements (While allowing them to refine elements). Users can simultaneously update the model according to access permission level.

Key Words: Object Process Modeling Methodology, Generic, Moduling

INTRODUCTION:

OPMM occurs when designing occurs through collaborative efforts of many designers [1]". These collaborative modeling, apply to a subset of efforts, focuses on the architecture and design of processes and systems, by using modeling methodology. The paper itself Focuses light on the requirements from a modeling environment, and specifies architecture, based on Object – Process- Methodology [2].

The concepts of modeling have been known and implemented in fields like systems modeling, CAD/CAM, software development, business process and in engineering fields. Three guidelines help evaluate, compare and define system modeling solutions for the common set of problems:

- Concurrency: The shared systems is a platform to work for the same systems, based on a single integrated and consistent model that defines it, throughout the development phase .Model should be available in real-time to get the most up-to-date view of a systems.
- Communication: Communication should be multi way regardless of their physical whereabouts.
- Security: The secure development protects the model from unauthorized external entities and by modelers.

OPMM provides a modeling environment, used for a large variety of modeling purposes. Holistic bimodal approach of OPMM help in development and evolution of systems, whose single model is, represented both visually and in natural language. One of the specialties of OPMM is, it integrates the Object Oriented and Process - Oriented paradigms into a single frame of /for reference, combined with built - in refinement and abstraction mechanisms. This makes OPMM ideal models for business process due to structure - behavior. The good example of complex systems, which is most beneficial and is an integrated application of OPMM[24],that is actually a generic reverse engineering process(Captures available alternatives) at different applications levels of an Enterprise Resource Planning (ERP) systems.

OPMM model is a set of interrelated Object Process Diagrams (OPDs), challenge arises in OPMM development is the maintenance of the integrity of the OPM model, that is manipulated by more than one modeler (at the same time).OPD contains detailed description, refines entities (Object /Processes).As any of the entity is refined, other entity /entities were directly connected to it, abstract OPD are brought into newly created OPD, and the modeler can add entities into sub process. When more than one modeler specifies the same entity, they are bound to contradict; each change in a common entity can potentially influence other OPDs.

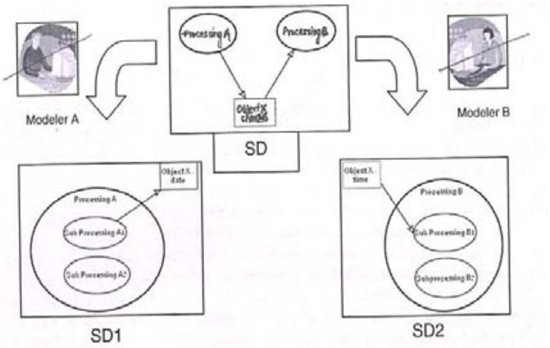

Fig.1:An Integrity Problem

Figure 1 illustrates an example of integrity maintenance problem. Two modelers are working on refined two different OPDs (SD1 and SD2) and all three OPDs share a common entity (Object X),type was determined in SD as “char [25]”.Here modeler A wishes to changes the type of Object x in SD 1 to “date”, at the same time modeler B wishes to changes the type of Object X in SD2 to “time”. Now modelers have to compromise the integrity of the OPM model .Such situations can be avoided when integrity and completeness of an OPD set developed. Standard development process is an important requirement for collaboration system modeling (such as spiral model).Each step in the process is based on refinement and modifications of the output of the last step [4].As noted, security is a major aspect in multi-user environments.

One of our goals is to protect the OPMM model from unauthorized changes. If the permissions of the both modeler A and B are set to “Refine” on OPD SD, then only both modelers can refine the processes and the connected Objects, but not commit to changes that may affect each other. Our paper specifies an implementation – independent model, embedded in OPMM, with advantage of refinement ability.

LITERATURE REVIEWED:

The current software industry offers variety of collaborative products in a number of domains, includes joint activity tool (Example – instant messaging, content sharing tools and audio communication) like NetMeeting[5], collaborative electronic presentations and meeting like lotus sometime[6],collaboration activities in ERP systems like SAP[7],and collaborative content management such as Documented[8].

In our research paper we will focus on the collaboration in the domain of formal engineering artifacts, includes business process modeling, systems modeling, anthologies, software coding and CAD/CAM.A collaborative business process modeling tool, combines web discussion forums with MS VISIO drawing tool, is a new approach to the capturing of Business Process Models [9].

Prominent systems include CVS [10] (for collaborative software coding), a large scale open-source project, provides user friendly and collaborative environment to a team of developers. Team SCOPE [11] is actually a groupware solution, interfaces with development environments. Collaborative Ontology engineering tools take a different approach, example Onto Edit [12] uses client-server architecture to support a collaborative engineering process. The model under construction can be duplicated through the client programs, and a locking mechanism enforces the model integrity. The users can lock a sub tree of the ontology (specified as a tree) and can be edited it without interferences. Ontology classes may have relations between them, and working on a class does not influences any related class. OPM cannot operate under these assumptions, and require different approach. In the field of systems modeling, Poseidon for UML [13]is in a process of upgrading to team support edition; this edition will include version control, multi-user support and client-server architecture. Rational Rose [14] and Citlera [15], UML-based tools, base their collaborative features on standard version control software. Concurrency can be achieved by breaking the systems modules into separate file, handled through the customary check-in/check-out mechanism. An example of a distributed model management systems SoftDdoc[16],supports collaborative software development, whose model description are shared and managed through a middleware.

Extensive research and numerous projects, served in [1], concern with collaboration in the CAD/CAM domain. Some research opportunities were identified, including conceptual design modeling and sharing of data. One another project [17] for computer-aided sequential control design tool deals with modeling problems and based on client- server architecture.

Objet process methodology:

OPMM is a holistic approach for the development of systems and to the study, integrates the object oriented and process oriented paradigms into a single frame of reference. Each system exhibits and co-exists and behavior (two major aspects) in the same OPMM model without highlighting. Most challenging systems are those in which structure and behavior are intertwined. Due to structure behavior integration, OPMm provides a concrete basis for modeling complex systems.

Three built - in refinement/abstraction mechanisms are built into, OPMM. They enable presenting the system elements without losing the comprehension of a system. Unfolding and folding is second pair of refinement and abstraction mechanisms.

OPCAT: OBJECT- PROCESS CASE TOOL:

OPCAT' [20] is an integrated system engineering environment; supports OPMM based system development and evolution. OPCAT has been goes under continuous development as an academic project (since 1996). It is designed to support the entire SDLC (system development life cycle) through OPMM, OPCAT, supports a bimodal graphical-textual view of the system under development, enabling OPMM accessibility to heterogeneously skilled users engaged in SDLC. Basically the environment provides for many phases of SLC (System life cycle), including system specification, design documentation and code generation [21], automatic analysis and potentially any programming language, generation of various UML diagrams, including class, use case, collaboration and state chart and animated simulation of the OPM model. A major function currently not supported by OPCAT is collaborative concurrent development of a single system.

PROBLEM SPECIFICATION:

A major challenge of collaborative OPMM development is provision of reliable parallel OPMM modeling. Science OPDs in the OPD set are interconnected is nature. OPDs can share common entities like Object, processes states; each change in a common entity influences other OPDs. Therefore, a method for maintaining the integrity of an OPD set must be developed.

Following OPMM conventions [2], we label OPDs hierarchically by SD (For system diagram, the root), SD1, SD2, SD1.1, SD2.3.1 etc. A refinement relation between OPDs (from SD1 to SD2) exists if and only if SD1 contains a refined (unfolded) version of the same entity in SD2. A commonality relation between OPDs SD1 and SD2 exits if and only if SD1 and SD2 share at least one common entity.

To analyze the integrity problem, we extend the definition of the system Map hyper graph [2], in which each mode represents an OPD. The edges of the SM are of two kinds of labeled edges: directed and undirected respectively. A directed edge represents a refinement (unfolding) relation, such that the edge is directed from the source OPD, in which the refinedentity (object/ process) is more abstract, to the definition OPD, in which things are more refined. The label indicates (1) the entity that is being refined and (2) the refinement type (unfolding).

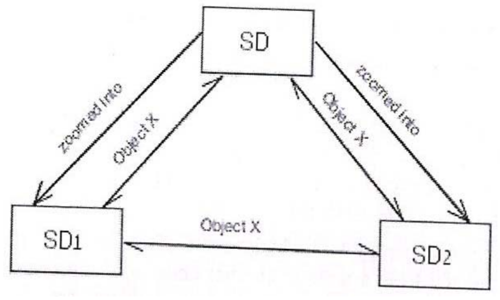

Fig.2: An example of an augmented system map.

Figure 2 illustrates an Augmented system Map, in which SD1 contains a refined version of an entity E1 (object / Process) that appear in SD in its abstracted version. SD2 contains a refined version of another entity E2, also represented in SD (in abstracted version). In above example, the directed edges represent a refinement (unfolding) relation between SD to SD1 and between SD to SD2. Since a common entity (Object X) exists in SD, SD1 and SD2, an edge labeled “Object X’’ connects each one of them to the two other nodes.

CONCLUSION:

The OPCAT architecture delivers system modeling features that meet the requirements of modern environments. It allows them of modelers to design a shared OPMM model. The client-Server paradigm enables real time modeling by eliminating risks of losing the model perfections. The architecture also takes care of the interconnectivity of OPMM. Additional advantages are security, central logging and backup facilities. On the same hand disadvantages include server is the bottleneck of the system, creating scalability and performance problems. Second disadvantage is that users need to be connected to the server to allow for online updates, while engaged in OPMM system development.

The approach we are following here opens the door to full - scale adoption and application of refinement activities. The new modules can be developed by using UML [22] are as workflow and peer-to-peer management.

RFFERENCES:

[1]Wang,L., Shen,W., Xie, H., Neelamkavil, J., and ardasani, A .,Collaborative conceptual design-state of the art and future trends, Computer Aided Design 34,2002.

[2] Dori,D. Object-Process Methodology-A Holistic System Paradigm. Springer Verlag, Berlin,new york,2002.

[3] Soffer, P.Golany B.,and Dori, D. ERP Modeling: A Comperehensive Approach. Information Systems 28,pp.673-690,2003.

[4] Potok,T.E., extensions to the spiral model to support joint development of complex software systems. Proceedings of the 30th Annual Southeast Regional Conference, ACM Press 2002.

[5]Microsoft, NetMeeting, http://www.microsoft.com /windows/ net meeting/

[6] IBM, Lotus Same time, http://www1.ibm.com/servers/eserver/iseries/sametime/

[7] SAP, http://www.sap.com/

[8]Documentum, htttp://www.documentum.com.

[9] Kazanis, P .and Ginige, A.A synchronous collaborative business process modeling through a web forum, Seventh Annual Collector Conference on Electronic Commerce. Melbourne, VIC, Australia, in association with ACIS 2002.

[10] CVS, htttp://www.cvshome.org/

[11] Stein field, C.,Jang,C., and Pfaff, B., Supporting virtual team collaboration: the Team SCOPE system. Proceedings of the international ACM SIGGROUP conference on supporting group work. ACM press, 1999.

[12] Sure,Y.,Erdmann,M.,Angele,J.,Staab, S.Studer R., and Wenke, D. Onto Edit: Collaborative ontology engineering for the Semantic Web. Proceedings of the First International Semantic Web Conference 2002(ISWC 2002),LNCS 2342,pp.221-235,Springer 2002.

[13] Gentalware, Poseidon for UML Enterprise edition ,http://gentalware.com.

[14] IBM, IBM Rational Rose – http://www.rational.com /products/rose/index.jsp

[15] Canyon Blue Inc., Cittera UML collaborative tool. htttp://www. Canyonblue.com/

[16] Suzuki, J. and Yamamoto, Y. Soft Dock: A Distributed Collaborative Platform for Model based Software Development.

[17] Yen, C., Li, W.J. and Lin, J.C., A web based collaborative, computer aided sequential control design tool. IEEE Control Systems Magazine, pp. 0272-1708, 2003

[18] Goldstein, H. Collaboration Nation, IEEE Spectrum, June 2003.

[19] Dori, D., Reinhartz-Berger, I., and Sturm A. (2003). OPCAT - A Bimodal Case Tool for Object – Process based system development.5thInternational Conference on Enterprise Information Systems (ICEIS 2003),pp.286-291.Software download site: http://www.Objectprocess.org/

[20]Sun Microsystems, Inc.Java2Plateform API Specification. http.//www.java.sun.com/products/jdk/.2/docs/api

[21]Unified modeling language (UML)http;//www.uml.org/.