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بالرسالة صفحات
لم ترد بالأصل

Ain Shams University
Faculty of computer
and information sciences
Department of Information System

DELIBERATION PROCESS MECHANISM FOR SOFTWARE DEVELOPMENT

Thesis submitted for partial fulfillment
of` master degree in information system

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Publications

Rania El-Gohary

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ABSTRACT

The early portion of software development process is missing automated support for many important activities that help firm up requirements and control the system design and evolution to satisfy customers' real needs.

This thesis introduces an improved formal model for requirements elicitation and evolution along with an implemented software tool based on the model. This tool with its associated database and other artifacts enabled by the model is used to capture stakeholders' criticisms to requirements and map these criticisms into the model objects to be used in synthesizing a set of open issues to be resolved.

These issues are resolved by examining and modifying requirements if necessary, and then propagating the change down in the requirements hierarchy in a consistent and controlled manner.

The issue resolution process is conducted by all relevant stakeholders supported by automated deliberation facility embedded in our software implementation of an enhanced formal deliberation model. The objects and process assist stakeholders to individually evaluate and judge different available alternatives to resolve an issue.

This outcome of the deliberation process is a change request that identify the affected requirement component in the requirements hierarchy that should be manipulated (added, changed, and/or deleted) to resolve the issue. The outcome reflects the group decision of selecting one of the available alternatives to resolve the issue.

To reach to such a decision, the software mechanism that implements our model provides each stakeholder involved in the deliberation process with the interface and the representation for him to conduct an independent and quantified judgment. The mechanism, then formally combines these individual judgment into a group decision that takes the form of a certified change request.

Our model combines, augments, and enhances well-known models that have being used by practitioners for a long time despite the defincies in each model. Throughout the thesis, we spot such defincies and show how alleviates them using our improved model.

The first of these models is issue-based-information systems (IBIS) that view a complex system development process as basically a deliberation among stakeholders to resolve the development issues.

Our model extends the IBIS model by making it more formal and hence increase it representation power. This improvement is the outcome of enriching the IBIS with more types and relationships that do not exist in the original model.

We also augmented our improved version of IBIS with a second formal model that provides automated assistance in the process of choosing for available alternatives to resolve an issue. This second model is based on our improved version of the analytical hierarchy process (AHP) that has being used in decision making by choosing among alternatives based on unbiased and quantified judgment mechanism.

Table Of Contents

List Of Figures

List Of Tables