Exploring Business Process Transparency Concepts

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Abstract

Transparency has been, for long, a general requirement for democratic societies. According to Leite [6], transparency will be a central issue in producing software. This work assumes that, for providing software transparency, it is necessary that the processes to be supported or automated be transparent as well. As such, using a requirements point of view, it is necessary that organizations implement process transparency to enable transparency in their automation or support. This work is based on Business Process Management concepts, NFR framework and quality management.

1. Introduction

In the U.S, after a major financial auditing scandal, congress established new requirements for financial transparency. The Sarbanes-Oxley Act of 2002 [4], widely known in the IT industry as SOX, obliges companies to demonstrate more control over their financial processes. Another example is the BASLE treaty [7], a set of essential principles, to be shared by Central Banks in order to provide international standards for banking systems. Both of these are based on organizational process, software and information transparency necessity. But, what is organizational transparency? How can software supporting processes be transparent? Which kind of information is needed for the organization to be transparent?

This work shows how the demand for transparency can be tackled with the NFR Framework and i* modeling.

2. Transparency concepts

In order to understand this discussion, it is important to realize how we interpret “transparency” in the organizational process context. Although we did not find a formal definition for the term in this context, we decided to begin with in-depth research on the term in different areas by observing different meanings.

From the literature review we gathered several expressions such as: complete information, objective information, trustworthy information, excellent information, easy access to information, understanding information and total opening communication channels.

Process transparency is as a challenge by itself, and as processes are more and more implemented by software, the challenge is even bigger. We understand that transparency is a non-functional requirement (NFR) and, as such, we have used the NFR Framework [1] to describe transparency as a set of interrelated softgoals (non-functional requirements).

3. Mapping to the NFR Framework

The NFR framework [1] allows softgoals arrangement in graphs with a deeper level of refinement in order to understand mutual effects through SIGs – Softgoals Interdependency Graphs. As our problem was to systematize the transparency concept, we established a correspondence between transparency characteristics found in the literature and some NFR types already catalogued in the NFR Framework [1]. We have used the following general heuristics to produce the SIG: a) first we studied relations among the types and separated them into groups, b) for each group we identified the dependencies between the types. c) If one type depends on others to be achieved, then this one will be placed on a higher level. The resulting SIG was composed of 36 nodes arranged in 3 levels. The
second level of decomposition was formed by the following softgoals: usability, auditability, accessibility and informativeness. We have also mapped the contributions (negative) from the softgoals confidentiality and security.

This SIG is the base ontology to be used in evaluating process transparency.

4. Transparency evaluation framework

Because process transparency evaluation has a strong relationship with “Quality Questions” (5W1H) [3], we identified relations between transparency types (the nodes at the SIG referred above) and “Quality Questions” in order to evaluate the strengths of each transparency types. The “Questions” used were as follows: WHAT – What will be done (task/artifact); WHEN – When each task will be done (time); WHERE – Where each task will be executed (place); WHY – Why the work needs to be done (rationale); WHO – Who will do the task (responsibility) and HOW – How the work will be done (method).

Combining the SIG as our base ontology and the 5W1H framework we establish a framework for evaluating process description models.

5. Transparency in process model

We compared three business process modeling meta-models using the evaluation framework described above. Three meta-models were evaluated: Fiorini [2], BPMN [8] and i* Framework [5]. All of them have the aim of organizing and documenting information about processes giving the most relevant information to render them explicit. With the purpose of ascertaining which of these models is more adherent to the NFR transparency SIG, we classified them into four degrees: No: Does not have enough information to explicit the criteria; Partially: Has in part, but not wholly, enough information to explicit the criteria. The criteria why and where are out; Almost: Has slightly short of or not quite accomplished enough information to explicit the criteria. Only one criteria is out; Yes: Has complete information to explicit the criteria.

The i* Framework ranked better than BPMN and Fiorini’s model because it covered most of the Quality Questions for each of the softgoals that compose the transparency SIG (Section 3). i* is intentionally oriented and relies on goals, softgoals and agents as its cornerstone principles [5].

6. Conclusions

In this work, we produced a preliminary transparency ontology using the NFR framework. Our intention is to make it more clear what is meant by process transparency. An evaluation framework for process transparency was proposed by combining the SIG ontology and the 5W1H framework. We have applied the evaluation framework to processes meta-models in order to understand how they would handle the NFR transparency.

Although i* did rank better in our evaluation, it is by no means the final answer to process transparency. Several issues need to be more explored. We only have looked at few negative contributions on the SIG for transparency, so further study is necessary to explore them. Another important concern is to verify the cost of producing and maintaining these models. The fact that i* allows the construction of more transparent models brings opportunities to enhance elicitation processes for organizational processes modeling.

7. References