Evaluation of the ReSA Framework with Practitioners in Industry

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***Abstract*—Abstract goes here....**

I. Introduction

To be added by Cristina and Nesredin

II. Background

To be added by Nesredin ....

III. Evaluation Methods

In order to conduct the evaluation, we develop first an evaluation framework, tailored to the evaluation of engineering methods and tools in industrial context, particularly useful our research problem. The framework is inspired by the DESMET evaluation methodology [ref] that aspires to develop a software engineering tools and methods within a particular organization, such as a research group, or a company. The evaluation framework basically characterizes our evaluation approach, and more importantly reflects the validity of our evaluation results, and the capability to infer generalizations for a wider use. Figure 1 illustrates the components of the framework, shown by the oval shapes, i) first the goals of the evaluation are identified from the overall goal of the evaluation, ii) and then we define metrics of the evaluation that contribute to the fulfillment of the goals, iii) based on the identified metrics, we select appropriate evaluation methods, iv) finally, we define the evaluation process that applies the selected methods in the industrial context.

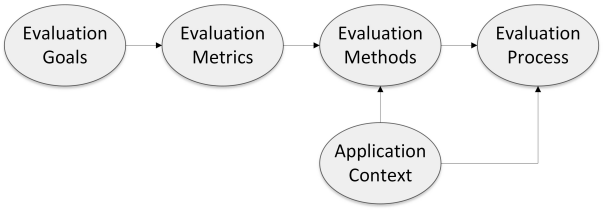

Fig. 1: Evaluation Framework

A. Goals of the Evaluation

The goals of the evaluation are direct derivatives of the main goal of the evaluation that we intend to achieve. In identifying the goals, the quality of the goals is discussed with our group researchers and domain experts from industry, with particular interest on the practicality, verifiability, and relevance of the goals to industry. So, the goals of our evaluation are:

- to assess the effectiveness of constrained natural language, in particular the ReSA language
- to assess the effectiveness of a SAT-based technique to detect specification defects
- to assess the capability of the ReSA language, especially:
  - the extent to which the language is capable of expressing a wide range of specification scenarios, also known as *Expressiveness*,
  - the extent to which users can choose words/phrases and syntactic variants to specify requirements also known as *Flexibility*, and finally
  - the extent to which the language renders the syntax and semantics of natural language, also known as *Intuitiveness*
- to assess the integration of the ReSA specification and analysis framework and its abstraction of formal technique from the user

B. Metrics of the Evaluation

C. Quantitative Method

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- time to complete a task
- number and type of questions
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D. Qualitative Method

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- Closed questions (multiple choices)
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E. Hybrid Method

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- feedback
- discussions
- open questions
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IV. Evaluation Process

- the evaluation model

A. Preparation Phase

B. Data Collection

- map the process to the methods presented in the Evaluation Method section.

V. Discussion (Technical)

A. ReSA Framework

With regard to:

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- lessons learned
- wisdom from industry, interaction with practitio
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B. General

- lifting your lessons, generalizations

VI. Related Work

To be added by Nesredin ....

VII. Conclusion and Future Work

To be added by Nesredin