

Implementing Structural Measures over *i** Diagrams

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Abstract. Measuring is a key issue in any software-related activity. In the context of the *i** framework, we are implementing *Measufier*, a prototype for measuring *i** diagrams in terms of properties that may be derived from their structure (structural measures). The prototype works over *i** diagrams represented by the iStarML interchange format, and provides some facilities for managing measures' catalogues, customizing the measures to the analyst needs, and computing the measure over particular diagrams.

Keywords: *i**, iStar, structural measures, *Measufier*, iStarML.

1 Introduction

Measuring is a fundamental activity for assessing the quality of conceptual models of any kind (“you can’t control what you can’t measure”). *i** models are not an exception to this rule. Some theoretical works have been proposed in the *i** community for defining measures over *i** diagrams [1]. However, there are not tools in the *i** marketplace offering the capability of defining and applying those measures. Our proposed *Measufier* tool is a first step to bridge this gap. This is the first version of *Measufier* (1.1) presenting a set of basic functionalities, to be enlarged in future versions. Its status thus may be considered quite preliminary. The tool may be downloaded from <http://www.essi.upc.edu/~gessi/Measufier/resources.html>, where some basic tutorial may be also found.

2 General Description

Measufier offers three main functionalities:

- Measure definition. It allows defining structural measures over *i** diagrams according to the principles presented in [1]. At the current prototype all the measures are kept in a single catalogue.
- Model management. Several *i** diagrams represented in the iStarML interchange format [2] can be loaded in the context of a user session.

- Measure evaluation. Measufier supports the evaluation of measures selected from the catalogue over *i** diagrams loaded in a session.

Given the use of iStarML, Measufier may be easily interconnected with tools that have the ability to export models into this format. Also, the openness of this interchange format makes it possible to apply Measufier to different variants of *i** supporting thus most *i** modeling frameworks.

Figure 1, left, shows two example *i** diagrams. They represent two alternative social systems for a Pediatrics Hospital. We want to analyse them quantitatively as a way to support informed decision-making. We decide to use concepts from social networks. Figure 1, right, shows the name of four measures from this field and select just one. This measure, InDegreeMeasure, provides an estimation of the strategic importance of one element to its environment. It is defined as the number of incoming connections that an element has.

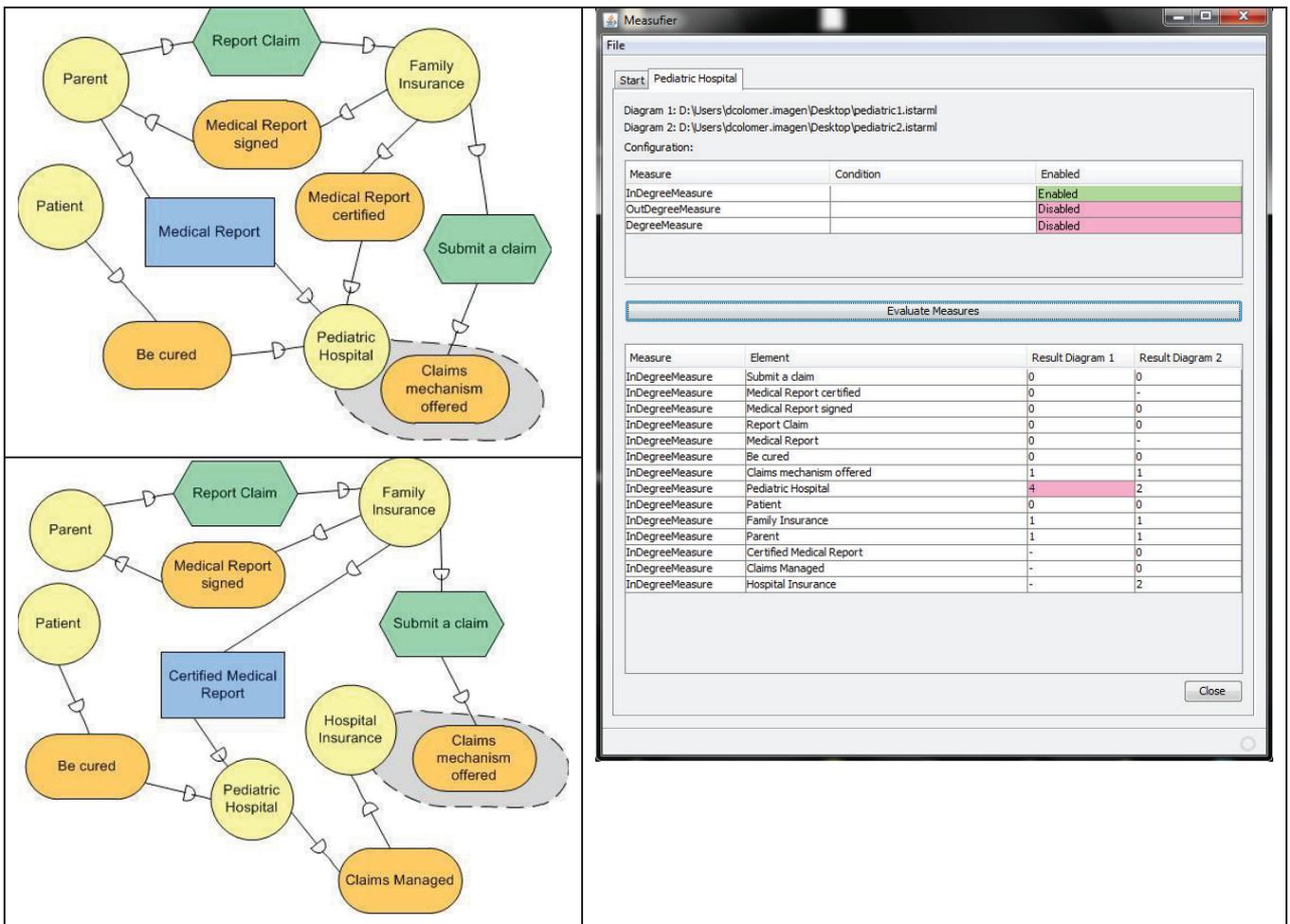


Figure 1. Two *i** diagrams for a Pediatrics Hospital and the outcome of Measufier.

3 Conclusions

Measufier is covering a gap in the current *i** tools landscape. Given its capabilities, it may complement other analysis tools and may complement existing techniques that require some quantitative analysis of *i** diagrams, e.g., analysing the adequacy of the model as starting point of an MDD process [3].

Because it is a first version, the tool has still many limitations, being the most important not having the ability to deal with arbitrary measures.

Our future work includes:

- Building a comprehensive catalog of measures. This catalogue will be indexed by concept or intended use of the model: e.g., social measures, measures for software architectures represented by *i** diagrams 4; etc.
- Implementing the connection with several *i** tools like OME, jUCMNav, TAOM4E, REDEPEND, etc. We will explore two non-exclusive ways. First, implementing an export facility in this tool for generating iStarML (already done for OME [5] and jUCMNav [6]). Second, offering Measufier as a service.

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