

## User Stories Dependencies: graphical representation to support Agile development

Isabela S. Godoi (IC), Regina L. O. Moraes (PQ)

### Abstract

Agile software development relies on User Stories to represent the systems requirements. When we are dealing with large and complex systems, the organization definition and the identification of dependencies between the User Stories without the support of a tool are not trivial tasks. The need of automation arises to tackle these challenges. Therefore, the goal of this work is to adapt an existent tool for graphically present the dependencies between User Stories, easing the Product Owner task regarding their priority definition. The final expected result is a new version of the selected tool that should be able to receive a predefined sequence of User Stories and present the dependencies allowing changes to accommodate relevant semantic issues.

*Key words: User Stories, Agile Software Development, Graphical Dependency Tool.*

### Introduction

In order to speed up the time to market, the management of the changes in the systems priorities and to better align information technology and business, every year, more and more institutions have been adopting Agile methodologies (VersionOne, 2013). However, the large number of User Stories to be dealt becomes often an obstacle to the adoption of Agile methodologies in complex systems (VersionOne, 2013). Therefore, to assist the solution of this problem, this paper proposes a graphical representation of User Stories and its dependencies, easing the process of User Stories' prioritization by Product Owner. User Stories' graphical representation relies on JGraphX, a Java Swing library under license Berkeley Software Distribution (BSD), which allows the visualization and interaction with graphs. JGraphX allows the user to customize the format, color and size of the elements to fit the specific context. In this work, each graph node represents a User Story and each edge represents a dependency between two User Stories.

### Results and Discussion

As shown in Figure 1, the User Stories are grouped by Business Value and sorted by the priority in ascendant order and descendent order of the development effort. To achieve this result, a file with the User Stories is created, which is used as input for JGraphX. After reading and processing the file, the application can graphically present the User Stories to the Product Owner (PO). Then, the PO can manually adjust and change the User Stories order, add new User Stories, replace or delete other User Stories. After the PO interaction, the result is delivered to the Agile time. A

preliminary validation was performed and the results are promising.

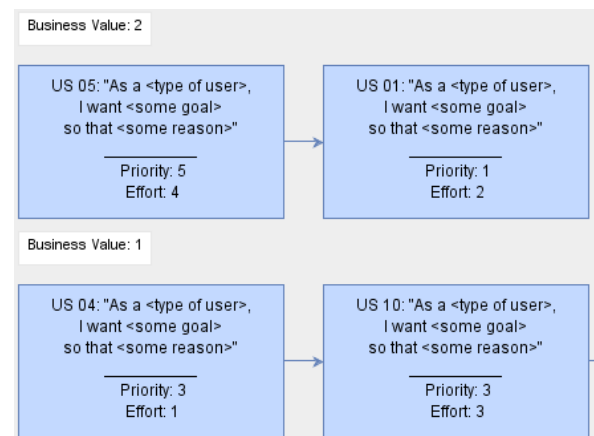


Figure 1. User Stories graphical representation.

### Conclusions

Even considering the increasing use of Agile methodologies in software development environments, there are concerns related to how to facilitate the implementation of some steps of these methodologies. Using the graphical representation proposed in this work it is easier to visualize the functionalities and the dependencies between USs. Then, the PO can take advantage of this graphical representation prioritizing the USs in an easier way regardless the system complexity.

### Acknowledgement

The authors would like to thank PIBIC/CNPq program and DEVASSES project.

VERSIONONE. **Executive Summary.** 8th Annual State of Agile Survey. 2013. Disponível em: <<http://www.versionone.com/pdf/2013-state-of-agile-survey.pdf>>. Acesso em: 27 jan. 2015..