Preliminary Study to Empirically Investigate the Comprehensibility of Requirements Specifications

Deirdre Carew, Dr. Chris Exton, Dr. Jim Buckley

University of Limerick, Ireland
Deirdre.Carew@ul.ie, Chris.Exton@ul.ie, Jim.Buckley@ul.ie

Margaret McGaley, Dr. J. Paul Gibson

NUI, Maynooth, Ireland
mmcgaley@cs.nuim.ie, pgibson@cs.nuim.ie

Abstract. This paper presents a pilot study to test plans for an empirical study, which will compare the comprehensibility of two specifications: a formal specification and an informal specification. The two documents used in the pilot study implemented the same logic, namely a portion of the Irish Electoral system. The "informal specification" was taken directly from the legal definition of the count rules for Irish elections. A formal requirements specification language was not employed for the pilot study. In place of a formal requirements specification language, the java programming language was used. Our main motivation for using the java programming language is based on an empirical study carried out in [19].

1. Introduction

There is a common perception in the requirements engineering community that formal specifications are more difficult to comprehend than informal specifications. This is often cited as one of the reasons why formal methods are not used more often. It appears however, that little or no empirical evidence exists to substantiate this claim.

Informal specifications, i.e. specifications written in natural language, are the most common and widely accepted approach to specifying requirements [23]. Many people have concluded that requirements specifications written using informal notations result in a common model, comprehensible by a general audience, which helps to enhance communication among all parties involved. In essence, informal specifications are seen as being easier to comprehend than formal specifications [23].

Formal methods provide developers with the facility to work at a level of abstraction independent of the implementation of the system [14, 6, 7]. They claim to help engineers focus on what a system should accomplish instead of how it should accomplish it [12]. In [8] a formal method is defined as: