Implementation Independent Profiling of SDL Specifications

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Abstract. The Specification and Description Language (SDL) is a worldwide accepted standard for development of new protocols, e.g. an increasing number of IEEE protocol standards uses SDL. Especially for mobile devices it is important that the protocol implementation is as energy efficient as possible. This cannot be achieved with a straight forward code generation from SDL to a target language as for example C. Thus, the normal way is that after the specification is done, parts of the protocol are implemented by hand using C or even VHDL. In this paper we are presenting our profiling tool, profSDL, which is designed to support engineers in determining the partitioning of the SDL specification. profSDL allows to determine static effort and dynamic effort of the protocol under development. The dynamic effort can be assigned to the protocol itself as well as to the SDL runtime environment. We applied profSDL to a fully functional SDL model of IEEE802.11a. The design decisions indicated by profSDL matched exactly what the designers decided manually. The major benefit of profSDL is that it works on SDL level, so that the profiling results are independent of any potential implementation decision e.g. programming language features.