System level design of telecom systems using formal model refinement:

Applying the B method/language in practice

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Abstract

The increasing complexity of modern telecommunication systems is one of the main issues encountered in most telecom products. Despite the plethora of methods and tools for efficient system design, verification and validation phases are still consuming significant part of the overall design time. The proposed approach outlines the use of the B method/language for producing correct-by-construction implementations of telecommunication systems. The method described is supported by appropriate tools that automate the process of proving that system properties are maintained during the various design stages. The feasibility of the latter is evaluated in practice through the design of a real world telecom application, borrowed from the domain of wireless telecommunication networks.

Keywords: Formal methods; Formal verification; Correct by construction systems; System level design