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Designing the Parlay Call-Control Using ASMs

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Recently different standardization bodies have joined to create a new standard to open network API between the telecom service level, which gives connectivity to different networks, and the application level, which is built by enterprises outside the telecom network domain. This OSA (Open Service Access) API is a standard interface for applications to use the capabilities of a network without knowing technology details. Parlay/OSA [4] specification covers different aspects: messaging, location, conferencing, security, call-control, etc. Our work focuses on the Call Control API specification whose main goal is both to allow applications creating whichever kind of call between voice terminals connected to different networks, and also react to call requests coming from various networks, according to the service-logic implemented by the applications (e.g. [3]). The Parlay documentation provides a specification of the Call Control Service Capability Feature (SCF) aspects of the interface by means of UML [5] class, state, and sequence diagrams. However, although UML emerges as the best practice modeling notation for object-oriented software development, in its current setting it still lacks of a formal semantics. As a consequence its usage and, correspondingly, the interpretation of developed models may differ considerably. For this reason several of semantics models for UML diagrams have been provided (see for instance [1]). We present a methodology to produce an ASM specification of the Parlay call control from the UML diagrams provided in the documentation. We exploit an existing UML to ASM tool framework [2] able to obtain *automatically* an ASM model of the Parlay call control given through UML class and state diagrams. This approach is of interest to groups working on Parlay mainly for two reasons. (a) **Validation**. In the Parlay specification a number of UML sequence diagrams modeling important scenarios of application are given. Feeding our toolkit with these sequence diagrams, such scenarios can be simulated against the given model to check that the system conforms with the expected behavior. (b) **Maintainability**. The update of a protocol specification, the supply of an additional protocol and of new scenarios are a big problem for developers because any modification in this complex software implies a new series of verifications of standard compliance, and leads to new potential bugs. Changes in the Parlay UML specification would be reflected in the corresponding ASM model automatically created by the tool. Additional effort would only be required to change the ASM specification of actions and events.

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