

Abstract

The number of electronic control units (ECU) in automobiles is continuously increasing. Designing complex system consisting of hundreds of ECUs is a challenging engineering task. The AUTOSAR standard established in the early 2000s, aims at supporting this design process by various facilities, like a modelling language and software architecture.

The growing number of electronic units results in higher electric power, and *fuel consumption*. This undesired effect can be reduced by switching off inactive units. In traditional topologies electric units are powered on and off according to the ignition signal. However this function can be realized by communication networks, where devices are turned on and off by *bus messages* respectively.

Since in most cases entire communication buses cannot be shut down, ECUs are organized into so called *partial networks* according to their functionalities. This refined structure enables selectively switching off certain unused services in the vehicle. To manage the partial networks, and to realize *selective wake-up*, we have to use such hardware bus interfaces (transceivers), which are able to power up the ECUs on *certain messages*. This mechanism is supported by CAN communication protocol standard (ISO 11898-6).

The goal of the work presented here is realising the software layer of a control unit in AUTOSAR architecture, supporting partial networks. The proper operation of network management is verified, and a PC side test tool is implemented. This application connects to the communication bus by a gateway, displays and simulates the network management messages. The test tool is realised in Eclipse environment, by means of AUTOSAR system models.