

The thesis focuses on an extension of the SOFA 2 component system allowing development of high-integrity real-time embedded systems using the component-based development approach. SOFA 2 employs a hierarchical component model and many advanced features which may be useful in this area of software development. The thesis offers discussion about necessary changes and features that needs to be incorporated into the SOFA 2 component system. The thesis also consists of design and prototype implementation of the extension in order to realise and prove the viability of the proposed concepts. This implementation allows development of high-integrity real-time embedded systems by its decomposition into components which offers strict separation of concerns and higher reuse. The prototype implementation aims to reuse as much as possible of the existing SOFA 2 tools and code. Use cases and comparison with related work is provided to demonstrate usability and features of the prototype implementation.