SOFA HIGH INTEGRITY
SOFA 2 PROFILE OVERVIEW
What is it?
SOFA 2 component system profile.
Targeted at high-integrity real-time applications development.
SOFA 2 profile is the new concept.
Concrete deployment and runtime implementation.
SOFA 2 profiles share common functionality. Currently repository and development tools.
SOFA HI is a profile of SOFA 2.
Together with existing implementation denoted as SOFA/J.
What has been done?
Each phase had to be addressed.

To allow real-time component systems implementation.
SOFA 2 component model was extended. To support modelling of real-time component systems.
Active components.

Support for periodic and aperiodic tasks.
Property sets.
Support for modelling of real-time attributes.
Architectural modes.
Support for architecture variability.
Repository was extended.
Support for other component languages was added.
Environment abstraction is provided.
To allow development of portable components.
Development support is covered by the tools. SOFA 2 offers quality usable development tools.
These tools were extended. Support for other languages and new model features was added.
Application components are glued together.
To form the resulting component system.
SOFA HI repository extension.
Generates component connection and initialization code.
Application is compiled and deployed. This is addressed by deployment environment.
SOFA HI deployment dock.
Generates build files, compile and deploy the application.
What is inside?
Model transformation and code generation.
The internals of SOFA HI implementation.
Hierarchical models are inherently complex. They cannot be easily used for code generation.
SOFA HI intermediate model was introduced. The solution of hierarchical component model complexity.
Simple flat component model.
Transformed from hierarchical SOFA 2 model.
SOFA HI modules use the intermediate model. The input for code generation templates.
SOFA 2 structural changes were needed. To allow implementation of SOFA HI.
The structure was absent in SOFA 2.
Everything was mixed up together.
SOFA 2 reminded big ball of mud.
Popular but hated architectural style.
The implementation had to be cut up.
To form small self-contained modules.
To get from this.

sofa
To this.
Finally, to this!
Modules are built by the SOFA 2 build system.
Advanced build system as the underlying backbone.
Allows to assemble SOFA HI distribution.
Composed of existing as well as new modules.
Let's see it in action!

Time for demo.
Stopwatch application.
Simple yet complex enough to show the basic features.
What is next?
The thesis is not the end.
More likely, it is the first step of the long way.
There is a lot of work to be done. Potential for future student projects and theses.
Support for architectural modes.
The way to address design time variability.
Micro-component model support.
The way to address run-time variability.
Support for distributed communication.
Allows to build distributed applications.
There are other ideas and concepts. They are not mature enough but worth future research.
Profile specific component model extensions.
Target platform modelling.
Component documentation support.
General improvements are needed as well. To improve the existing SOFA 2 implementation.
Componentization of SOFA 2 implementation.
Micro-dock usage.
Your ideas and remarks are welcome. They may help to form the SOFA HI future development.
Questions?