

SOFA High Integrity (SOFA HI)

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1. Overview of SOFA HI

SOFA HI is an extension of the SOFA 2 component model, targeted at high-integrity real-time embedded systems.

The key additions and differences of SOFA HI comparing to SOFA 2 include various restrictions of the component model in order to make it more predictable and lightweight. For instance, SOFA HI restricts dynamic architecture reconfigurations to dynamic component updates at runtime only, while SOFA 2 supports more types of dynamic architecture reconfigurations). In addition, while SOFA 2 does not consider any restricted computational model, SOFA HI considers the Ravenscar Computational Model for local deployments, with an extension for distributed deployments.

As opposed to SOFA 2, SOFA HI mediates accessing to the RTOS and hardware through a service accessible to all components, in order to keep control over all resources hardware interactions. In SOFA 2, it is possible to generate connectors and controllers at runtime. This is not possible in SOFA HI.

SAVOIR (Space Avionics Open Interface Architecture) is an ESA initiative to standardise spacecraft avionics and thus increase cost-efficiency. In COrDeT Toulouse, an ESA TRP project [1], SOFA HI component model is used in order to fit with goals of SAVOIR and provides a basis for a programming framework for spacecraft onboard software.

[1] Component-Oriented Development Techniques (COrDeT), ESA Contract AO/1-5237/06/NL/JD, 2007-2009

2. Download

SOFA HI source code is a part of SOFA 2 [SVN repository](#). To check-out source code use the following SVN command:

```
svn checkout
svn://svn.forge.objectweb.org/svnroot/sofa/trunk/sofa-hi/trunk/
```

3. Related papers

Here you can find publications related to SOFA HI (publications related to SOFA 2 in general can be found on the separated [page](#)).

- Hosek P., Pop T., Bures T., Hnetyuka P., Malohlava M.: **Comparison of Component Frameworks for Real-time Embedded Systems**, Proceedings of CBSE 2010, Prague, Czech Republic, LNCS 6092, Springer, pp. 21-36, ISSN 0302-9743, ISBN 978-3-642-13237-7, Jun 2010, [WWW](#)
- Prochazka, M., Ward, R., Tuma, P., Hnetyuka, P., Adamek, J.: **A Component-Oriented Framework for Spacecraft On-Board Software**, Proceedings of DASIA 2008, DAta Systems In Aerospace, Palma de Mallorca,

European Space Agency Report Nr. SP-665, ISBN 978-92-9221-229-2, May 2008,
[WWW](#)

- Hnetynka, P., Bures, T., Prochazka, M., Ward, R., Hanzalek, Z.: **SOFA High Integrity: Our Approach to SAVOIR**, Accepted for DASIA 2009, DAta Systems In Aerospace, Istanbul, Turkey, May 2009