



(Semi-) automated generation of an executable specification using IP-XACT

Description:

The increasing complexity of embedded devices, such as modern MEMS sensor systems, makes an early availability of a model based executable specification nearly indispensable. Those high level models can support the design space exploration and uncover negative design decisions or specification inaccuracies at an early stage of system development.

The XML based IP-XACT standard is more and more used to describe system components at register and bus level to create a reusable representation of the IP. It holds valuable information used in design, implementation and verification phases.

In this thesis, a simple sensor device should be described using the IP-XACT standard. The sensor should at least consist of a measurement module, a configurable data path and an interface for accessing the measured data. Furthermore a converter should be designed and implemented as a prototype, which is able to create high level SystemC modules whose interfaces are derived from the IP-XACT description.

The following tasks have to be conducted:

- Learn about IP-XACT, SystemC and MEMS sensors
- Create an IP-XACT description of a simple sensor device
- Create a concept, how to generate high level SystemC modules using the IP-XACT description
- Prototypical implementation of the designed converter
- Evaluation of the created high level modules
- Discussion and documentation of the results and possible limitations

Supervisor:

- [M.Sc. Sebastian Stieber](#)
- [Prof. Dr.-Ing. Christian Haubelt](#)