Model-based Multicore Software Development
The ARAMiS II Development Process
Timo Sandman, KIT and Stefan Kuntz, Continental AG
Introduction

• ARAMiS II Generic Development Process and Methods

• Characterization of software and hardware platforms – Technical Architecture Models
Generic Development Process – Overview

- **REQ** | Requirements
- **SYS** | System Architecture
- **SW** | Software
- **HW** | Hardware
- **MEC** | Mechanics

- Task
- Verification and Validation VV
- Certification
- Artefact
- Work Product
- Validation from the “Right Wing” of the V-Model
Taking decisions about which system elements are realized by:

- **Software** – Software platforms
- **Hardware** – Multicore based platforms
- **Mechanics**

considering functional, safety, security, timing, performance, etc. requirements

SW and HW capabilities are described by models for analyses purposes
Generic Development Process – Software

- Requirements
- Models

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- REQ: Requirements
- SYS: System Architecture
- SWA: Software Architecture
- SWD: Software Design
- SWI: Software Implementation
- UT: Unit Test
- IT: Integration Test
- AT: Acceptance/System Test
Generic Development Process – Hardware

- **REQ** Requirements
- **SYS** System Architecture
- **HWA** Hardware Architecture
- **HWD** Hardware Design
- **HWI** Hardware Implementation
- **UT** Unit Test
- **IT** Integration Test
- **AT** Acceptance/System Test

- **Models**
Generic Development Process

- Stakeholder Requests
- Requirements
- Constraints
- System Architecture
- Requirements
- Constraints
- SW Architecture
- Requirements
- Constraints
- SW Design
- Requirements
- Constraints
- SW Implementation
- SW Implementation

REQ  SYS  SWA  SWD  SWI  UT  IT  AT

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- Requirements
- System Architecture
- Software Architecture
- Software Design
- Software Implementation
- Unit Test
- Integration Test
- Acceptance/System Test

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### Generic Development Process

- **Development Artifact**
- **Requirements**
- **Constraints**

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#### Architecture, Design and Implementation:

- **Decomposition**
- **Composition**
- **Partitioning**
- **Parallelization**
- **Deployment**

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- **Development Artifact**
- **Requirements**
- **Constraints**
- **Verification Tests**
- **Validation Test**
- **Interference Models**

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- **Verification Tests**
- **Validation Test**
- **Interference Models**

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- **Verification and Validation VV**
- **Certification**

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**Artefact**

**Work Product**
Models and Interference Models

- Hardware and software models
- Interference models
- Failure models
Interference Models

- Architecture Level
- Causes
- Safety Impact
- Interference Class
- Effect
- Mitigation
Outlook

- Detailing the task of the Generic Development Process
- Refine the models
- Improving seamless and integrated methodology supported by appropriate tools
Thank you for your attention!

Stefan.Kuntz@continental-corporation.com
Continental AG
Regensburg, Germany