Project Report

AADL committee meeting
Salt Lake City, April 16, 2007
The general goal of the project is to propose a component based predictable implementations of mission-critical embedded systems associated with certification issues.

- Definition of new methods and tools based on extended AADL descriptions
- AADL extensions to support specific non-functional real-time embedded constraints and to provide run-time execution capabilities.
Spices

Framework

- ITEA program (Information Technology for European Advancement)
  www.itea2.org
- 3 years project: Sept 2006 -> Aug 2009
- 15 Partners:
  AIRBUS France (Industry - France) + subcontractor: ELLIDISS Technologies (SME –France)
  Axlog Ingénierie (SME - France)
  BARCO Avionics (Industry – Belgium)
  CEA-List (Research institute – France)
  CETIC (Research institute – Belgium)
  FéRIA (Research institute – France)
  K.U Leuven (University – Belgium)
  Israel Aircraft Industries LTD (Industry –Israel)
  LESTER (University – France)
  SQS (SME – Spain)
  TCP/SI (SME –Spain)
  THALES Avionics (Industry – France)
  THALES Communications (Industry –France)
  Universidad de Cantabria (University – Spain)
  Verimag (Research institute –France)
WP1 : Multi-domain extended AADL

Several concepts and aspects have to be studied:

- high level concept of components and containers,
- behavioural description,
- timing requirements and behaviour,
- power consumption properties,
- quality of components,
- support of the standards (Arinc 653...)

Status (April 2007)

- requirements gathering
- AADL modelling guidelines
- work about the Behavioral Annex
WP2: Verification and Validation Techniques

Goal: study, define and prototype methods and tools that will assist in the verification and validation of architectures that have been expressed using AADL

Status (April 2007)
- work about AADL semantics
- overview of tool qualification in airborne software
- tooling activities (Eclipse based):
  - AADL simulator (Axlog)
  - interaction with OSATE and TOPCASED
  - new AADL editor: ADELE
WP3: Component Execution Support

Execution support based on the Component/Container Model (CCM) that offers the following benefits:

- explicit description of the provided and requested services of each component
- separation of concerns, between the business code (to be hosted by the component) and the non-functional one (whose realisation is to be achieved by the generated container)

HW/SW co-design: AADL to SystemC translation tool.

Status (April 2007)
- modelling CCM with AADL: concept mapping and modelling process
- cf. separate presentation about CCM and AADL
WP4: Demonstrators

Use case 1: Avionics
- ARINC 653 and Integrated Modular Avionics (IMA)
- Airbus, Barco, IAI, ...

Use case 2: Space
- POSIX compliant real-time in satellite ground tracking station
- embedded HW/SW controllers for earth observation satellites
- TCP, IAI, ...

Use case 3: Communication systems
- Representative architecture of a Software Radio concept for an avionic equipment
- Thales Communications
WP5: Dissemination, Standardisation and Exploitation

Status (April 2007)
- gforge
- website: http://www.spices-itea.org
- interaction with the AADL committee!

SPICES and the AADL committee:
- SPICES will propose extensions to the language
- SPICES will experiment AADL in industrial contexts
- Need to coordinate with other AADL related activities
- Wish to exchange advices and results