AADL Tools

AADL committee
Noordwijk, 27 April 2009

Ellidiss Technologies
www.ellidiss.com
Independent SW tool editor:

Model Driven Engineering with Component Based Approaches for Critical Systems and Software

Elldiss Software
UK based company
aka TNI Europe Ltd
Tools sales office

Elldiss Technologies
Fr based company
New tools development
R&D center

FAIYELEY
deimos
CS
EADS
Eurofighter Typhoon
BAE SYSTEMS
GiAT Industries
eurocopter
eesa
cnes
AIRBUS
ISI
TELIX GmbH
eurocopter
eesacnes
SAGEM
SIMENS
DASSAULT AVIATION
THALES
Hispano-Suiza
SAGEM
ALCATEL
AERMACCHI
DATEL
GENERAL DYNAMICS
AADL solutions

Modeling Tools
- **Stood**: commercial, stand-alone, industrial support
- **Adele**: open-source, TOPCASED (Eclipse), R&D
- domain specific graphical tools: ex. **SMP2, Labassert**

Analysis Tools
- **Cheddar**: open-source, stand-alone, industrial support
- Multi-agents simulator
- Static verification tools (LMP technology: Logical Model Processing)

Service
- domain specific tool development
- tool-chain integration
- tool support, customization, training, consultancy, ...
STOOD
from AADL specifications to "ready to compile" code
ADELE

AADL graphical editor for TOPCASED
Domain specific graphical front-end for the AADL

--- Interface View: PFS_int ---

SYSTEM PFS_int
END PFS_int;

SYSTEM IMPLEMENTATION PFS_int.others

SUBCOMPONENTS
CYCLIC : SYSTEM CYCLIC.others;
BASIC : SYSTEM BASIC.others;
CONTROL : SYSTEM CONTROL.others;
BasicOp : SYSTEM CalledOps::BasicOp.others;
Upstream : SYSTEM CalledOps::Upstream.others;
Downstream : SYSTEM CalledOps::Downstream.others;
TC : SYSTEM TC.others;

CONNECTIONS
EVENT PORT CONTROL.ControlDOWNToBasic -> BASIC.ControlDOWNToBasic;
EVENT PORT CONTROL.ControlUPToBasic -> BASIC.ControlUPToBasic;
EVENT PORT BASIC.BasicOp -> BasicOp.BasicOp;
EVENT PORT CONTROL.IfDownstream -> Upstream.IfDownstream;
EVENT PORT CYCLIC.CyclicActivationImplForTC -> TC.CyclicActivationImplForTC;
EVENT PORT CYCLIC.CyclicActivationImplementation -> BASIC.CyclicActivationImplementation;
EVENT PORT TC.TCommand -> BASIC.TCommand;
EVENT PORT BASIC.BasicToControl -> CONTROL.BasicToControl;
END PFS_int.others;
CHEDDAR

AADL compliant real-time performance analysis tool

Scheduling feasibility, Processor cpu :
1) Feasibility test based on the processor utilization factor :
   - The base period is 290 (see [18], page 5).
   - 104 units of time are unused in the base period.
   - Processor utilization factor with deadline is 0.64138 (see [1], page 6).
   - Processor utilization factor with period is 0.64138 (see [1], page 6).
   - In the preemptive case, with RM, the task set is schedulable because the processor utilization factor 0.64138 is equal or less than 0.77976 (see [1], page 16, theorem 8).

2) Feasibility test based on worst case task response time :
   - Bound on task response time : (see [2], page 3, equation 4).
     T1.others => 14
     T3.others => 3
     T2.others => 1
   - All task deadlines will be met : the task set is schedulable.
AADL Tools Status

- **STOOD 5.2.2 available since end November 2007**
  - graphical support of AADL
  - import/export of textual AADL
  - connection with production/analysis tool (OSATE, OCARINA, CHEDDAR)
  - download: http://www.ellidiss.com

- **ADELE 2.3 released in December 2008**
  - included into TOPCASED 2.3 experimental package and earlier versions
  - download: http://www.topcased.org

- **CHEDDAR 2.1 released in July 2008**
  - download: http://beru.univ-brest.fr/~singhoff/cheddar
  - support available from Ellidiss Technologies

- **Other AADL related developments in progress:**
  - LABASSERT graphical editor (follow-on of the ASSERT project)
  - Multi-Agents Simulator (partnership with Virtualys)
  - UML/MARTE add-on for STOOD/ADELE
  - New AADL graphical editor