Ellidiss Software
www.ellidiss.com

Ellidiss Technologies
www.ellidiss.fr

UK based company
aka.TNI Europe Ltd
Tools sales office

Fr based company
New tools development
**R&D center**

20 years + support to major industrial projects:

- HOOD Software design tools for Ada and C
- Eurofighter Typhoon
- Airbus A340, A380, A400M, A350
- Tiger Helicopter (mission calculator)
- Rafale (engine control)

10 years + investement in new technology:

- SAE AS-5506: Architecture Analysis & Design Language
- AADL graphical modeling tools: Stood for AADL
- AADL analysis framework: AADL Inspector
- European Space Agency: TASTE Editors (Space SW development tools)
- European Commission: ERGO Project (Space Robotics)
- Generic model processing technologies: GMP, LMP, LMP Dev Kit
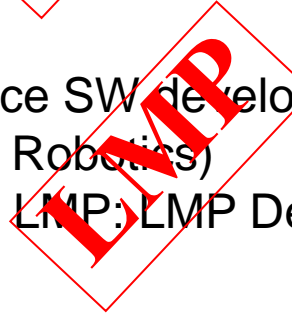
Tools for AADL

- Design**: Stood for AADL**
  - AADL Instance Model graphical editor
  - Top-down design guidelines (HOOD)

- Design Analysis: **AADL Inspector**
  - Timing analysis
    - Scheduling analysis (Cheddar)
    - Simulation (Marzhin)
  - Foreign models import
    - SysML, Capella, MARTE, …

- Model Processing technology: **LMP**
  - Glue to assemble AADL tool-chains
  - Syntactical layer: AADL, Ada, C, XM* (XML, XMI, ECore), SDL
  - Semantical layer: prolog
  - LMP Designer

- Domain Specific graphical front ends for AADL: **GMP**
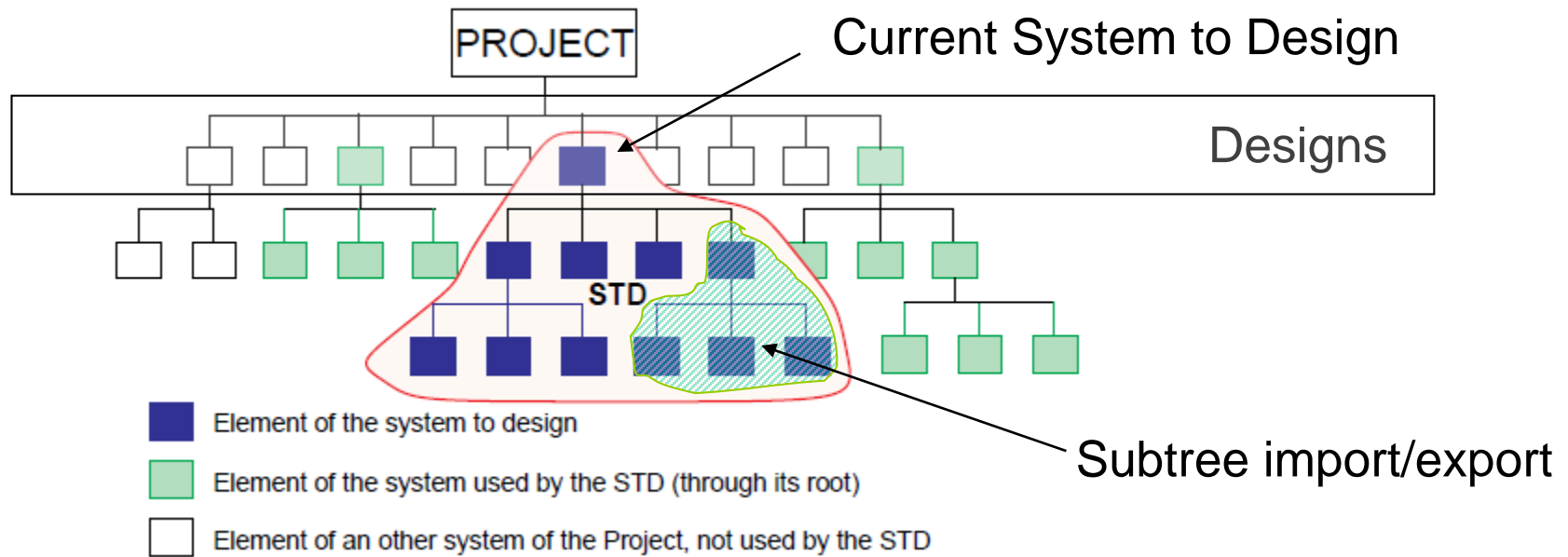 - TASTE
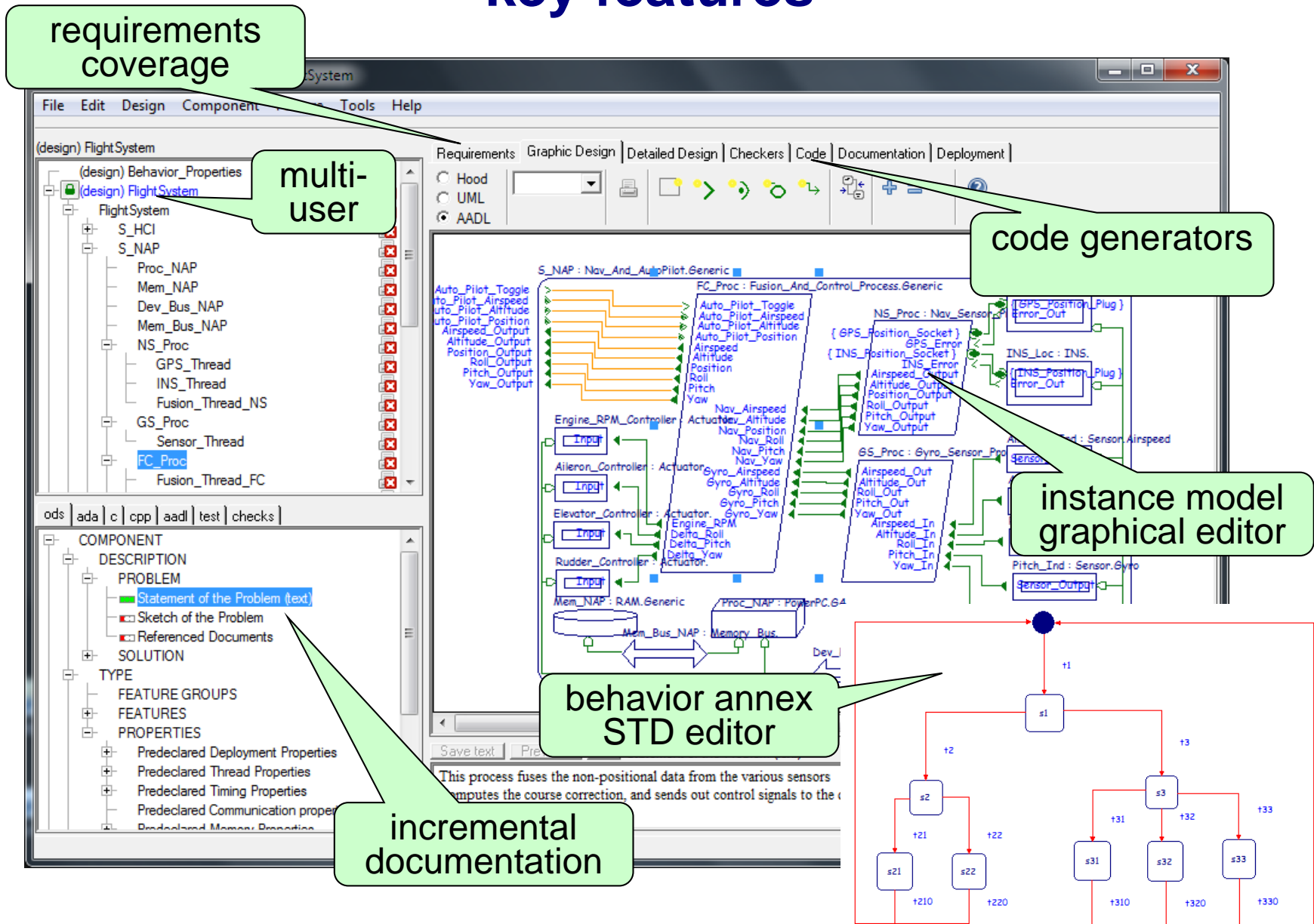
Top-Down modeling process for AADL

- Offers an industry proven practical modeling process to AADL designers
- Hierarchical Object Oriented Design (HOOD)
  - Inherits 20 years usage for the biggest European avionics projects (Airbus, Eurofighter)
- Benefits for the AADL user (Stood for AADL)
  - **Graphical** editor of the AADL **Instance Model** (what you design is what you get)
  - **Low Coupling** oriented top-down decomposition
  - **Data Hiding** enforcement (visibility rules, no provides data access)
  - AADL Declarative Model generator (textual AADL) for **inter-operability**
  - Supporting activities: documentation, coding, requirements traceability

HOOD
collaborative work
and scalability

Current System to Design

Designs

STD

Subtree import/export

■ Element of the system to design

■ Element of the system used by the STD (through its root)

□ Element of an other system of the Project, not used by the STD

Stood 5.5
new features

- ## AADL model update
  - core AADL 2.2
  - behavior annex 2.0
- ## AADL export
  - end to end flow generation from port annotations
  - call sequences generation from IDEF(0) like Diagram
  - behavior annex template from State Transition Diagram
  - graphical properties to preserve layout on round-trip
- ## AADL import
  - behavior annex
  - graphical properties
- ## Others
  - Reqtify 2018 import/export
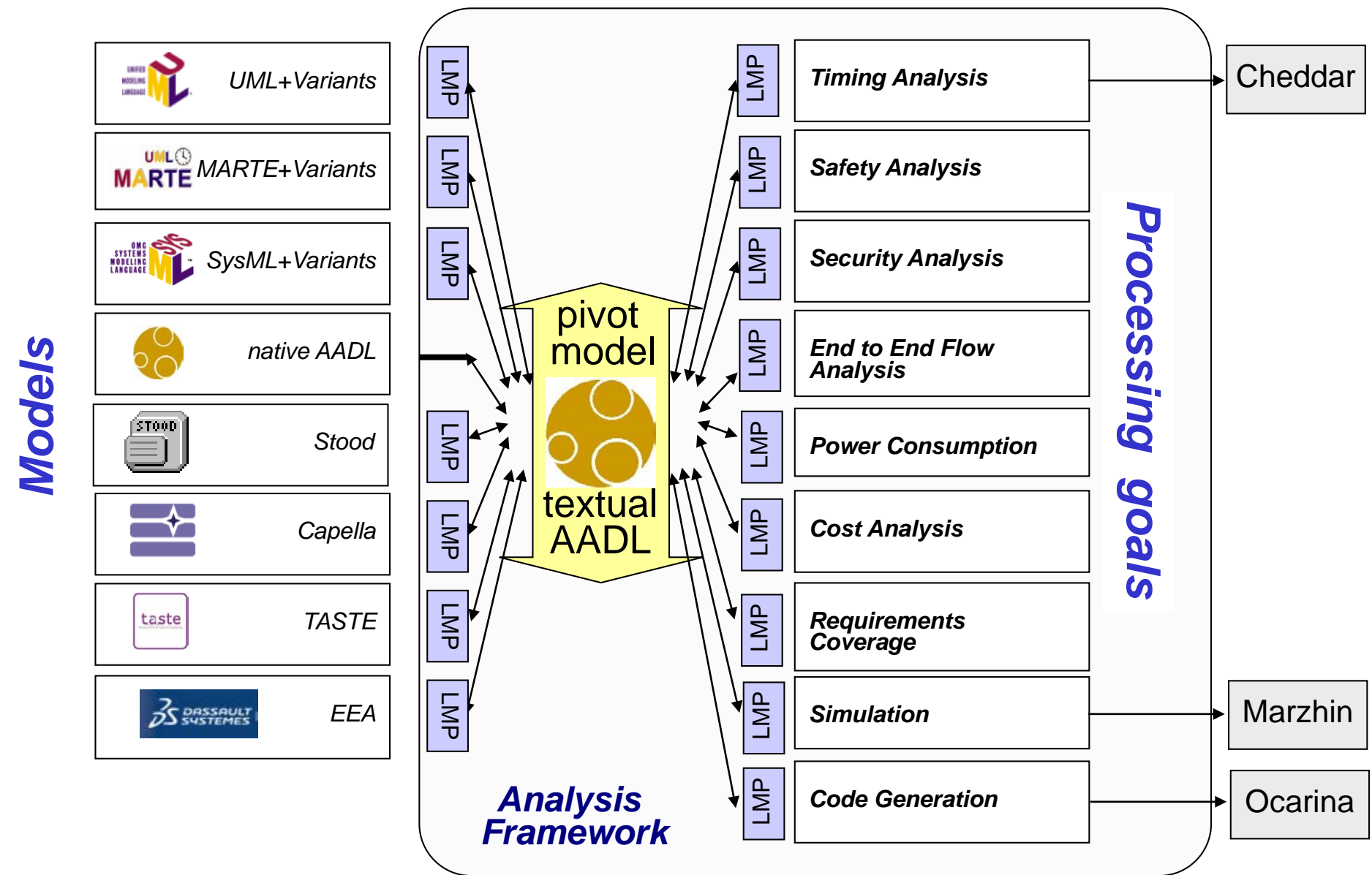
AADL Inspector key features
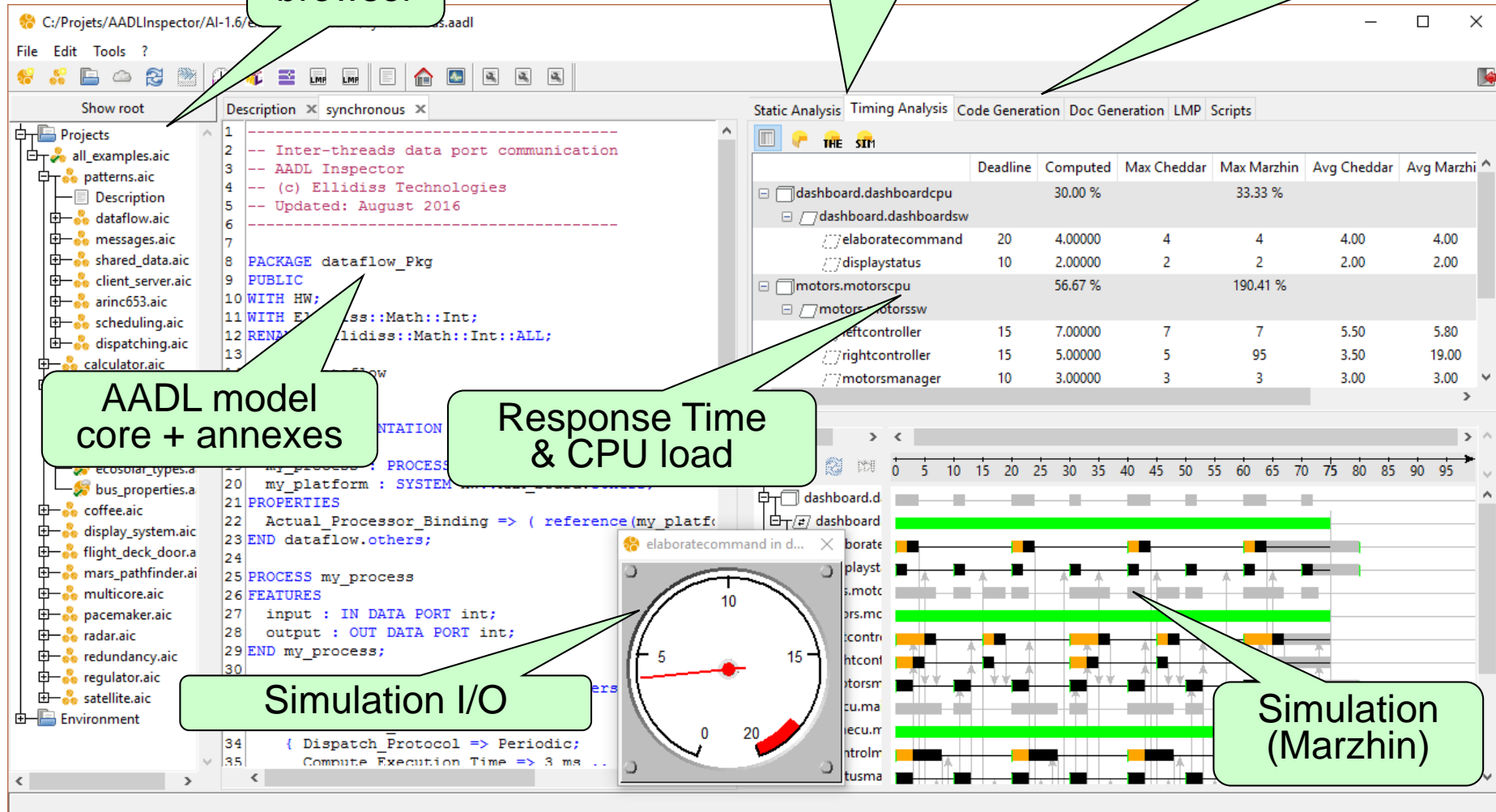

Projects browser

Timing analysis

More analysis to come:
- Safety
- Security

AADL model core + annexes

Response Time & CPU load

Simulation I/O

Simulation (Marzhin)

AADL Inspector
features

- ## Simulator
  - multi-agent based AADL runtime emulator
  - support Buses, Cores, Partitions, Threads
  - support a subset of the behavior annex
  - use computed response times for end to end flow latency analysis
  - improvements to support heterogeneous time units
    - input model time unit normalization
    - optimization to skip to the next significant time tick

- ## Scenarios and scripting
  - define behavior for simulated system environment
    - Human user
    - Devices
  - define test cases
    - Input: scenario
    - Output: VCD trace

- ## Model converters
  - use LMP transformation to implement * to AADL mappings
  - examples: SysML, Capella PA, MARTE

Products & Services Summary

- **Critical software development tools**
  - An industry proven SW design process: HOOD
  - Stood for AADL:
    - architectural design and AADL import/export:
    - v 5.5 to be released soon
  - AADL Inspector 1.6:
    - early verification of AADL models
    - v 1.7 in development (more analysis plugins)
- **Tool development/integration technologies**
  - LMP Dev Kit: model processing toolbox (prolog)
  - GMP: DSL graphical editor framework
- **Services**
  - COTS tools sales support
  - Tools development, integration and support
  - AADL consulting and training
  - R&D partnerships