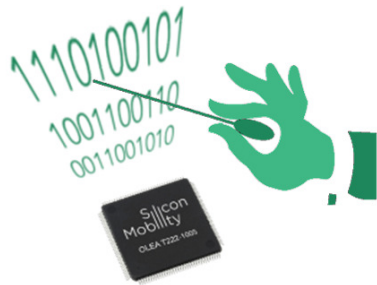# Silicon Mobility

OLEA® COMPOSER

Seamless development and calibration framework taking full advantages of OLEA® technologies.

- Support all stages of V design cycle: MiL, SiL and HiL
- Support of the most popular design, simulation, debug and validation tooling
- Support of automatic C and HDL code generation for OLEA®
- Support of real-time variables / parameters debug and calibration in CPU and/or AMEC® FLU

Changing developers' life

OLEA® is a unique solution combining the hardware flexibility of AMEC® FLU embedded programmable logic with software flexibility of the ARM® Cortex-R5F CPU into a single automotive qualified semiconductor.

OLEA® COMPOSER orchestrates a wide set of leading development tools all along the V-Model development lifecycle and accelerate development on OLEA®. From Model-in-the-Loop (MiL), Software-in-the-Loop (SiL) down to Hardware-in-the-Loop (HiL), developers drastically reduce development, validation and calibration time and drastically improve performances playing with the Hardware/Software split provided in the framework.

OLEA® COMPOSER includes the following products:

OLEA® T222 Target Framework: Driven code generation framework for MATLAB/Simulink based on a target toolbox

OLEA® T222 Virtual Prototyping Model: System C model of OLEA® T222 for rapid SiL simulation

OLEA® T222 AMEC RTL Simulation Model: AMEC® FLU model for cycle accurate RTL simulation and real-time tuning

OLEA® Precision RTL: Mentor's Graphics based synthesis tool combined with Agilis P&R tool

OLEA® T222 MCAL: AUTOSAR 4.2 Compliant drivers

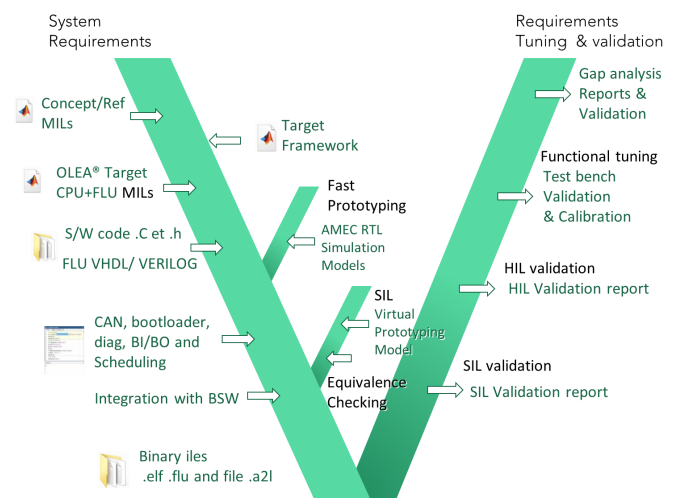OLEA® T222 Starter Kit: OLEA® T222 Board with low level software package

OLEA® T222 Calibration Board: OLEA® T222 specific device for calibration

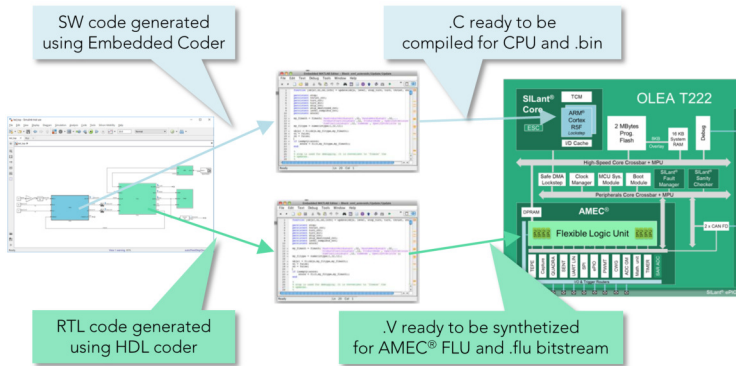OLEA® Inverter Board: Power stage extension board for OLEA® T222 dedicated to inverter control
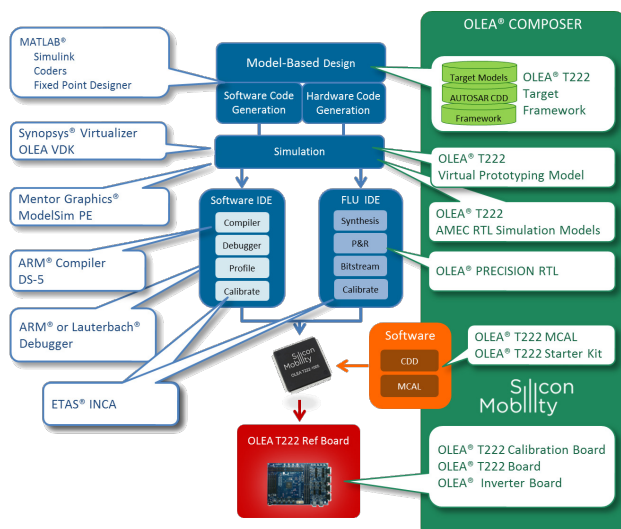
OLEA® COMPOSER in OLEA® development flow

OLEA® COMPOSER in V design cycle

Model in the Loop

OLEA® T222 Target Framework is a driven and instrumented framework using OLEA® target library for fast and seamless MATLAB Simulink reference model porting to OLEA® T222 with pre-defined CPU / AMEC® communication protocol. It allows simultaneous C and HDL automatic code generation from MATLAB/Simulink. The generated code is directly usable as an AUTOSAR Complex Device Driver.

- SW code generated using Embedded Coder
- .C ready to be compiled for CPU and .bin
- RTL code generated using HDL coder
- .V ready to be synthetized for AMEC® FLU and .flu bitstream

- All AMEC® FLU hardware resources available as target models (e.g ADC, PWM, Timers, CWG, PIO, QUADRA, CAPTURE)
- Automatic generation of the CPU / AMEC communication
- Automatic variables and parameters instrumentation for measurement and calibration on hardware targets

Software in the Loop

OLEA® T222 Virtual Prototype VDK and OLEA® T222 AMEC RTL Simulation Models are simulation environments enabling fast and accurate software and hardware validations.
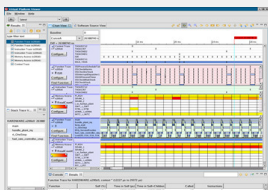
Accurate Virtual Prototyping
- Transaction / Memory Map
- Programming

Software development/validation
- Boot / OS / AUTOSAR BSW
- Complex Device Driver
- Co-simulation with SIMULINK

VDK ECU System Simulator
- Early software development
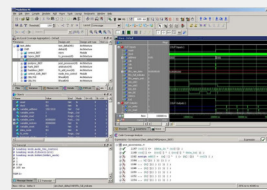- H/W & S/W split & correlation
- Fast simulation and debug

Synopsys's VDK view

Cycle Accurate AMEC® RTL Model
- AMEC
- FLU I/F

RTL Simulation
- Reference tests bench
- Including CPU & DMA access
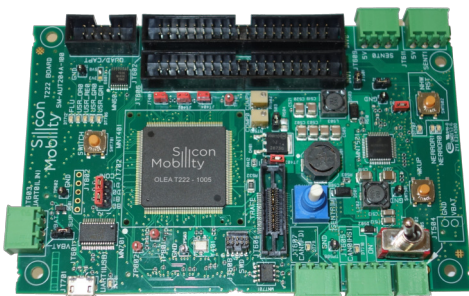- FLU design integration validation
- Signal debugging

Mentor Graphics's ModelSIM view

Hardware in the Loop

OLEA® T222 Starter Kit

Starter Kit is a development board packaged with Chip Support and Board Support Package software and Documentations for quick application design

Calibration with OLEA® T222

OLEA® T222 and OLEA® T222 Target Framework include the necessary hardware and software resources for real-time validation and calibration of parameters into CPU

- Direct support from ETAS INCA via JTAG or CAN
- Defined variables and parameters are automatically updated using DPRAM & DMA for real-time calibration
- Logger modules are acquisition functions for measurements and are automatically generated.
- Embedded Trace Manager for real-time software execution time
- I/F are hardware resources interfaces and are automatically generated
- SRAM overlay on eFLASH for variables / parameters real-time tuning
- Parameter modules are non-intrusive parameter update functions for calibration and are automatically generated

Silicon Mobility