No.1 System Simulator

Thorough embedded system verifier for improved software reliability. Automatically generated simulation environment through simple configuration. Supports co-verification using GAIO's ISS and MATLAB/Simulink(R).

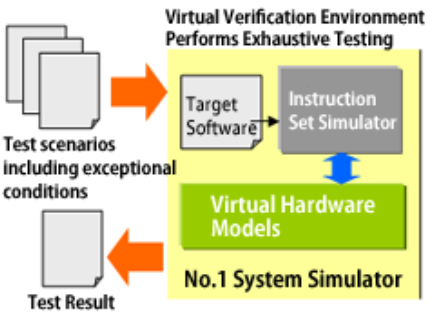
"No.1 System Simulator" is GAIO's latest simulation development environment that can improve embedded software reliability. The new and easily configurable application called "System Component Synthesizer" can be used to automatically generate a virtual simulation environment with a variety of MPU models and other virtual HW. It also supports co-verification by connecting GAIO's ISS and MathWorks's MATLAB/Simulink.

Executes Thorough Testing of Virtual Embedded Systems to Reduce Latent Errors

A debugging system using the target hardware can successfully debug a system under normal conditions, however it would be difficult to test how the system would react under exceptional conditions using this method. This is because such exceptional conditions and accurate event timings are difficult to reproduce with actual hardware. Due to this limitation, many embedded products are in fact shipped with latent errors.

Verification through the use of an MPU simulator is a method to overcome such limitations, since event timings can be freely controlled in a virtual environment. In this manner exceptional conditions for the system can be tested, thereby achieving a more thorough debugging process for the system.

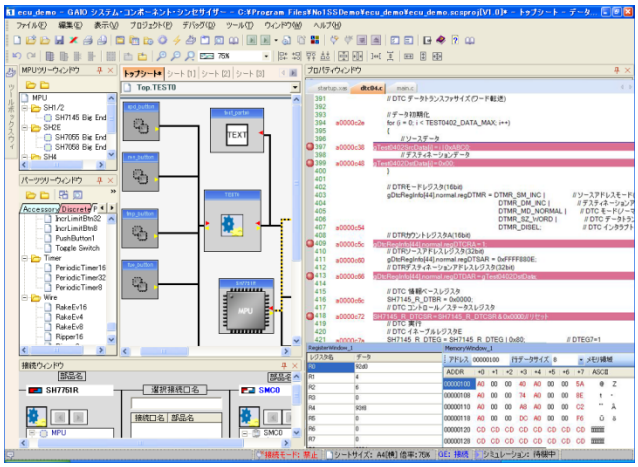
'No.1 System Simulator' presents such a solution to improve embedded software reliability.



Synthesizes and Generates the Simulation Environment through Simple Configuration

The 'System Component Synthesizer' (SCS) is used to create a simulation environment for the embedded system. This is accomplished by connecting the virtual hardware components with the dedicated editor, and configuring the I/O port and interrupt type. The simulation environment configured with an MPU, peripheral circuits and external hardware will then be generated automatically.

Each virtual hardware component is created as a separate dynamic link library (DLL) file. The simulation system can work dynamically, without programming or compiling hardware parts, allowing the user to compose and debug the simulation model simply and quickly.



Cycle-Accurate ISS with Source Code Debugging Capability

The cycle-accurate ISS (Instruction Set Simulator) used in 'No.1 System Simulator' simulates actual MPU operations, memory module and interrupt behavior. Also since the memory mapping is simulated virtually, software for the device driver and application layers can be tested as well.

The source code debugging capability is available by default.

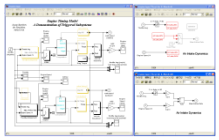
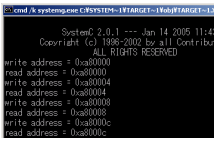
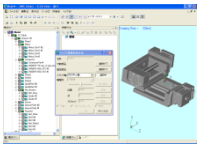
Co-Verification Capability of Automotive ECUs using MATLAB/Simulink

The MATLAB/Simulink system modeling environment is generally used during the requirement analysis or specification design stages of the V-based automotive development process. These virtual models are then presented as specification documents to the embedded software developer.

GAIO's ECU software verification system connects the MATLAB/Simulink virtual models with an MPU simulator (ISS), which can test the ECU systems during the initial development phase within a virtual environment.

No.1 System Simulator Program Compatibility

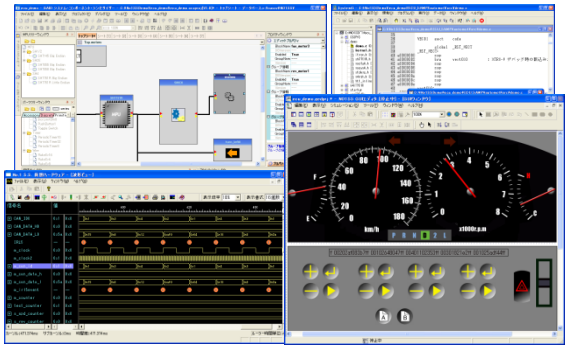
* MATLAB/Simulink (MathWorks)
* CarSim (Mechanical Simulation)
* VMech Simulator on XVL (Inter Design Technology)
* SystemC ASIC Simulator (OSCI)
* Verilog-HDL, VHDL Logical Simulator (of other EDA tool venders)

Automotive ECU Development Examples

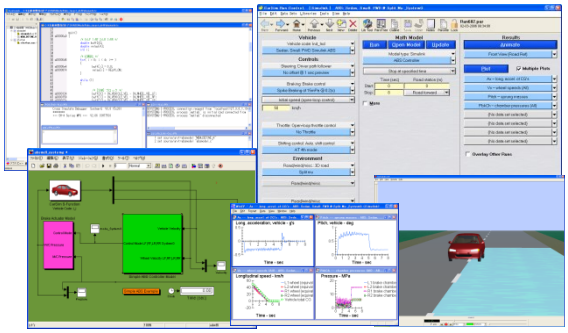
Instrument Panel Simulation using CAN Communication

Automobile instrument panel simulation that receives packet data from the CAN networked ECUs. After the data is received, information such as the car speed, engine rotation, temperature and fuel remaining will be displayed.



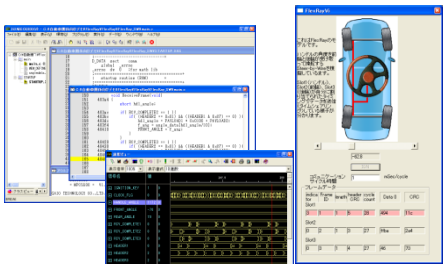
Anti-Lock Brake System Simulation using MATLAB/Simulink and CarSim

Performs ABS system simulations using GAIO's ISS connected with MathWork's MATLAB/Simulink and Mechanical Simulation's CarSim. This simulation features an animated display of the car movement to view how the ABS system performs.



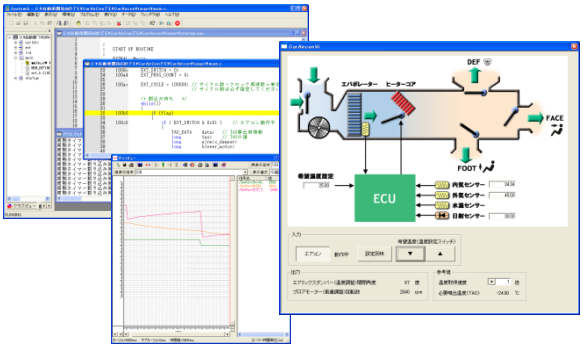
FlexRay Steering Control Simulation

FlexRay steer-by-wire system simulation with compatibility for real-time FlexRay signal monitoring. This simulation includes a FlexRay packet data generator as well as displays for the data and wheel/tire rotation. The FlexRay packet data is generated from measurements taken from the steering wheel in real-time, and then displayed in the appropriate windows.



A/C Control Simulation

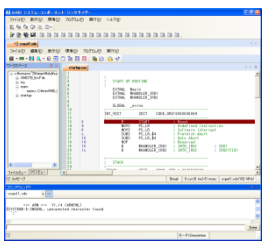
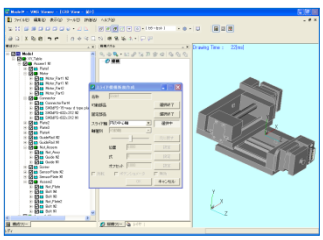
Simulation of a modern air conditioning control system capable of sensing temperature fluctuations in order to maintain a comfortable and cool environment inside the vehicle.



Office Automation Equipment Examples

Printer Paper Feeding Simulation using 'VMech Simulator on XVL'

Verifies the paper feeding control software through co-simulation using GAIO's ISS and InterDesign's VMech Simulator on XVL.

GAIO TECHNOLOGY CO.,LTD.

Headquaters (Tennouzu Office):
Tennouzu First Tower 25F
2-2-4 Higashi-Shinagawa, Shinagawa-ku, Tokyo 140-0002 Japan
Tel: +81-3-4455-4767

2014.08