**ADvantageDE**

Real-time and non-real-time simulation and test project development environment

Project Assemblies
Simulation models and code modules are added to the ADvantage project by adding assemblies. Multiple assemblies can be assigned to a single processor, or assemblies can be assigned to distributed processing nodes.

Processor Assignment
Assemblies are assigned to processing nodes with drag and drop from the Target Browser. When using a GPOS target each assembly executes in a separate, synchronized, non-real-time process.
The ADvantage Framework

The ADvantage Framework is an open architected suite of software tools used to develop and perform simulation-based development and test. Simulation-based development and test activities available with the ADvantage Framework include software-in-the-loop simulation, real-time hardware-in-the-loop simulation, and distributed real-time simulation. The ADvantage Framework includes the following components:

- ADvantageDE - development environment
- ADvantageVI - run-time environment
- SIMplotter - real-time plotting & charting

Intelligent Integration

Intelligent Integration is an approach used to perform highly effective system integration. When performing Intelligent Integration, a pure software “virtual integration lab” is implemented in parallel with real-time simulator implementation. This approach allows for greater parallelization of development activities and thus reduces the overall cost and schedule for system integration. The ADvantage Framework is the only simulation framework designed specifically for Intelligent Integration.

Connections

Communication from model-to-model, from model-to-I/O, and from model-to-Alitia panel is defined using Connections. Connections can be established with drag-and-drop, by importing an Interface Control Document (ICD), or by using an appropriate port-naming strategy to allow for “Auto Connect”.

Inter-Process(or) Communication

Complex simulation projects demand scalable and sophisticated communication between numerous processes and spread across multiple processors. The ADvantage Framework keeps the complexity of inter-process(or) communication transparent to the user.

Real-Time Interfaces

The ADvantage Framework supports I/O interfaces through the use of standard PCI, cPCI, PXI, VME, PMC, and IP computer boards. ADvantage includes board support for an extensive list of standard analog, digital, serial communication and databus interfaces as well as a range of specialized sensor and load emulation boards.

Open Architecture for I/O

ADvantage includes a driver development kit (DDK) to assist users with custom driver development for commercial-off-the-shelf and custom computer board support.
In ADvantageDE, projects of any size can be built and ready to run with a click of the build button. When the build button is pressed ADvantageDE goes to work behind the scenes. First, the ADvantage Code Generator generates compact and efficient framework code. Next, ADvantageDE spawns the appropriate compilers to build and link the complete project including mixed language elements. Finally, ADvantageDE maps each data dictionary against the appropriate memory location in the project to provide visibility into models and code when the project is running.

Compiler Independent

The ADvantage Framework is compiler and operating system independent. ADvantageDE supports most popular compilers and can be configured to support nearly any commercially available compiler. The ADvantage Framework also transparently handles the complexities of mixed-language project development.

Working with Code

ADvantageDE makes it easy to add code modules to your software-in-the-loop or hardware-in-the-loop project. Source files, binaries, and include paths are added to models with drag and drop. The ADvantage model interface is powerful yet easy to use.
About ADI

A pioneer in the development, manufacture, and use of simulation and control systems technology for nearly fifty years, Applied Dynamics’ products and expertise are used in leading simulation laboratories around the world. Applied Dynamics is a supplier of advanced real-time simulation and simulation-based test tools for the aerospace, defense, automotive, electronics, and other related industries. Headquartered in Ann Arbor, Michigan, Applied Dynamics has international offices in the United Kingdom, installations in 23 countries, and representatives throughout the world.

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