

SIMSCRIPT III: New Modular Object-Oriented Simulation Language

When you decide on a programming language for your simulation project, it's best to choose one built expressly for modeling and simulation. CACI's SIMSCRIPT III — Modular Object-Oriented Simulation Language is precisely such a tool.

With SIMSCRIPT III, you benefit from a language specifically designed for discrete-event and combined discrete-continuous simulations. SIMSCRIPT III is a self-documenting, general-purpose object-oriented programming language with built-in constructs for process-oriented simulation. The language is easy to learn, runs efficiently and includes a powerful set of graphical and statistical tools. Together they make SIMSCRIPT III a true cornerstone programming language for successful simulation projects.

Moreover, SIMSCRIPT III is an open environment, and permits functions and routines written in other languages like C, C++ or Java to be invoked with simple commands. You get a quick and easy way to interface with specialized libraries, databases and packages like HLA RTI.

CACI's SIMSCRIPT III is a new Modular Object-Oriented modeling and simulation programming language for building portable, high-fidelity, large-scale simulation and modeling applications with interactive graphical user interfaces, presentation and 2-D animation graphics. Imported geographical maps and airport or factory layouts create realistic visualizations.

SIMSCRIPT III supports objects and classes, including their attributes and methods, as well as sets (linked lists) of objects. An invocation of a "process method" represents an activity of an object which can be scheduled and can elapse simulation time. Both single and multiple inheritance are supported. Methods inherited from base classes can be overridden by derived classes.

Support for modules allows the source code to be organized in a hierarchical structure. Large models can be divided into modules. The "main module" can import definitions from subordinate modules, and subordinate modules can import from other modules. Each module provides a public interface and

private implementation details are hidden. Modules promote better source-code organization and facilitate the reuse of code for efficient development.

The syntax of SIMSCRIPT III is English-like and "self-documenting". SIMSCRIPT III statements are natural to read and write and include a "define-to-mean" capability to customize the appearance of the source code when desired. This helps developers to better understand the code, reducing development and maintenance costs.

SIMSCRIPT III is designed as a superset of SIMSCRIPT II.5[®] providing full backward compatibility. Most existing SIMSCRIPT II.5[®] models run on SIMSCRIPT III without modification, and can transition to an object-oriented paradigm at their own pace.

CACI provides SIMSCRIPT III on 32-bit platforms including PC Windows 2000/XP, PC Linux and major UNIX workstations; 64-bit SIMSCRIPT III is available for AMD64 Opteron systems with 64-bit Red Hat Linux.



Portability

Programs written in SIMSCRIPT III with its simulation graphics features are highly portable. They can be developed on a PC running Windows 2000/XP and easily moved to any supported UNIX/Linux platform with simple recompilation. Graphical elements are created without programming and are platform independent.

Application areas

SIMSCRIPT III is intended for projects in a variety of industries and arenas, including telecommunications, network analysis, transportation, manufacturing, inventory control, health care, military operations, wargaming, and logistics planning.

SIMSCRIPT III supports all SIMSCRIPT II.5[®] capabilities and provides a seamless and natural transition to object-oriented technology for major large scale commercial models, military simulations and live exercises written in SIMSCRIPT II.5[®] rely on the ability of SIMSCRIPT to process thousands of processes, events and entities while providing an effective simulation for analysis and wargaming support.

Powerful Simulation Features

SIMSCRIPT III is an easy-to-use and powerful simulation language for discrete-event simulation. In addition to the standard features of Object-Oriented general-purpose high-level languages, it provides a timing mechanism and concurrent event and process management.

SIMSCRIPT III supports “world-view” as well as “object-view” modeling paradigms. Classes are user-defined object types that can be dynamically instantiated and

destroyed during a simulation run. They represent components of a real-world system being modeled. Their properties are defined by attributes, while methods and “process methods” define their behavior.

Processes run concurrently; can activate or interrupt each other, and can be queued for limited resources. As simulation time progresses, statistical measures of changing quantities such as queue lengths, can be automatically collected and reported.

Development Environment

The SIMSCRIPT III development environment is a set of interactive tools for the rapid building of graphical, discrete-event simulation models. These tools include:

- **SIMSCRIPT III Studio** — A complete interactive development environment supporting automatic building of projects with hierarchical directories with intuitive GUI and extensive online help.
- **SIMSCRIPT III Graphics** — A powerful graphics environment supporting presentation graphics, enhanced animation, and graphical user interfaces with menus, palettes and dialog boxes.
- **SIMSCRIPT III Graphical Editors** — A collection of interactive, menu-based editors for creating animation icons, graphs, menus and presentation graphs. Geographical maps and layouts in JPG format can be imported for creating realistic simulation visualization.
- **SIMSCRIPT III Symbolic Debugger** — Built right into the language. The user simply compiles the modules selected to debug and runs the model.

- **SIMSCRIPT III Statistical Package** — Fits real-world data or simulation output data into a mathematical distribution.
- **SIMSCRIPT III Data Base Connectivity (SDBC)** — Provides well-defined common SIMSCRIPT III Application Program Interface (API) to the major database systems on the market: Microsoft Access, SQL Server, Oracle, IBM DB2, IBM Informix and MySQL.

Documentation

SIMSCRIPT III manuals and example programs are available on-line; training courses are scheduled regularly at CACI and at customer’s site.

Contact CACI

Let CACI assist you in defining your simulation needs and show how SIMSCRIPT III can help you achieve your goals quickly and affordably.

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