

Rapid Database Generation






Up to date, reusable, and accessible - One of the major challenges to the expanding role of simulation is the ability to access reusable, run-time terrain and entity model databases in a timely and efficient manner. As a leader in rapid database generation, CAE has developed common database architectures and central repositories to support military programs and operations around the world.

Why a common virtual environment

Using a common virtual simulation architecture, CAE has developed a framework for developing common virtual environments (CVE). The goal is to allow clients access to rapidly generated, correlated run-time databases for supported simulation systems. Key objectives of the common virtual environments include:

- Plug-and-play capability, interoperability, and reuse of data;
- Reduce redundancies;
- Access to a common repository of updated, correlated data sources;
- Common training elements throughout the military forces;
- Reduce future development and life-cycle costs; and
- Allow different systems to train together through distributed simulation.

For military personnel in the battlefield, having training systems equipped with the most up-to-date databases ensures they are better prepared for their missions and increases the potential for mission success. For the military leaders making acquisition decisions, the ability to test and evaluate new equipment in realistic synthetic environments allows them to make better informed decisions to equip military personnel in the field.

Dataset sources	Integrated toolset	Common database used as repository for database generated forces and simulator(s)	No publishing No data duplication Single correlated DB for all simulation devices
	<ul style="list-style-type: none"> Industry Standard Modellers Large-area Image Mosaics Automated Large-area DB Build Automated Culture Extraction Sensor Texture DB Tools Framework 		



Shortening the development time

Militaries cannot wait months for the delivery of proper mission planning, mission rehearsal, and training tools such as databases. CAE's database production centers are dedicated to the rapid development of run-time databases. Through the use of commercial-off-the-shelf (COTS) and government software products, our dedicated database engineers are able to provide run-time databases in a matter of hours or days. Run-time databases are regularly updated with new terrain features, environmental characteristics, and targets.

Providing the full scope of simulation services and tools

CAE has developed a database framework based on industry-standard open architecture components integrating government and COTS tools. The components combine to create virtual simulation capabilities such as dynamic environment; atmospheric effects; after-action review; exercise management tools; CBRNE hazards; computer-generated forces; munitions; and command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems. The use of this framework will support the interoperability of virtual, live, and constructive simulation systems, fulfilling an important requirement for future training and mission rehearsal needs of military organizations.

Supporting distributed simulation

Simulation exercises are often conducted using multiple client devices that require a common or shared representation of the synthetic environment at run-time. For example, one client device may show vector-based output of building outlines and road networks while another may give an infra-red (IR) representation over the same geographic area. Through the use of high-level architecture (HLA) and distributed interactive simulation (DIS) networks, these client devices can be 'hooked up,' enabling communication across the network and improved geographic correlation at run-time as entities move throughout the environment.

Program example – SE-Core DVED



CAE has been contracted by the United States Army to develop a common database architecture, rapid database production process and tools, and establish and operate five database production centers located in the United States and around the world under the Synthetic Environment Core (SE-Core) Database Virtual Environment Development (DVED) program. These database production centers will create the Army's Common Virtual Environment (CVE), a fully integrated and correlated virtual environment that the Army will use for virtual training and mission rehearsal.

A key component of the overall SE-Core DVED program is to provide the common database architecture, integrated tools framework, and software tools for rapidly creating CVE databases through centralized database generation facilities. These databases will be shared and reused throughout the Army for virtual training exercises involving ground, aviation, and joint forces.

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