



Reconfigurable Image Generator and Database Generation System

This invention was developed as part of the U.S. Air Force sponsored Operational Based Vision Assessment (OBVA) program. The program was tasked with developing a high fidelity flight simulation laboratory, creating the capability to examine the relationship between pilot visual capabilities and performance in simulated operationally relevant tasks. The exceptional visual acuities of the Air Force pilot population required the simulator to present significantly greater pixel density than was currently available in existing technologies. This necessitated the development of a higher-fidelity image generator system, based on emerging technologies, than systems currently available as a complete solution. This innovation resulted in a 150 mega-pixel synchronized, continuous display system driving real-time computer generated imagery at a 60-Hz refresh rate.

Technology Details

The system, the Reconfigurable Image Generator (RIG), consists of software and a hardware configuration, and a Synthetic Environment Database Generation System (RIG-DBGS). This innovative Image Generator (IG) uses Commercial-Off-The-Shelf (COTS) technologies and is capable of supporting virtually any display system. The DBGS software leverages high-fidelity real-world data, including aerial imagery, elevation datasets, and vector data. Through a combination of COTS tools and in-house created applications, the semi-automated system can process large amounts of data in days rather than weeks or months, a disadvantage of manual database generation. A major benefit of the RIG technology is that existing simulation users can leverage their investment in existing real-time 3D databases (such as OpenFlight) as part of the RIG system.

Commercial Applications

- Flight Simulation
- DataWalls
- Ultra Realistic Scenery
- Remote Visualization
- Virtual Environments
- Entertainment
- Planetariums

Patents

This technology is protected by a pending U.S. Provisional Patent Application. (Reference No. ARC-16933-1).

Benefits

- Very low cost simulator
- Highly scalable/reconfigurable
- COTS hardware/software
- Easy technology upgrades
- Drives 100+ megapixel visuals
- Based on proven technology
- 120 Hz refresh capable
- Synchronized, continuous, multiple 4K displays
- Leverages existing databases
- No recurring software fees



Scene of RIG-DBGS generated database capable of 60 Hz update rate using the RIG