

Motif Compositing

More than ever, today's training devices rely on portraying realistic views of the synthetic environment. This synthetic environment can be seen through the visual system, radar, forward-looking infrared (FLIR), and a growing list of other sensors. To achieve a realistic synthetic environment, there is a generally accepted axiom – content is everything. More content means increased realism and improved cues for the trainee. While a large amount of content is always desirable, acquiring or manually modeling every detail is usually cost prohibitive.

Motif compositing is CAE's breakthrough technology that addresses the challenge of adding realistic content to databases while doing so cost-effectively. Motif compositing brings rich correlated content to the virtual world and matches all geo-specific attributes in the source data. It automatically enriches sparse source content through smart rules and algorithms that are tailored for hundreds of terrain types throughout the world.

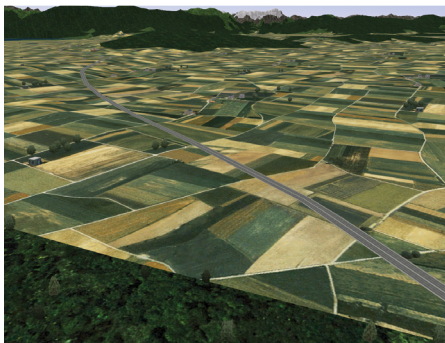
Before Motif Compositing

Earlier so-called “geo-typical” databases provided good height cues over large areas at the expense of unsightly joints and repetitive textures that limited scene realism. Recent high-end synthetic environments typically involve satellite imagery databases to address the demand for better realism. Although appealing at first, these databases are often weak in three areas. They lack the correlated 3D content critical to low altitude visual cueing, and the high-resolution imagery and material textures are often limited in coverage. Additionally, imagery shading, shadowing and time of year are permanently etched into the picture, thereby preventing real-time control. These factors seriously affect training tasks that involve low-level flight operations. Although manual modeling within a small area can address critical portions of the training curriculum, this approach is cost-prohibitive and cannot be scaled to nation-size databases. Considering that today's new systems boast the ability to render significant amounts of database content at higher and higher resolutions, it becomes clear that industry is challenged to deliver enough database content.

The Future with Motif Compositing and CDB

With CAE's motif compositing, large segments of a database are built with smooth terrain transitions, no repetitive patterns. Indeed, when paired with CAE's pioneering run-time publishing of the common database (CDB) format, database content adjusts automatically in order to fully exploit the graphics rendering performance of the image generator or any other client device. Because motif compositing automatically enriches sparse source content through smart rules and algorithms, realistic databases can be generated quickly and cost-effectively.

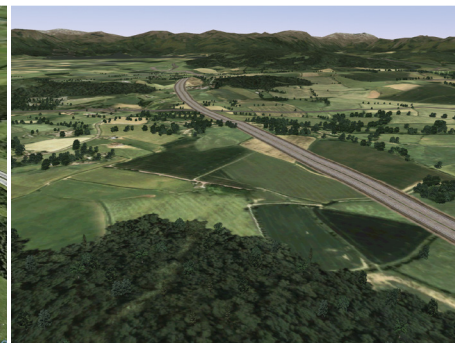
CAE qualifies scenes built using motif compositing as “geo-representative”. It allows you to model any geo-specific buildings and content you need for training and have it placed in a backdrop of rich and convincing representative content. For example, a city outline in the Mediterranean is expanded as clay rooftop villas along winding roads, while the same outline in North America would result in asphalt-shingled bungalows on regular grid streets. A deciduous forest in Australia expands to high eucalyptus trees, whereas the same in New England results in a mix of birch and maple trees.



This image shows the original database.



Google image of the area represented in the original database.



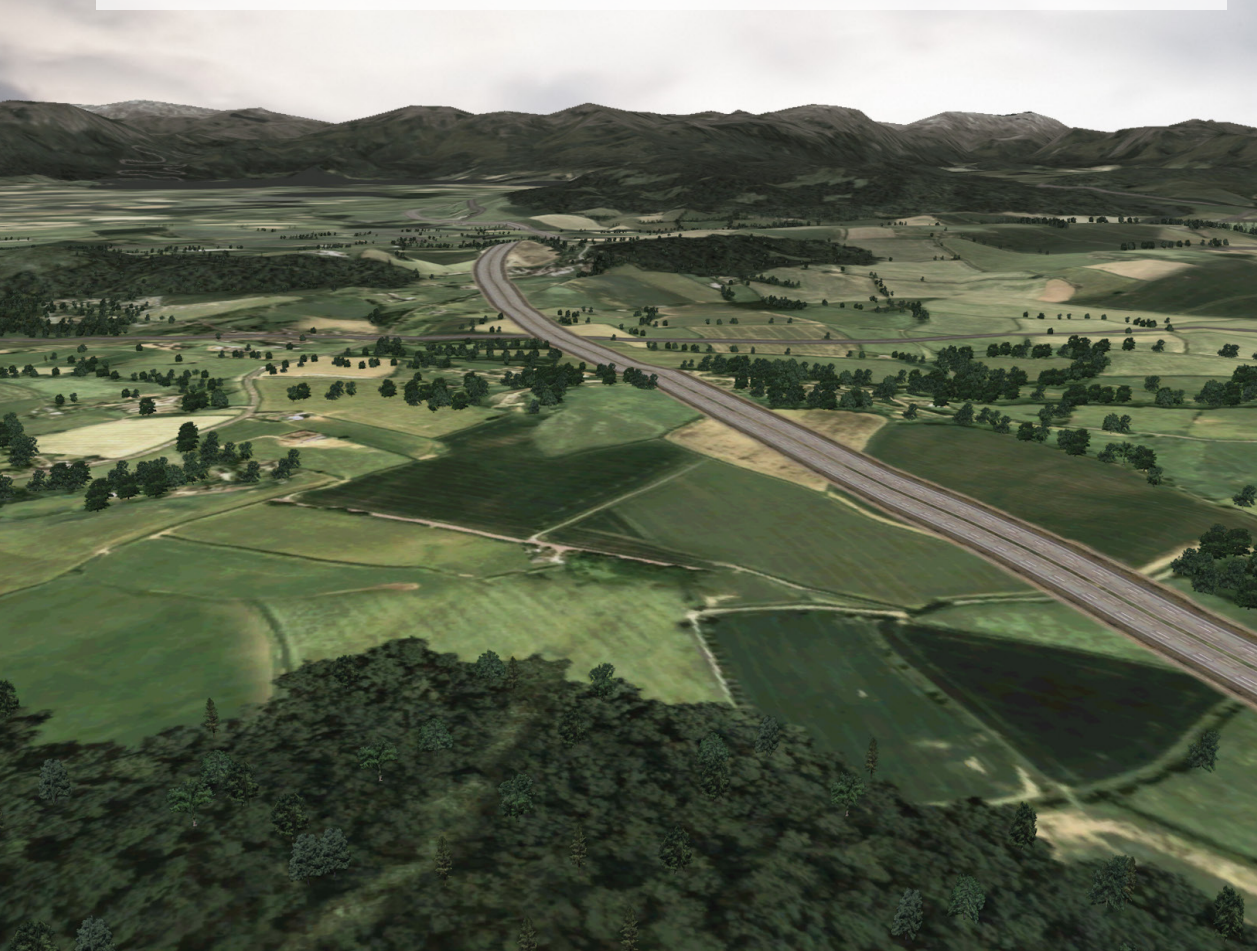
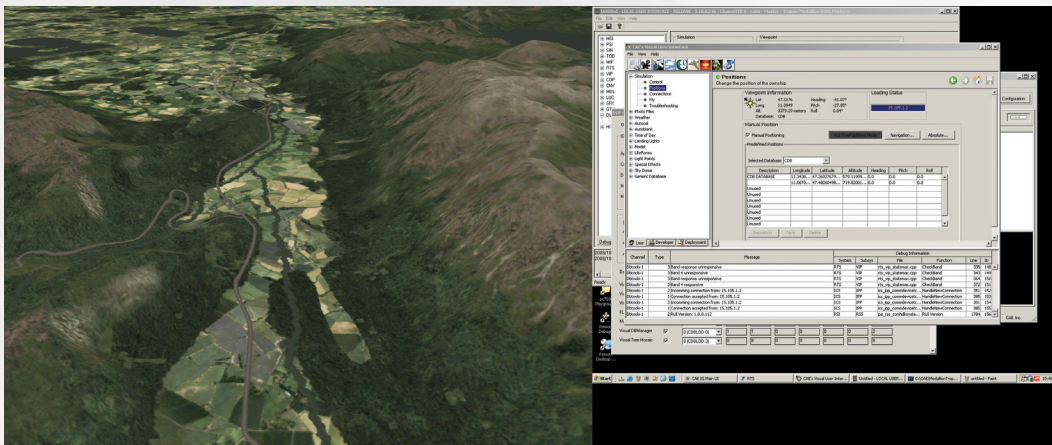
Area of the database generated automatically using CAE's motif compositing.

Benefits of Motif Compositing and CDB

The combination of CDB and motif compositing is ideally suited to breathe new value into existing sparse training databases. You can easily embed newly developed areas into your existing converted training database and leave motif compositing to make it rich with content and more realistic. Either way, your content and investment is protected in the years ahead, as CDB is an open format and provides run-time database interoperability. The CDB is the only format to do so in the simulation market.

Motif compositing offers a significant reduction in the cost of database ownership, allowing you to exploit the advances in visual systems and other simulation devices. The approach also provides full season generation as well as material attributes for infrared, night vision, radar and semi-automated forces (SAF). This is poorly addressed when using visual satellite imagery as the primary source of scene content for military training.

By using CAE's motif compositing, you get richer, more realistic training databases that are more cost-effective and can be generated more rapidly. In addition, you get increased realism at high and low altitudes and a greater sense of immersion for the trainee in the synthetic environment. CAE's motif compositing is truly a paradigm shift, simplifying how synthetic environment databases are built while setting the stage for rapid content growth in line with the continued performance increases in computer graphics hardware.



Canada

CAE Canada
150 Metcalfe Street, Suite 2201
Ottawa, ON K2P 1P1

Tel: +1-613-247-0342
milsim@cae.com

United States

CAE USA
4908 Tampa West Blvd.
Tampa, FL 33634

Tel +1-813-885-7481
Fax +1-813-901-6429
cae_usa@cae.com

United Kingdom

CAE UK plc
Innovation Drive, Burgess Hill
West Sussex RH15 9TW
England

Tel +44 (0) 1444-247535
Fax +44 (0) 1444-244895
cae_plc@cae.co.uk

Europe

CAE GmbH
Steinfurt 11
D-52222 Stolberg, Germany

Tel +49-2402-106-0
Fax +49-2402-106-270
info@cae-gmbh.de

Australia

CAE Australia Pty Ltd
Unit 40, Slough Business Park
Slough Avenue
Silverwater, NSW 2128

Tel +61-2-9748-4844
Fax +61-2-9714-0300
caeus@cae.com.au

Asia

CAE Singapore (S.E.A.) Pte Ltd
2 Seletar Aerospace Link
Singapore 797570

Tel: +65 6430 4390
Fax: +65 6430 4399
milsim@cae.com

India

CAE India Pvt Ltd
Survey No.26 & 27, IVC Road
Bandaramanahalli Village, Uganvadi
Post Devanahalli Taluk, Bangalore -
562110 India

Tel +91-80-2625-6000
Fax +91-80-2625-6160
caeindiapvtltd@cae.com

Middle East

CAE Middle East
P O Box 45990
404, Dhabi Tower, Hamdan Street
Abu Dhabi, UAE

Tel +971-2-676-7676
milsim@cae.com

Corporate Headquarters

CAE
8585 Côte-de-Liesse
Saint-Laurent, Quebec
Canada H4T 1G5

Tel +1-514-341-6780
Fax +1-514-734-5718
milsim@cae.com

