

# MAPCORE®

Geovisual SDK



## Unique MAPCORE® Advantages

- **Comprehensive** – everything developers need to add geovisualization components – 2D and 3D maps, images, video, overlays & objects, supportive calculations and more
- **Optimized** – supports legacy platforms, including full range of fixed-configuration military hardware
- **Flexible** – standard C/C++/C# APIs for maximum control over geospatial operations within native application look and feel
- **Performance** – optimized hardware acceleration for faster graphics rendering



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## Geovisual SDK

In today's fast-changing and highly-connected military, paramilitary and civilian theatres of operation, immediate access to accurate, real-time tactical geovisualization has become crucial to mission success.

### Tactical Geovisualization in Action

From command post workstations, through vehicle-mounted PCs, to hand-held computers – today's field mission decision makers, need fast access to high quality, highly-relevant visual information based on geospatial data, pictures, and video from remote storage or real-time ground or air-based sensors.

This need to swiftly and accurately convey important tactical spatial information led Elbit Systems to create **MAPCORE®**, a uniquely powerful and comprehensive geovisual SDK (Software Development Kit). **MAPCORE®** enables developers to rapidly create and seamlessly integrate cutting-edge geospatial visualization capabilities – including powerful and cutting edge 3D functionality - into existing and new applications.

### Field-Proven, Flexible Solution

With dozens of fielded systems worldwide, **MAPCORE®**-based applications are rapidly implemented in installed client, thin client or web service modes - providing maximum cross-platform flexibility, without compromising on performance or visual quality. Offering direct interface with most common GIS data formats, **MAPCORE®** can either work with data in its original format, or automatically convert to a **MAPCORE®**-optimized format.

**MAPCORE®** offers developers the tools and know-how to meet today's real-world geovisualization challenges, creating mission-critical systems such as:

- Moving maps for navigation systems
- Mission planning, debriefing and terrain analysis
- C<sup>4</sup>ISR systems
- Ground and aerial simulators and trainers
- Airborne C<sup>2</sup> systems

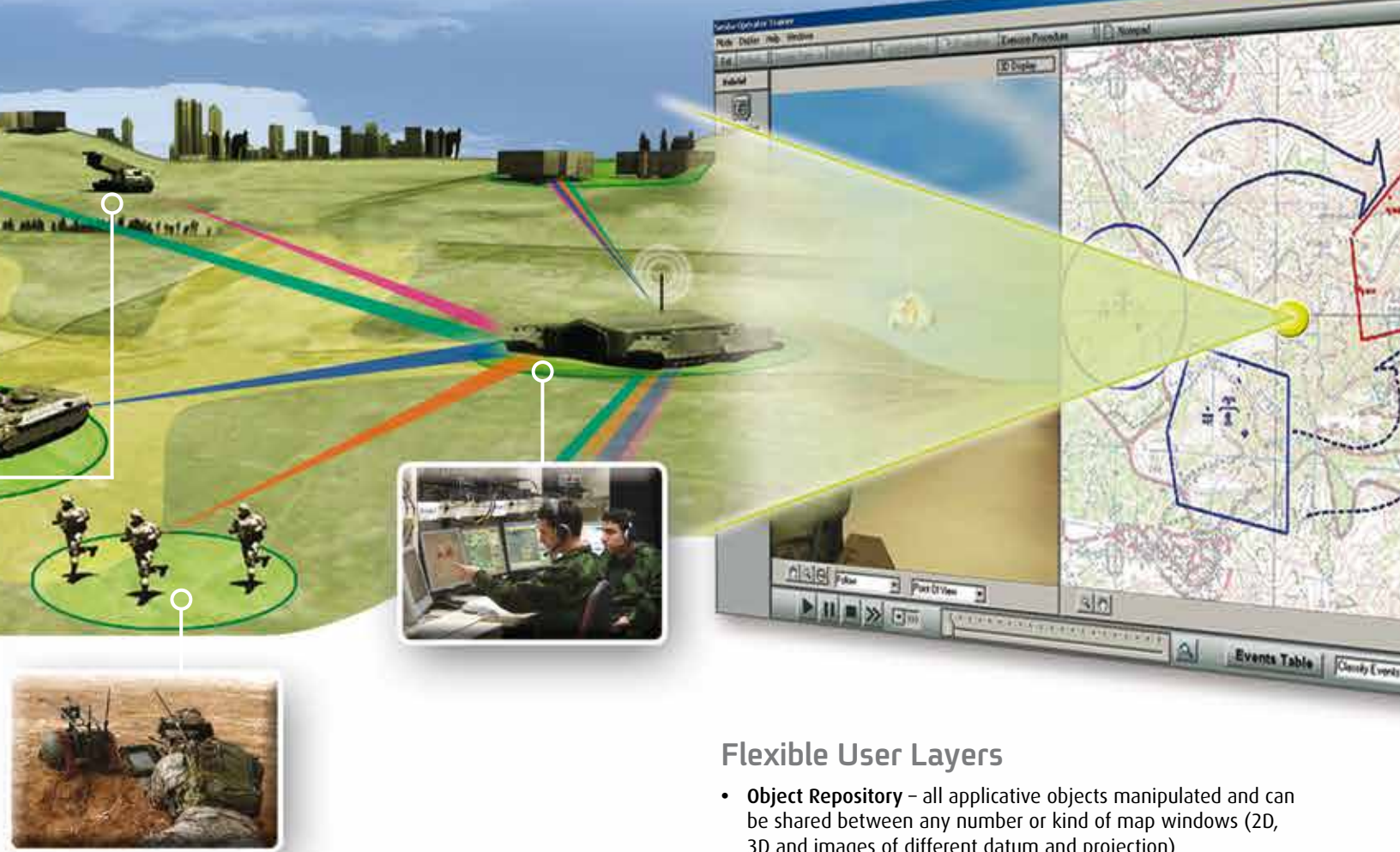
### MAPCORE® Module Highlights

The most comprehensive and powerful geovisualization SDK on the market today, the **MAPCORE®** package covers a full range of capabilities necessary for geo-enabling any application, including:

#### 2D, 2.5D Mapping

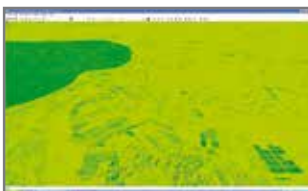
- **Advanced map display** – unified operational picture displays - raster, vector and elevation-based layers in multi-layered application windows
- **Efficient raster and vector format** – efficient internal raster and vector formats, converters (standalone or API) for most industry formats, optional direct access to standard formats, and interface to commercial databases (Oracle Spatial, SQL Server, ArcSDE 9.x, Post GIS) for maximum flexibility





## 3D Terrain Viewer

- **Performance** - leveraging native hardware acceleration to achieve near-real life visualization even on legacy or hand-held devices
- **Interactivity** - fly and drive-through capabilities for any scene, from indoor thru street level to outdoor scenes
- **Multi-perspective** - Multi terrains or multi cameras support
- **Object handling** - Extensive objects drawing support, from simple 2D objects to complex animated with articulated parts 3D meshes
- **Enhanced shadows & illumination** - directional, fixed and spot light sources with mutual interaction and integral shadowing mechanism
- **Effects** - full range of visual effects: local (dust, smoke, fire etc.) and environmental (rain, snow, clouds, sun etc.), Sensors simulation (IR, NVG etc.)
- **Terrain analysis** - combined Line-Of-Sight and area of site calculations performed and visualized in real-time as part of the 3D scene



## Flexible User Layers

- **Object Repository** - all applicative objects manipulated and can be shared between any number or kind of map windows (2D, 3D and images of different datum and projection)
- **Objects definition** - Extensive support for defining all kinds of user objects grouped in collections and overlays including complex objects with unlimited geometries connections and appearances
- **Real-time update** - multiple objects can be updated and moved in real-time, accurately showing position and status data for targets, deployed assets and any other applicative location-sensitive object



## Calculations

- **Network and proximity analysis** - optimal route selection for automated vehicle routing, for mission planning or in real-time scenarios
- **Routing management** - automatic real-time route modification in response to obstacles and threats
- **Geo intelligence and terrain analysis** - extensive calculations options for field condition assessment, decision support, and terrain analysis, including:
  - Conversions between coordinate systems, datum and ellipsoids and angle unit conversion.
  - Geometrical operations on geometrical primitives and complex figures.
- **DTM-based (Line-Of-Sight and area of site) factoring in Earth curviness**



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### Images and Video

- **Image enhancement** – brightness, contrast, sharpening and all other kinds of image enhancements
- **Automatic image restitution** – a robust set of algorithms for images restitution, images can be treated as maps, enabling overlay, object and vector data displays, pixel level coordinate acquisition from sensor images
- **Stereo viewing** - stereoscopic presentation of two overlapped images
- **Panoramic view creation** – real-time creation of panoramic view from not joined cameras (enabling a 360° sight from inside a vehicle)
- **Images fusion** - real-time fusion of images (or video streams) from different sensors like visible & IR
- **Video projection** - real-time multiple video streams projection over 2D/3D terrain
- **VMD & Targets Tracking** - VMD (Video Motion Detection) and all kinds of targets (ground and aerial) tracking support



### 3D Reconstruction

- **Obstacle detection** – real-time, stereo based obstacles detection for UAVs
- **Fully automatic 3D modelling** – from fly-by or drive-by to complete textured 3D model, including:
  - Camera path reconstruction
  - 3D cloud of points creation
  - Mesh creation
  - Texture projection

