# GeoMedia

Product description

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# Product summary

GeoMedia is a comprehensive GIS product line that lets you realize the maximum value of your geospatial resources, integrating them to present, clear and actionable information. It provides simultaneous access to geospatial data in almost any form, uniting it in a single map view for efficient processing, analysis, presentation and sharing. GeoMedia's intuitive, dynamic analysis functionality enables concatenation of analysis processes so the results of one operation feed directly into the next process, as well as automatic updating of results in response to data changes. It delivers high-productivity tools that speed the implementation of geospatial databases by improving the efficiency of common workflows. GeoMedia provides flexibility, interoperability, open architecture and adherence to industry standards such as OGC and ISO.

GeoMedia's stable, robust technology is in active use in organizations throughout the world. Whether your organization has a single user or hundreds distributed across the enterprise, GeoMedia's flexible architecture maintains a high degree of performance and reliably meets your demands.

GeoMedia is available in three product tiers, providing an ideal solution for a broad range of organizations and projects so everyone can achieve superior results.

Click on a link below for quick navigation:

Feature comparison chart
GeoMedia Essentials
GeoMedia Advantage
GeoMedia Professional

# Feature comparison chart

| Capability | GeoMedia Essentials | GeoMedia Advantage | GeoMedia Professional |
|---|---|---|---|
| Data access Read-Only | X | X | X |
| Data access Read-Write | X | X | X |
| Data management | X | X | X |
| Image preparation | X | X | X |
| Presentation and rendering | X | X | X |
| Vector analysis | X | X | X |
| Spatial Modeling | X | X | X |
| Basic feature placement and editing | X | X | X |
| Labeling | X | X | X |
| Linear reference model | X | X | X |
| Layout, Printing and Plotting | X | X | X |

| | | | |
|---|---|---|---|
| Export to most common file formats | X | X | X |
| Geocoding | X | X | X |
| 3D visualization | X | X | X |
| Consumer basemaps | X | X | X |
| Raster/Grid analysis | | X | X |
| Terrain artifacts | | X | X |
| Advanced feature placement and editing | | X | X |
| Validation and cleanup | | X | X |
| Export to enterprise database management systems | | X | X |
| Transaction management | | | X |
| Linear network | | | X |
| Parcel management | | | X |

# GeoMedia Essentials

GeoMedia Essentials is the base product. It provides powerful, ad-hoc and complex analysis capabilities along with image preparation and enhancements. GeoMedia Essentials provides data access, through GeoMedia's data server technology, to a wide range of data sources and formats.

## Key features

### Easy to learn and use

- Intuitive ribbon user interface
- Common interface used throughout the GeoMedia suite
- Extended tooltips
- Extensive Help, eTraining and tutorials available online
- Suite of utilities that do not require GeoMedia to be running

### Utilities

GeoMedia installs a separate set of utilities that let you perform tasks outside of the main GeoMedia environment:

- Database Utilities
- Define CAD Server Schema File
- Define Coordinate System File
- Define Symbol File
- Define Text File Server Format File
- Define Warehouse Configuration File
- GeoMedia Desktop Configuration Wizard
- G/Technology Interoperability Utility
- Publish Address Geocoding Index
- Publish to GeoMedia SmartStore Warehouse

### Data access (Read-Only)

- Microsoft Access
- ArcView Shape files
- File Geodatabase (FGDB)
- MapInfo
- MicroStation .dgn files
- AutoCAD files
- Intergraph I/CAD .map files
- G/Technology

- GeoMedia SmartStore files
- Object Space files
- GML
- KML
- ODBC Tabular
- OGC WCS
- OGC WMS
- OGC WFS
- OGC WFS-T
- Oracle Object Model (including spatial types)
- Microsoft SQL Server (including spatial types)
- Microsoft Azure SQL Database (including spatial types)
- PostgreSQL with PostGIS (including spatial types)
- Text file
- .xlxs (Excel)
- Vector Product Format (VPF)

## Data access (Read-Write)

- Microsoft Access
- File Geodatabase (FGDB)
- OGC WFS-T
- Oracle Object Model (including spatial types)
- Microsoft SQL Server (including spatial types)
- Microsoft Azure SQL Database (including spatial types)
- PostgreSQL with PostGIS (including spatial types)
- OGC GeoPackage (including spatial types)

## Data management

- Feature class definition
  - Geometry types
  - Attribute types
  - Hypertext
- Feature categories and groups
- Coordinate system definition
- Enterprise libraries

- Microsoft Access

- Microsoft SQL Server

- Oracle

- PostGIS

- Shared GIS information

  - Connections to data sources (Warehouse and Catalog)

  - Legends

  - Styles

  - Queries

  - Categories

  - Searches

  - Spatial filters

  - Queues

- Explorer window

- Drag and drop

## Presentation and rendering

- Point styles

  - Symbol styles – AutoCAD drawing files, GeoMedia symbol files, MicroStation cell files and SVG Files

  - Font styles

  - Picture styles

  - Bar charts

  - Pie charts

- Linear styles

  - Simple styles

  - Pattern styles

  - Combination of dashed and pattern styles

- Areal styles

  - Boundary style – simple, pattern

  - Fill style – simple, gradient, hatch and pattern

  - Point style – symbol, font, picture, bar chart and pie chart

- Text styles

- Image styles

- Compound styles (mix of point, line and area geometry)

- Properties

- Size

- Width

- Rotation

- Color

- Alignment

- Offset

- Patterning

- Transparency

- Tinting

- End caps

- Midline joins

- Text halos

  - Attribute-based

  - Animation

  - Thematic maps

    - Range

    - Unique value

    - Pie charts/Bar charts

  - Named Styles

## Labeling – Rules-based label placement

- Label Manager is used to define the label properties and rules for label placement

  - Create shared rules/styles

  - Set label priorities

  - Set label obstacles

  - Define label properties

    - Text (attribute or text string)

    - Fonts

    - Size

    - Color

    - Symbols – GeoMedia FSM symbols, symbol fonts

    - Expression Builder defines how labels are built from text attributes

  - Define label placement rules

    - Label position

- Label sacking
- Font reductions
- Line crossing
- Overlap labels
- Offsets
- Leader lines
- Centerlines
- Divided highways
- Repeat labels
- Overhang
- Extend boundary
- Place at dominant angle

- Dynamic labeling
  - Toggle on/off
  - Auto refresh when Map Window extent changes (zoom, pan, etc.)

- Static labels
  - Display
  - Refresh
  - Suppress/Restore
  - Change properties
  - Highlight feature
  - Compose/Decompose
  - Stack
  - Reposition
  - Duplicate
  - Leader

## Vector analysis

- Attribute query
- Native query (for vendor-specific database management systems)
- Join and union (of database tables)
- Buffer zone
- Aggregation
- Analytical merge
- Analyze geometry

- Functional attributes (including custom functions)
- Spatial query
  - Touch
  - Within distance of
  - Contained
  - Are Contained By
  - Entirely Contained
  - Entirely Contained By
  - Overlap
  - Meet
  - Are Spatially Equal
- Spatial intersection
  - Touch
  - Contained
  - Are Contained By
  - Entirely Contained
  - Entirely Contained By
  - Overlap
  - Meet
  - Are Spatially Equal
- Spatial difference
- Search and searches
- Find address
- Address geocoding
- Coordinate geocoding

## Spatial Modeling

- Run Spatial Model command
- Run Spatial Model – Explorer window
- Rerun Spatial Model – Explorer window
- Spatial Model properties – Explorer window
- Spatial Model refresh all – Explorer window
- Add to Map Window – Explorer window
- Display in Data Window – Explorer window
- Spatial operators

- Features Input
- Features Output
- Features Database Output
- Filter by Geometries
- Filter by Attributes
- Coordinate Transformation
- Define Functional Attribute
- Generate Functional Attributes
- Mask Features
- Intersect Features
- Merge Features
- Create Centerpoint
- Create Centroid
- Create Buffer Zone
- Create Buffer Ring
- Join Features
- Union Features
- Summarize Related Features
- Smooth Geometry
- Densify Geometry
- Generate Topology Features
- Classify Features
- Attribute Statistics

## Basic feature placement and editing

- Feature placement
  - Undo
  - Place point features
  - Place line features
  - Place area features
- Placement editing
  - Smart snapping
  - Raster snapping
- Feature and Geometry editing
  - Delete feature

- Delete geometry

- Edit geometry

- Continue geometry

- Move

- Spin

## Linear Reference Model

Track and analyze data that is associated with locations along a linear network.

- LRS precision location
  - LRS Model Selection
    - Measure, Measure with Internal/External Markers
    - Duration, Duration with Internal/External Markers
  - Key field selection – primary, secondary, tertiary and quaternary
  - 2D or 3D geometric length consideration
  - Reverse geometry option
  - Insert feature using precision location
- Dynamic segmentation
  - Select an event table from any connection
  - Use queries of an event table
  - Use 2D or 3D geometric length
  - Segment linear and point event data
  - Support multiple event reference methods
    - Measure
    - Projected XY coordinates
    - Longitude/Latitude
    - Marker offset
    - Duration
  - Supports single or multi-level LRS features
  - Supports datum-based events
  - Resolves multiple events at same location
  - Supports rotated point events

## Geocoding

GeoMedia Address Geocoding lets you generate Address Geocoding Index (AGI) files, geocode addresses, take an address in text form and locate that address as point geometry and geocode an entire feature class or query rendering the addresses.

- Find address

- Geocode addresses

- Publish Address Geocoding Index

- Define parsing rules

- Define geocoding model

## 3D visualization

GeoMedia integrates 3D formats with other formats available through its data access functionality, such as 2D vector data, raster and image data. It does this seamlessly in the Map Window. Commands are available to toggle between 2D and 3D display of data and access the 3D format listed here:

- Hexagon Smart Point Cloud (HSPC)

- OGC3D Tiles

## Consumer basemaps

Access and display consumer basemaps in context with other 2D vector formats and with raster and image data.

- Open Street Maps (OSM)

## Microsoft Bing Maps integration

GeoMedia integrates a Microsoft Bing Maps aerial/map/birds-eye display window (Bing Maps license required.) Users can match the Bing Maps view to the GeoMedia MapWindow and synchronize views.

## GPS tracking

Access GPS data in real time to track positions on a GeoMedia map view and efficiently populate or update features in a GeoMedia warehouse.

## Layout, printing and plotting

- Map composition environment – Map, Legend, Scale Bar, North Arrow, etc.

- Cartographic grid placement – geographic, projection

- Reference grid and reference index placement

- Map Window printing

## Export to most common file formats

- AutoCAD DWG

- AutoCAD DXF

- Esri shapefile

- Esri file geodatabase

- MapInfo MIF

- MicroStation DGN

- GML

## Image preparation

The GeoMedia package provides limited image manipulation:

- Insert an interactive image such as a logo or backdrop
- Insert georeferenced images
- Adjust image display
    - Contrast, brightness
    - Invert colors (greyscale, color or binary)
    - Define foreground and background colors
    - Turn on or off background transparency
    - Select image banks for multi-band images
- Create image footprints
- Insert and review geotagged photos

# GeoMedia Advantage

GeoMedia Advantage builds upon GeoMedia Essentials. It adds efficient data capture and editing tools for the creation and management of geospatial databases and expands the analytical capabilities by including raster data analysis to complement the vector feature analysis of GeoMedia Essentials. Users can perform line-of-sight and hot spot analysis along with site location and corridor planning. GeoMedia Advantage also provides the ability to generate terrain artifacts such as contours, shaded relief and color-coded elevations for the creation of mapping products. Geometry validation tools are also included.

## Key features

### Utilities
- Batch Plotting

### Layout, printing and plotting
- Map Book generation

### Export to file formats
- Oracle Object
- SQL Server

### Advanced feature placement and editing
- Feature placement
    - Multi-level undo/redo
    - Place point features

- Orient to geometry
- Place at angle
- Rotate dynamically
- Place linear features
  - Point by point
  - Two-point line
  - Consecutive two-point line
- Place area features
  - Place by point
  - Place by circle
  - Place rectangle
  - Place rotated rectangle
- Insert area by face
- Insert interactive area by face
- Arc placement
  - Start, end, point on edge
  - Start, point on edge, end
  - Arc by center
  - Precision key-in of parameters
- Construction aids
  - X, Y
  - Delta X, Delta Y
  - Delta X, Delta Y from point
  - Distance and direction
  - Distance and direction from point
  - Distance along feature
  - Distance/distance intersection
  - Bearing/bearing intersection
  - Constrain by length
  - Constrain tangent
  - Azimuth
  - Bearing
  - Parallel to
  - Perpendicular to

- Place at offset
- Deflection angle
- Place orthogonal to
- Placement editing
  - Maintain relationships in feature placement and editing (coincidence, existing geometry)
  - Stream mode digitizing
  - Table digitizing
  - Vector breaking on placement/editing
  - Precision coordinate key-ins
  - Construction aids
  - Define SmartSnap tolerances
  - Integrated raster/vector snap
- Feature editing
  - Delete feature
  - Merge feature
  - Split feature
  - Copy feature
- Geometry editing
  - Delete geometry
  - Edit geometry
  - Continue geometry
  - Move geometry
  - Re-digitize geometry
  - Spin geometry
- Attribute editing
  - Update attributes

## Data integration and validation

- Problem detection
- Problem auto correction
- Dynamic queued edit
- Geometry Information
- Advanced geometry validation
  - Supports multiple input features for the validation
  - Output anomalies are written to a Query

- Anomaly types evaluated in the detection
  - Unknown geometry
  - Invalid geometry
  - Uncontained holes
  - Overlapping holes
  - Invalid coordinates
  - Area loop
  - Invalid geometry component
  - Area not closed in Z plane
  - Z out of range
  - Not monotonic
  - Not flat
  - Z breaks
  - Z spike
- Anomaly types evaluated in the detection providing an auto-correct option
  - Empty geometry
  - Too few vertices
  - Unclosed areas
  - Zero length lines
  - Zero coverage areas
  - Kickbacks/Duplicate points
  - Kink
  - Loop in line
  - Short vector
  - Null geometry
  - Superfluous geometry component
  - Fragmented geometry
  - Duplicate feature
- Basic connectivity validation
  - Supports two input features for the validation
  - Output anomalies are written to a Query
  - Query connectivity
    - Undershoots
    - Overshoots

- Node mismatches
- Unbroken intersecting geometry
- Non-coincident intersecting geometry
- Nearly coincident geometry
- Fix connectivity
  - Trim overshoots
  - Extend overshoots
  - Break crossing lines
  - Insert vertex in crossing lines
- Advanced connectivity validation
  - Supports multiple input features for the validation
  - Output anomalies are written to a Connection/Queue
  - Anomaly types evaluated in the detection
    - Shared edge
    - Shared face
    - Sliver
    - Gap
    - Dead end
    - Short vector
  - Anomaly types evaluated in the detection providing an auto-correct option
    - Overshoot
    - Undershoot
    - Unbroken intersecting geometry
    - Non-coincident intersecting geometry
    - Node mismatches

## Raster grid analysis

GeoMedia Advantage has numerous functions that allow for detailed raster analysis and display.

- Map algebra
  - Mixed mode arithmetic
  - Operations
    - Monadic
    - Dyadic (Math)
    - Dyadic (Relational)

- Dyadic (Logical)
- Trigonometric functions
- Logarithmic functions
- Mode functions
- List functions

- Classification
  - Clump
  - Explicit cross tabulation
  - Group
  - Hotspot detection
  - Implicit cross tabulation
  - Recode
  - Supervised
  - Thiessen
- Interpolation
  - Density
  - Inverse Distance Weighing (IDW)
  - Triangulation
  - Ordinary kriging
  - Ordinary kriging suite
  - Spline
- Layers
  - Export
  - Edit
  - Mosaic
  - Subscene
  - Reproject
  - Import
  - Rasterize
  - Vectorize
  - Cell magnifier
  - Drill-down
  - Histogram
  - Profile

- Visualization
  - Blending
  - Color composite
  - Overlay
  - Shaded relief
- Zone
  - Area
  - Buffer
  - Characterize Boundary
  - Detect edges
  - Fill gaps
  - Perimeter
- Path
  - Characterize linkage
  - Distance cost
  - Length
  - Segmentation
- Statistical analysis
  - Local scan
  - Random
  - Zonal score
- Surface
  - Aspect
  - Curvature
  - Downhill accumulation
  - Downhill path
  - Fill depressions
  - Fill pits
  - Flow concentration
  - Grade
  - Inflection angle
  - Insolation
  - Isoline generation
  - Reverse path

- Smooth
- Sub-basin delineation
- Update geometry Z values
- Viewshed
- Volume
- Elevation workbench
  - LiDAR source data properties
  - Inverse distance weighting
  - Spline
  - Smooth
  - Shaded relief
- Utilities
  - Create Elevation Footprints
  - Design Legend
  - Label Isolines
  - LAS Files to Feature Class

## Spatial Modeling

- Spatial Operators
  - Fill Depressions
  - Calculate Flow
  - Calculate Flow Concentration
  - Accumulate Flow
  - Interpolate Using IDW
  - Find Watersheds
  - Interpolate Using Kriging
  - Define Continuity Model Parameters
  - CGA – Density Interpolation

# GeoMedia Professional

GeoMedia Professional builds upon GeoMedia Advantage. It adds additional feature capture and editing tools that are coupled with an extensive set of quality assurance capabilities for the effective creation and management of enterprise databases. GeoMedia Professional provides medium to large organizations the ability to control data access across all users using optimistic transactions, while maintaining the integrity of the enterprise data given the organization's business rules. Version- and time-based analysis are possible with GeoMedia Professional. Finally, users can easily create and manage linear networks and validate the linear network connectivity as necessary.

## Key features

### Utilities

- Spatial Model Editor
- Schema Remodeler
- Transaction Administrator

### Advanced feature placement and editing

- Feature placement
  - Insert traverse
- Feature editing
  - Change feature class
  - Copy parallel
- Geometry editing
  - Partial delete
  - Insert intersection
  - Reverse direction
  - Construct circular fillet
  - Rotate geometry
  - Extend
  - Extend to intersection
  - Extend two lines to intersection
  - Trim
  - Trim to intersection
  - Simplify geometry
  - Smooth geometry
- Attribute editing
  - Update attributes using text

- Copy attributes
- Copy attribute definition

## Transaction management

- Revision sets
  - Optimistic locking
  - Pessimistic locking
- Commit all features (revision sets)
- Commit individual features
- Discard all features
- Discard individual features
- Lock records
- Edit valid time range
- Conflict resolution
  - Attributes
  - Geometry
- Query locked features
- Query modified features
- Temporal query
- Apply temporal filter

## Data integration and validation

- Automated geometry and connectivity validation
- Attribute validation
  - Manage attribute validation rules
  - Validate attributes
- Detect void areas
- Edge matching
  - Automated
  - Interactive
- Conflation

## Cadastral

- Coordinate Geometry (COGO)
- Validate parcels
- Fix parcels

- Parcel numbering

- Parcel labeling

- Parcel split

- Parcel join

- Parcel fabric adjustment

  - Create control point links

  - Adjust geometry

  - Control point link Collections

  - Query control point links

  - Query link residuals

  - Delete adjustments

- Parcel relationships and rules

- Parcel management tools

  - Select by polygonal fence

  - Locate features by attribute search

  - Locate features by query

  - Review attributes

  - Square geometry

  - Label segments

  - Label coordinates

  - Sequential attribution

  - Topo select

  - Synchronize geometry

  - Related feature rules

  - Related feature properties

## Network management – Advanced feature models

GeoMedia Professional allows for the management and analysis of linear networks found in many public works department workflows (water, gas, electricity, etc.).

- Feature validation of new and existing data

- Network tracing and analysis

- Dimensioning and labeling functions

- Define AFM associations and rules

- Populate connectivity tables for existing features

- Rules-based digitizing/editing of new data

## Image preparation

- Image registration

- Output to GeoTIFF

## Export to enterprise database management systems

GeoMedia Professional provides commands for exporting data to other GIS or CAD systems. You can export the following:

- ASCII format for Oracle Object Model database

- ASCII format for SQL Server database

- GeoTIFF

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# About Hexagon

Hexagon is the global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon's Safety, Infrastructure & Geospatial division improves the resilience and sustainability of the world's critical services and infrastructure. Our solutions turn complex data about people, places and assets into meaningful information and capabilities for better, faster decision-making in public safety, utilities, defense, transportation and government.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 24,000 employees in 50 countries and net sales of approximately 5.2bn EUR. Learn more at hexagon.com and follow us *@HexagonAB*.