

Leapfrog Works

Technical Specifications

In this document, you will find everything you need to understand the system requirements to run the application, including a feature list for Leapfrog Works and the industry data formats it supports.

Leapfrog Works

A dynamic 3D subsurface modelling solution that turns complex data into clear, easy to interpret models.

Leapfrog Works helps you visualise and understand the geology so you can communicate and make better decisions on all your civil engineering and environmental projects.



Dynamic 3D modelling

Models update when new data is loaded



Ground type classification

Rapidly build compelling geological models



Share & collaborate

Visually share your model with stakeholders



Interoperability

Industry standard formats from ground investigations to BIM



Engineering design

Connecting the geology with engineering designs



Environmental insight

Link groundwater models and contaminant plumes to geological models for robust insights



Generate cross sections

Dynamically generate cross sections anywhere you need them



Flexible pricing

Pricing options to fit your organisation

Technical Specifications¹

3D modelling

- Full 3D modelling
- Fast Radial Basis Function (RBF) implicit interpolation engine
- Dynamic update with linked or reloaded data

Geological modelling

- Model geology from borehole, structural, geophysics, GIS, 2D grid, map, point, polyline, mesh/surface and historical cross section data
- Deposition, intrusion, erosion, stratigraphic sequence, vein, vein system, and fault modelling methods
- Structural modelling with form interpolants, stereonet and structural trends

Numeric modelling

- Interpolate numeric values from boreholes, geotechnical investigations, environmental samples, well screens or points
- Spheroidal and linear variance controls
- Advanced geostatistical numeric modelling⁴
 - Kriging
 - Radial basis function

- Inverse distance weighted
- Nearest neighbour
- Apply anisotropic trends
- Create distance buffers

Attributes

- Create user defined attributes to volumes
- Audit object history and properties
- Reference codes for job tracking

Surfaces

- Create meshes from points, polylines and other mesh parts
- Repair and move meshes
- Extract top and bottom surfaces from 3D volumes
- Create contours and import photogrammetry surfaces

Site investigations

- Borehole planning
- Borehole correlation of lithology with numeric downhole traces

Cross sections

- Create cross sections with model volumes, surfaces and boreholes applied
- Layout cross sections for presentation

- Generate cross and long sections relative to an alignment

Model management

- Central model management interoperability:
 - Version controlled models in central repository
 - Review, collaborate and maintain audit trail of models

Visualisation

- 3D manipulation, layer control, slice, sections in scene, draped GIS data
- Publish 3D scene to web browser with View upload
- Versatile colourmaps
- Saved scenes for interactive viewing in Leapfrog Viewer
- Multiple 3D views
- Create movies from scenes

Data inputs

Elevation grids

- Arc/Info ASCII Grid Files (.asc, .txt)
- Arc/Info Binary Grid Files (.adf)
- Digital Elevation Model Files (.dem)
- Surfer ASCII or Binary Grid Files (.grd)

- SRTM Files (.hgt)
- ESRI .hdr Labelled Image Files (.img, .bil)
- GeoTIFF Image Files (.tiff, .tif)

GIS Vector data

- Shape Files (.shp)
- MapInfo Files (.tab, .mif)
- ESRI Personal GeoDatabase Files (.mdb, .accdb)
- MapInfo Batch File (.xml)
- ESRI Geodatabase (.gdb)

Geophysical and 2D GIS grids

- Arc/Info ASCII Grid (.asc, .txt)
- Arco/Info Binary Grid (.adf)
- Digital Elevation Model (.dem)
- Intergraph ERDAS ER Mapper 2D Grid (.ers)
- ESRI .hdr Labelled Image (.img, .bil)
- SRTM Files (.hgt)
- UBC grids (.ubc) and Open Mining Format grids (.omf)
- Surfer ASCII or Binary Grid (.grd)
- GOCAD Voxit files (.vo)
- Geosoft Grid files (.grd)
- Grid eXchange file (.gxf)

Borehole data

- AGS Files (.ags) v3.1 & 4.0
- gINT projects (.gpi) via ODBC
- CSV Text File (.csv)
- ASCII Text File (.asc)
- Plain Text Files (.txt)
- Data Files (.dat)
- Via ODBC (.mdb, .accdb)
- TSV Text Files (.TSV)

Points

- CSV Files (.csv)
- ASCII Text Files (.asc)
- DXF Files (.dxf)
- DWG Files (.dwg)
- Leapfrog Works 3D Point Data Files (.pl3, .ara)
- Via ODBC (.mdb, .accdb)

Maps/Photos/Cross sections

- PNG Files (.png)
- JPEG Files (.jpg, .jpeg)
- TIFF and GeoTIFF Files (.tiff, .tif)
- Bitmap Files (.bmp)
- Graphics Interchange Format Files (.gif)

Designs

- DXF Files (.dxf) versions R13 - R27
- Civil3D and AutoCAD DWG Files (.dwg) versions R13 - R27²
- Bentley Design files (.dgn) v7-8
- Alignments in LandXML (*.xml)

Meshes

- Leapfrog Files (.msh, .ara)
- Leapfrog Model Files (.lfm)
- DXF Files (.dxf)
- DXF Polyface Files (.dxf)
- DWG Files (.dwg)
- Open Mining Format surfaces (.omf)
- Textured Alias Wavefront Object Files (.obj)

Polylines

- Drawing Interchange Polylines (.dxf)
- DWG Files (.dwg)
- Leapfrog Polylines (.lfpl, .csv, .txt)

Flow models³

- ModFlow Models (.nam, .mf, .mfu)
- FEFLOW Models (.fem, .dac)

Colour gradients

- Geosoft Colour Files (.tbl)
- ERMMapper Lookup Tables (.lut)
- MapInfo Colour Files (.clr)
- Leapfrog Colour Files (.lfc)

Data outputs

Elevation/Thickness grids

- Arc/Info ASCII Grid Files (.asc)
- ESRI .hdr Labelled Files (.bil)
- ENVI Raster Image Files (.img)
- Surfer ASCII Grid Files (.grd)

GIS Vector data

- Shape Files (.shp)

Maps and Photos

- Geo Tiff Files (.tif, .tiff)

Borehole data

- CSV Files (.csv)
- IFC v4 Files (.ifc)

Points

- CSV Files (.csv)
- DXF Files (.dxf)
- DWG Files (.dwg)
- DGN Files (.dgn)

Polylines

- Leapfrog Polylines (.lfpl, .csv)
- Drawing Interchange Polylines (.dxf)
- DWG Files (.dwg)
- DGN Files (.dgn)

Scenes

- Upload to View web application (web browser)
- Leapfrog Scene (Viewer/Aspect)

Movies

- Movie Files (.wmv)

Rendered images

- Image Files (.png, .jpg, .jpeg)

Meshes (Model surfaces/Output volumes/Interpolant surfaces)

- Leapfrog Files (.msh)
- DXF Files (.dxf)
- DWG Files (.dwg)
- DGN Files (.dgn)
- IFC v4 Files (.ifc) with user defined attributes
- Alias Wavefront Object Files (.obj)

Cross section layouts

- PDF Files (.pdf)
- Scalable Vector Graphics Files (.svg)
- PNG Image Files (.png)
- GeoTIFF Files (.tiff, .tif)

Cross section evaluations

- 2D or 3D output
- DXF Files (.dxf)
- DWG Files (.dwg)
- DGN Files (.dgn)

Flow models³

- ModFlow Models (.nam)
- FEFLOW Models (.fem)

Optional extensions

- Hydrogeology
 - Create geological models as grids for ModFLOW and FEFLOW flow models
 - Import and visualise flow model results from ModFLOW and FEFLOW simulations
- Contaminants
 - Create dynamic 3D plume models
 - Powerful and intuitive variography
 - Calculate contaminant mass and volume
 - Fully transparent and auditable workflow

Notes:

1 Specifications subject to change without notice

2 Some objects may require exploding in Civil3D

3 Available with optional Hydrogeology extension

4 Available with optional Contaminants extension

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