

VoxelSpace

Quickstart Guide

VoxelSpace is a volumetric spatial platform that transforms massive terrain, infrastructure, and sensor datasets into living 4D environments. Traditional models capture only surfaces—lines, elevations, or textures. Volumetric modeling uses

voxels—3D pixels that store data about each cubic volume. This unlocks new capabilities for simulation, change detection, infrastructure planning, and geoscience because the entire volume becomes the dataset.

VoxelSpace centralizes data in a cloud-hosted repository and offers real-time voxel-level modeling and massive-scale processing using serverless spatial functions called spatial lambdas.

- [Prerequisites](#)
- [1. Sign Up & Set Up Your First Project](#)
- [2. Prepare and Upload Your Data](#)
- [3. Process Data into Indexed Datasets](#)
- [4. Visualize Your Data](#)
- [5. Explore Advanced Features](#)

Prerequisites

Before getting started, ensure you have:

- A VoxelSpace account (the free tier allows up to 5 GB of uploaded data and includes limited compute hours).
- Data in supported file formats as outlined in the upload wizards, including common point-cloud, mesh, block-model, and raster formats.

1. Sign Up & Set Up Your First Project

Follow these steps to create your first project:

1. Navigate to platform.voxelspace.com and log in with your Microsoft, Google identity or your work email.
2. On the catalog page, click **New Project**
3. Provide a project name and description
4. Select your time zone
5. Accept the default coordinate datums and projections:
 - WGS 84 horizontal datum
 - Mean-sea-level vertical datum
6. Set a voxel resolution or leave the default setting
7. Submit the form

Your new project will appear in the project list.

2. Prepare and Upload Your Data

Inside your project, click **Add Object ? Raw Data** and choose the type of dataset you want to import:

Point Cloud

- Upload LiDAR or photogrammetry point clouds
- **Supported formats:** .las, .laz, .txt, .xyz, or compressed .zip files
- Provide an object name and optional description
- Select your file

Mesh

- Upload surface meshes (e.g., .obj files)
- When prompted for a column meta label, supply "Default" or another appropriate label
- Choose your file

Block Model

- Upload block-model tables
- **Supported formats:** .csv, .txt, .xls, .xlsx, or .zip
- Map your columns to Origin X, Origin Y, Origin Z, and Value fields
- Select horizontal and vertical datums and a projection

Ortho-Imagery

- Upload orthorectified images or mosaics
- **Supported formats:** .png, .jpg, .bmp, or .tif
- For PNG/JPEG/BMP files, include the corresponding world file (.jgw, .pgw, .tfw, etc.)
- GeoTIFFs embed this metadata and can be uploaded directly

After choosing the file and completing required fields, click **Create**. A new row appears in the project list showing the object type, creation time, size, and status icon. Note that raw objects cannot be visualized until they are processed.

3. Process Data into Indexed Datasets

To make data queryable and visualizable, convert raw objects into indexed datasets or voxel grids:

Indexed Points

Converts a raw point cloud into a queryable point-cloud dataset. Select your source point cloud and click **Create**.

Indexed Mesh

Similar to Indexed Points but for meshes. Select the raw mesh as source and create an indexed mesh.

Indexed Imagery

Processes ortho-imagery into an indexed raster dataset. **Important:** Only one processing job can run at a time on the free tier, so subsequent jobs remain queued until the current task finishes.

Voxel Block Model

Converts block-model tables into voxel grids. You can specify:

- Translation offsets
- Scale factors
- Rotation parameters

Launch this process only when no other job is queued.

Additional Processing Options

- **Voxel Terrain**
- **Ortho Voxel Terrain**
- **Voxelised Points**
- **Voxelised Mesh**

Each option is tailored to specific data types. Processing tasks appear on the **Pending Tasks** page. In the free tier, only one task can run concurrently, so plan your workflow accordingly.

4. Visualize Your Data

Once you have indexed datasets, explore them in the interactive 3D viewer:

Creating a View

1. Select **New View** from the project or choose **View** from an indexed object
2. Enter a name and description for your view

Working with the View Editor

1. Click **Add Objects** and select your indexed datasets
2. Datasets appear in the left panel with icons for:
 - Color settings (palette icon)
 - Bounding-box display
 - Zoom controls
 - Visibility (colored dot)

Navigation and Controls

- **Visibility toggle:** Use the colored dot to show/hide datasets
- **Camera controls:** Click the cross-hair icon to center the camera on the dataset
- **Extent display:** Use the box icon to reveal dataset boundaries
- **Manual navigation:** Zoom or pan manually if objects don't appear automatically

Customizing Appearance

- **Color settings:** Access via the palette icon to choose constant colors or gradient schemes
- **Point size adjustment:** Set point sizes for point clouds
- **Color palettes:** Includes options like Viridis and Plasma
- **Raster overlays:** Overlay raster layers on imagery

Toolbar Features

- Switch between navigation tools (select, pan, zoom)
- Show or hide the grid
- Enter full-screen mode
- Automatic camera re-centering when using zoom icons

5. Explore Advanced Features

VoxelSpace offers powerful capabilities beyond basic visualization:

Spatial Calculations

Run serverless **spatial lambdas** to:

1. Compute volumes across datasets
2. Filter data based on specific criteria
3. Derive metrics across trillions of voxels

Temporal Tracking

Add time as a dimension to your datasets to observe changes over time, including:

- Erosion monitoring
- Construction progress tracking
- Fluid movement analysis

Multi-Source Data Fusion

Seamlessly integrate multiple data types into a single voxel grid:

- LiDAR point clouds
- Drill hole data
- Seismic datasets
- IoT sensor data
- CAD files

This unified approach enables comprehensive analysis across diverse data types.

Collaboration and Integration

- **Project sharing:** Collaborate with team members
- **Unity export:** Export projects for game engines
- **API integration:** Integrate the platform into existing workflows

Conclusion & Next Steps

This quickstart guide has walked you through the core VoxelSpace workflow:

- **Project creation** and initial setup
- **Data upload** for various formats
- **Processing** raw data into indexed datasets
- **Visualization** in the interactive 3D viewer

Volumetric modeling with voxels captures the full volume of space, enabling insights that traditional surface models cannot provide.

Recommended Next Steps

- Explore additional processing types for your specific data
- Experiment with spatial lambdas for advanced analysis
- Consider upgrading your plan to access:
 - Increased storage capacity
 - Additional compute hours
 - Concurrent job processing

For more advanced tutorials and documentation, visit the VoxelSpace knowledge base or contact support through the platform.