Welcome! VRMesh is an advanced 3D point cloud and mesh processing software tool. Our innovative technologies are aimed to provide powerful and easy solutions for engineering industries. The entire family of VRMesh consists of three packages targeted to different customers.

**VRMesh Family:**

- **VRMesh Studio**: A comprehensive solution covering automatic point cloud classification, feature extraction, accurate point cloud meshing, and advanced construction module. It includes all features in VRMesh.
- **VRMesh Survey**: An automatic point cloud classification and feature extraction solution. It enables you to easily classify vegetation, building roofs, and ground points in LiDAR data or from images. It can automatically detect building footprints, powerlines, poles, tree crowns, and railway tracks in point clouds. It is also able to adjust airborne/mobile LiDAR strips with high accuracy.
- **VRMesh Reverse**: A complete reverse engineering workflow for users to wrap point cloud data into accurate polygon meshes as well as NURBS surfaces. It delivers best-in-class point cloud processing and various mesh repair/editing tools. It also provides you automatic registration, inspection, volume calculation, and deviation measurement tools.

**Feature Comparison:**

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<tr>
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<td>★</td>
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<td>★</td>
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<td>NURBS</td>
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<td>Construction</td>
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<tr>
<td>Inspection &amp; Measurement</td>
<td>★ ★</td>
<td></td>
<td>★</td>
</tr>
</tbody>
</table>

**File Formats:**

- Import: e57, las, laz, zlas, ptx, pts, txt, asc, xyz, stl, obj, dxf, shp, ply, 3ds, ffs, zfs, rdbx, wrl, vtk, csv, rcp/rcs
- Export: las, laz, zlas, pts, txt, asc, stl, obj, igs, dxf, fbx, shp, grid, wrl, ply, vtk, csv, x3d, pdf, rcp

**Data Handling:**

- No limit concerning the point cloud and mesh size
- Support batch processing of multiple files
**FEATURE HIGHLIGHTS**

**Point Cloud Classification:**

VRMesh automatically classifies vegetation, building roofs, and ground points in LiDAR data or from UAV images. The program has unique features for classifying point clouds under extreme variations in terrain, no matter the data is gathered from steep slopes covered with dense vegetation or areas where there is very few ground points available.

![Airborne LiDAR](image1)
![Mobile LiDAR](image2)
![UAV Images](image3)

**Feature Extraction:**

VRMesh can automatically extract building footprints, powerlines, railways, poles, and tree crowns in point clouds. It also provides automatic edge and corner detection allowing you to quickly pick a line along a chosen ridge, ditch, railway, powerline, road markings, etc.

![Extract Powerlines/Railways](image4)
![Extract Poles](image5)
![Extract Tree Crowns](image6)

![Pick Ridge](image7)
![Pick Railway](image8)
![Pick Road Markings](image9)

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**FEATURE HIGHLIGHTS**

**Construction:**

VRMesh’s unique construction module can automatically fit polygon surfaces and create breaklines for pipe / curb / edge / profile to point clouds. It also allows you to extract planar area from point clouds to create a low polygon building. The construction module is available only in VRMesh Studio.

**Point Cloud to Mesh & Mesh Editing:**

VRMesh provides best-in-class point cloud processing and various mesh repair/editing tools. It enables you to convert point clouds to triangle meshes with high accuracy. It also allows you to seamlessly merge multiple surfaces and optimize your designs in many ways.
The registration functions in VRMesh work on both point clouds and meshes by searching for overlapping regions for each pair of clouds/meshes and best-fit mapping overlapping regions to minimize registration errors, in a least squares sense.

**Registration:**

**Inspection & Measurement:**

VRMesh provides various analysis tools that help you perform accurate inspections between digital reference models and measure points, distances, areas, volumes, and deviations easily.