



## SOP: Hybrid AI & Plugin Scan-to-BIM Workflow

**Tools:** PointCab Origins, PointCab 4Revit Plugin, PointCab Nebula, aurivus AI, Autodesk Revit, Autodesk Forma.

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### Phase 1: Processing & Preparation (PointCab Origins)

**Goal:** Prepare two distinct datasets: one for AI processing and one for precision layout in Revit.

1. **Import & Register:** Import raw scans into **PointCab Origins** and register them.
  2. **Generate "4Revit" Deliverables:**
    - Create a "Floor Plan" job and "Section" jobs in Origins to define the building levels.
    - *Action:* Vectorize main grid lines or critical boundary lines using Origins' vector tools if high precision is required (these transfer directly via the plugin).
  3. **Export for AI:**
    - Export the cleaned, unified point cloud as an **E57 file** for aurivus.
  4. **Save for Plugin:**
    - Save the PointCab Origins project file (specifically the .pcp or proprietary format readable by the plugin).
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### Phase 2: Project Setup & Coordination (Revit + PointCab 4Revit)

**Goal:** Establish the "Skeleton" of the BIM model using the 4Revit Plugin before generating AI geometry.

1. **Connect Project:**
  - Open **Autodesk Revit** and the **PointCab 4Revit** tab.
  - Load the PointCab Origins project file.
2. **Coordinate System & Levels:**
  - *Action:* Use the plugin to automatically generate Revit **Levels** based on the floor plan heights defined in Origins. This ensures the AI model (next step) lands on the correct reference planes.



- Use the plugin to align the Revit Project Base Point to the scan coordinates.

### 3. Layout Transfer:

- Import the vector lines (Grids, property lines) created in Origins directly into Revit as Model Lines or Grids.
- *Result:* You now have an empty Revit file with perfect levels, grids, and coordinates, ready for AI geometry.

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## Phase 3: AI Classification & Bulk Modeling (aurivus AI)

**Goal:** Rapidly populate the "Skeleton" with 3D architectural and MEP elements.

### 1. AI Processing:

- Upload the **E57 file** (from Phase 1) to **aurivus AI**.
- Run classification (Architectural + MEP).

### 2. Revit Generation:

- Open the **aurivus** plugin in the same Revit file.
- **Walls/Doors/Windows:** Use aurivus to detect and place these elements. *Note: Since levels were set up in Phase 2, ensure the AI-generated walls are constrained to these correct levels.*
- **MEP:** Use the "Speed Drawing" tool to click-and-generate pipe runs and ducts.

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## Phase 4: Detailing & Verification (Revit + PointCab 4Revit)

**Goal:** Model complex custom elements and perform Quality Control (QC) using the 4Revit Plugin.

### 1. Modeling Complex Geometry:

- For complex walls or custom structural elements that aurivus might misinterpret, switch back to the **PointCab 4Revit** tool.



- *Action:* Use the "**3D Points**" feature in the 4Revit plugin. Click two points on the scan data in the PointCab view to generate a precise wall or beam in Revit that snaps to your existing AI-generated content.

## 2. Visual Verification (QC):

- Use the 4Revit plugin to overlay the high-res **Orthophotos** (generated in Origins) directly onto your Revit floor plans.
- Compare the AI-generated walls (from aurivus) against the Orthophoto background to check for drift or errors.

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## Phase 5: Stakeholder Loop (PointCab Nebula)

**Goal:** Share the "Work in Progress" model context with non-Revit users.

1. **Upload:** Publish the point cloud project to **PointCab Nebula**.
2. **Link:** Embed the Nebula viewer link into the Revit Object properties (URL parameter).
3. **Usage:** A user clicking on a Revit element can open the URL to see the real-world 360° view of that specific spot in Nebula.

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## Phase 6: Contextual Analysis (Autodesk Forma)

**Goal:** Environmental analysis of the validated model.

1. **Send to Forma:**
  - With the model validated by the 4Revit plugin, select the "Send to Forma" command in Revit.
2. **Analyze:**
  - Run Noise, Wind, and Solar analysis in Forma.
  - *Benefit:* Because you verified the model alignment using 4Revit (Phase 2), the Forma analysis will be geolocated correctly for sun/shadow studies.

## Why this hybrid workflow?



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- **aurivus** is fast (automates 80% of geometry).
- **PointCab 4Revit** is precise (handles the critical 20%: levels, grids, and complex custom fits).
- **Revit** acts as the central assembly hub.

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