🍣 Combo Placer

Background & Problem Statement

Design & Engineering (D&E) currently relies on manual workflows in Revit to convert "host" walls into the final combo wall families used for fabrication. Modelers must:

- Select the correct combo wall family based on the host wall type and openings.
- Manually place the combo wall along the host wall's centerline.
- Manually adjust the combo family (openings, edge conditions, and top/bottom connections and more..) so they match the host wall geometry and adjacent elements.

This process is repetitive, error-prone and highly dependent on individual modeler expertise. As projects scale, the manual effort to configure every combo wall becomes a bottleneck.

Today, there is no automated, consistent way to: Select the correct combo wall family based on a given host wall's properties; place that combo wall on the correct centerline and span; and automatically sync openings, edges, and connections between the host wall and the combo family. As a result, D&E modelers spend significant time on repetitive setup of approximatly 2 weeks. We need to reduce manual modeling overhead and enforce a single, reliable logic for how combo wall families are selected, placed, and parameterized from the host wall context.

High-Level Solution

Build an MCP-based automation that, given a selected host wall, will:

1. **Determine and place the appropriate combo wall family** on the host wall's core centerline, matching its start and end points.
2. **Automatically map host wall properties and openings** into the corresponding combo family parameters.
3. **Automatically set Combo parameters** based on the wall's geometry, adjacent walls, and supporting elements.

Main Supported Features

- **Host-to-combo family mapping -** Map host wall family / level / opening count to the correct combo family type.

- **Automatic combo placement -** Place chosen combo family so its start/end points match the host wall. Align combo to the host wall core structural centerline.
- **Opening position & size synchronization**
  - Detect number and side (left/right) of host wall openings (doors/windows).
  - Translate host opening location, sill height, width, and height into combo parameters (e.g., `WL_LO_Location`, `WL_RO_Location`, `WL_LO Width`, `WL_RO Top Height`).
  - Story ☐ VDA-14944: Adjust the combo opening position based on the original opening `DONE`
- **Automatic edge condition assignment (left/right edges)**
  - Detect wall junction type at each end (T, L, splice, free, etc.).
  - Classify each panel's role in the junction.
  - Populate `WL_L_Edge` and `WL_R_Edge` with the correct connection type values (0–8/11).
  - Provide validation / error handling when junction type is ambiguous.
  - Story ☐ VDA-14946: Define the combo's Right and Left edge condition based on the wall connections `DONE`

Future support
- Advanced Settings for generic flexibilty
- Bottom connection configuration
- Top connection configuration
- Shear wall support (holdown, and shear segments paramters)
- Ledger Placement Ext + Int