Components

❖ Attr

- ***Cross Sections***
  - **USAGE:** This component is used for selecting a Cross Section from a window.
  - After loading, Cross Section can be selected again by double-clicking the component.
  - **INPUT:** There is no Grasshopper input for this component.
  - **OUTPUT:** Selected Cross Section as a text value. If OK is not pressed, it returns null / empty Text Value.
  - **PRO:** Graphical user interface for selecting.
  - **CONTRA:** Loading Cross Sections from catalog is very slow, and loading uses many resources.
  - **WARNING:** If the catalog is loaded, the Selecter DialogBox appears automatically.

- ***Materials***
  - **USAGE:** This component is used for selecting a Material from a window.
  - After loading, Material can be selected again by double-clicking the component.
  - **INPUT**: There is no Grasshopper input for this component.
  - **OUTPUT**: Selected material in a text value. If OK is not pressed, it returns null.
  - **PRO**: Graphical user interface for selecting.
  - **WARNING**: If the catalog is loaded, the Selecter DialogBox appears automatically.

❖ Base

- ***Line to AxisVM Line***
  - **USAGE**: This component is used for sending lines from Rhino to AxisVM. Lines can be defined as members (truss) if material and Cross Section are both defined.
  - **INPUT**:
    - Lines as list
    - Material as a text value
    - Cross Section as a text value
  - **OUTPUT**:
    - AxisVM lines as a list (if lines can be defined as trusses, they will be sent as trusses)
  - **WARNING**: Lines are created independently in the component.

- ***Mesh to AxisVM Mesh***
  - **USAGE**: This component is used for sending mesh structures from Rhino to AxisVM. Mesh structures can be defined as
    - domains
    - surfaces (shell)
    - lines or trusses (from mesh edges)
  - **INPUT**:
    - Mesh as list
    - Material as a text value
    - Cross Section as a text value (will be used only if output is connected to Edges)
    - Thickness as a double precision floating number
  - **OUTPUT**:
    - AxisVM Meshes as a list (If necessary inputs are missing then basic values will used in another's component input (material=S235 and thickness=10cm for surfaces and domains))

- ***NodeSupports***
  - **USAGE**: This component is used for creating nodesupports.
  - **INPUT**:
    - 6 double precision floating numbers for Nodesupport stiffnesses.
  - **OUTPUT**:
    - AxisVM Nodesupport

- ***Point to AxisVM Point***
  - **USAGE**: This component is used for creating Points from Rhino to AxisVM.
  - **INPUT**:
    - Points as a list
    - Nodesupport as item
  - **OUTPUT**:
    - AxisVM Points

❖ Send

○ ***GrasshopperToAxisVM***

- This is the main component of the plugin. Currently every communication between Grasshopper and AxisVM is done by this component.
- After creating this component, a new AxisVM application will be initialized with a new Model. Currently only new models can be created from Grasshopper.
- If any of the input parameters are changed the component will refresh the newly created AxisVM model's status.
- **USAGE**: This component is used for sending Objects to AxisVM.
- **INPUT**: (* - as list)
  - AxisVM Points* :: Points will be created from an AxisVM Point
  - AxisVM Lines* :: Lines will be created from an AxisVM Line
  - AxisVM Surfaces* :: Surfaces will be created from an AxisVM Mesh
  - AxisVM Domains* :: Domains will be created from an AxisVM Mesh
  - AxisVM Edges* :: Edges will be sent from an AxisVM Mesh
- **OUTPUT**: There is no Grasshopper output for this component.
- **WARNING**: The load of this component blocks any Grasshopper - user interactions.

Properties

❖ *Weaknesses*

- Cross Sections's component loading is slow.
- Only new AxisVM applications can be created by this version.
- Loading Rhino/Grasshopper is slower due to reading information from catalog.
- Loading a Grasshopper project which contains Materials, CrossSections will always ask for selecting values after the project is loaded, which slows down the opening of the project.
- Loading a Grasshopper project which contains GrasshopperToAxisVM components can cause multiple AxisVM applications opened at the same time.