Generate a visual report of your UNS

Produce a human-readable diagram of your Unified Namespace (UserTypes, AssetTree, Tags) in interactive HTML, Mermaid, SVG, or PNG.

Standards Compliance How-to Industrial Ontology Visual Report

Version 10.1.5+

Primary path: the Knowledge Graph button

The fastest way is a single click in Designer. No AI required, works offline.

1. Open **Unified Namespace UserTypes**.
2. On the toolbar, click **Knowledge Graph** (tooltip: *Generate Knowledge Graph of UNS*).
3. Designer generates an interactive HTML file and opens it in your default browser. The file lands in the solution's Exchange folder under `Visualizations/` as `<SolutionName>_UNS_Visual.html`.

The HTML is a single self-contained artifact with the UNS nodes and edges embedded. No server required. Pan, zoom, and filter via cytoscape.js inside the browser.

The diagram shows:

- UDT class diagram. Composition members as `hasPart` edges, Reference members as dotted edges, `BaseUserType` as inheritance arrows.
- AssetTree containment. One node per folder, one per Tag, with the `/Attr` convention made visible. When a path has BOTH a naked equipment instance Tag and a sibling `/Attr` envelope (the 10.1.5+ dual-shape pattern), they appear as siblings under the auto-created folder — the naked instance is live equipment, the `/Attr` envelope is static ontology metadata. A future revision may color-code or shape-code the two for at-a-glance disambiguation.
- Cross-links. Reference-typed members pointing at other tags.
- Summary. Counts of UDTs, Enumerations, Tags, folders. Any warnings.

Alternative path: AI-driven for scripted or fuzzy-intent flows

If the AI assistant needs to generate visuals as part of a larger workflow (post-import verification, narrowing a large solution to a subtree, filtering by scope), it uses the `generate_uns_visual` MCP tool. See skill Skill Generate UNS Visual.

```
generate_uns_visual(scope="full", format="html")
generate_uns_visual(scope="subtree", root_path="/Plant1/Line3", format="mermaid-md")
generate_uns_visual(scope="userTypes", include_inheritance=true)
```

The MCP tool defaults to `mermaid-md` for scripted diffs. Pass `format="html"` for the interactive view.

Output ladder

Tier	Format	Best for
1	`mermaid-md` (`.md`)	Docs, handoff, diff. Renders natively in VSCode, GitHub, Obsidian, Confluence. No local tools required.
2	`svg` / `png`	Embedding in external docs, tickets, email. Requires `mmdc` on the host. Falls back to `mermaid-md` with a warning if unavailable.
3 (button default)	`html`	Interactive exploration (pan, zoom, filter) via cytoscape.js. Single self-contained file, no server required. Available in 10.1.5.

Example Mermaid output

```
classDiagram
    Motor <|-- Pump : BaseUserType
    class Motor {
      Running : Digital
      Speed : Double
      Temperature : Double
    }
    class Pump {
      FlowRate : Double
      Pressure : Double
    }
```

Performance notes

- Mermaid starts to struggle around 80 nodes or 200 edges. The generator emits an advisory warning above those thresholds. Switch to `html` (no limit, interactive) or narrow the scope (`subtree`, `userTypes`).
- `html` handles large graphs without performance advisories. Pan, zoom, and filter inside the browser scale well beyond Mermaid's practical limits.
- Same solution plus same parameters always produces byte-identical output. Safe to check into source control.

Related: Import an OWL/RDF ontology into your UNS · Export your UNS to RDF/OWL/GraphDB
