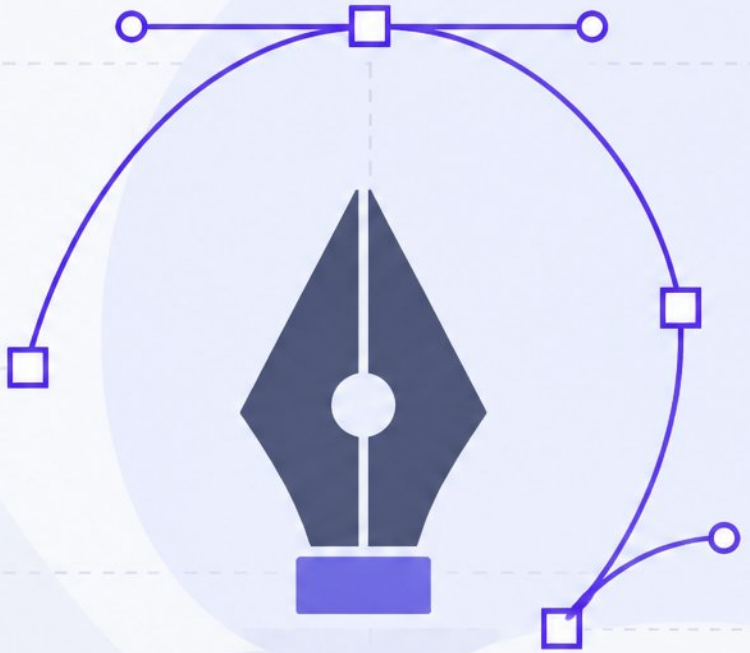
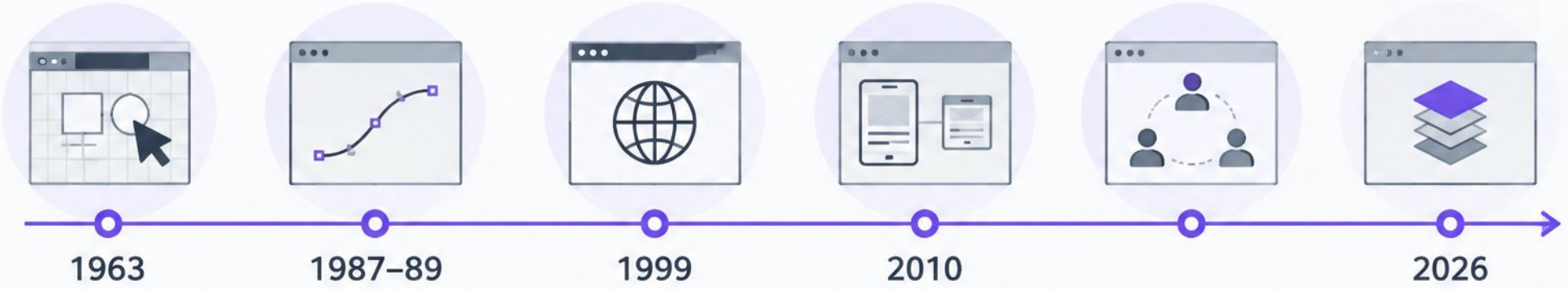
Software for UI Design and Vector Editing: Tools, Concepts, and Workflows

Course roadmap

- Tool families, vector fundamentals, interface-to-asset workflow, handoff
- UI design platforms vs. vector illustration suites: overlap and divergence
- Audience focus: systems and handoff, end-to-end flow, geometry, transferable concepts
- Working vocabulary: artboards, frames, components, variants, constraints, auto layout, paths, booleans, design tokens
- Process outlasts tool choice — but tool constraints still shape outcomes



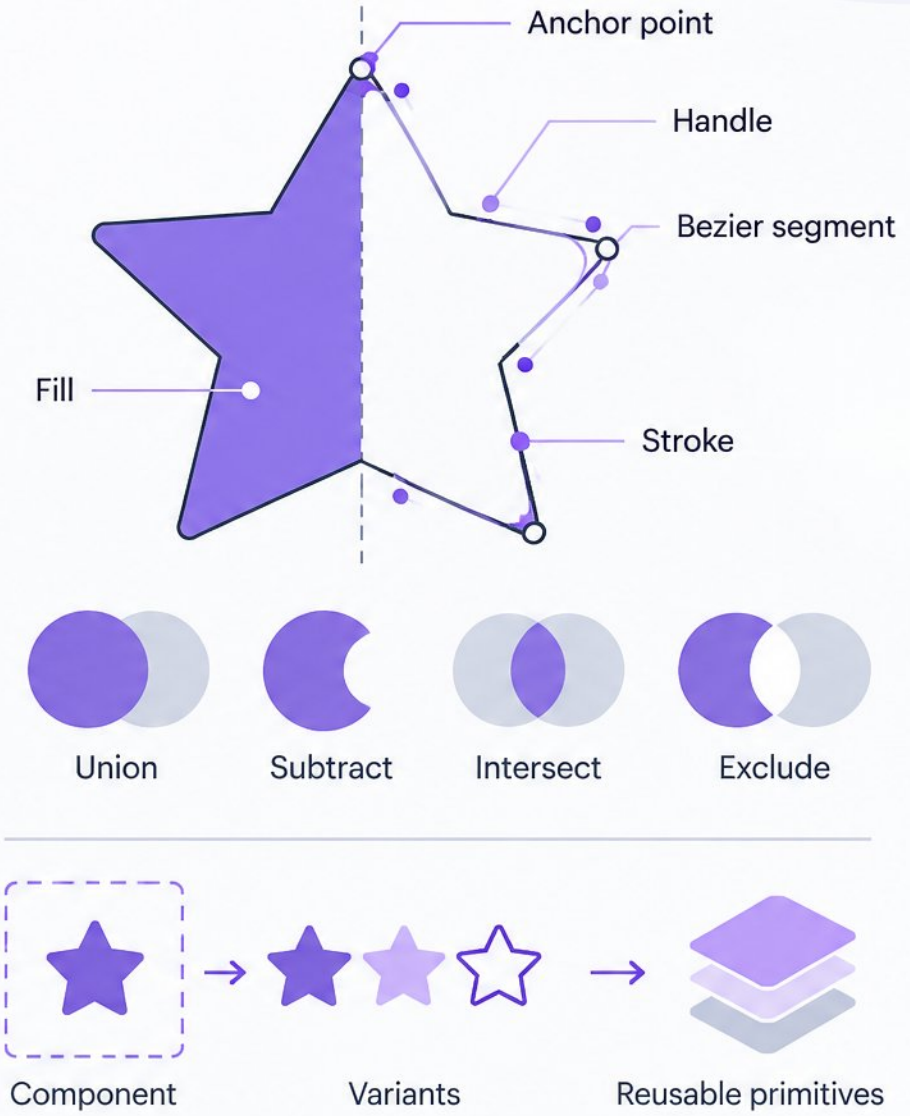
Background: From Desktop Vector Editors to Browser-Based Design



- 1963: Sutherland's Sketchpad pioneers interactive vector drawing
- 1987–89: Illustrator and CorelDRAW define desktop vector editing
- 1999: SVG becomes a W3C standard, making vectors web-native
- 2010: Sketch moves UI mockups out of Photoshop, screen-first
- Browser collaboration and component libraries reshape team workflows
- 2026 landscape: Figma default, Penpot open-source, Sketch Mac-native
- Adobe XD sits in maintenance mode — not a choice for new projects

Core Concepts:
Vector Geometry and Interface Models

- Paths, anchors, handles, strokes, fills, and compound shapes
- Bezier paths vs. vector networks: two segments per point vs. many
- Boolean operations: union, subtract, intersect, exclude — the icon workhorses
- Figma booleans stay editable; Illustrator's Pathfinder commits unless you hold a modifier
- Artboards, frames, grids, and auto layout drive responsive behavior
- Components, variants, styles, and tokens as reusable primitives



Tool Families and Selection Criteria

Choose the right tools for your team

UI platforms

- **Figma** for cross-platform teams; **Sketch** for all-Mac studios; Penpot for open source and self-hosting



Vector suites

- Illustrator, Affinity Designer (free since 2025), Inkscape, CorelDRAW for icons and illustration



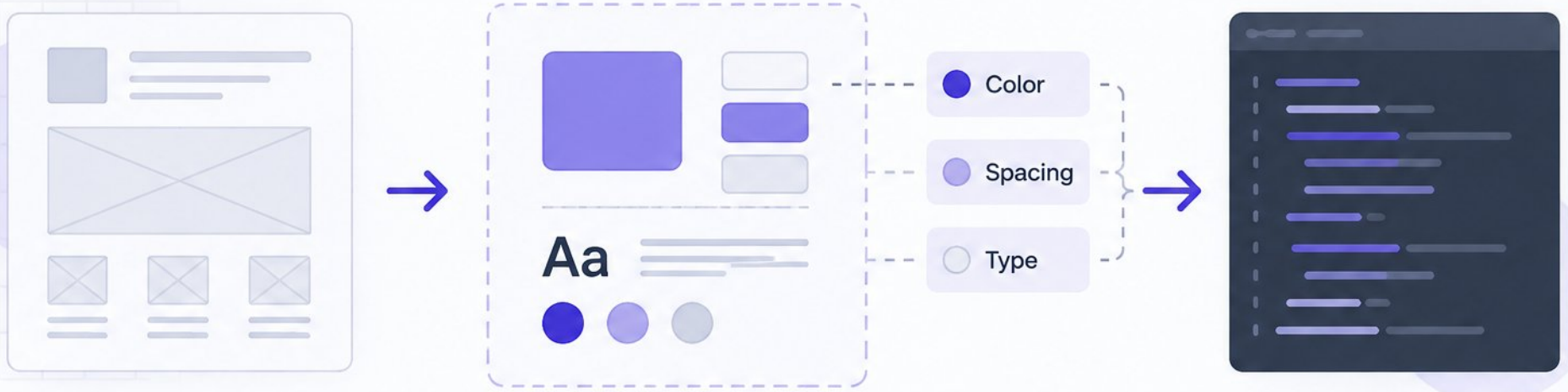
2026 pricing: Figma Full seat ~$16/mo annual; Sketch $12/editor/mo or $120 Mac licence; Penpot free to 8 editors

Adobe XD is in maintenance mode — not a choice for new projects

Selection matrix: collaboration, offline use, file ownership, plugins, handoff, platform support, teaching fit



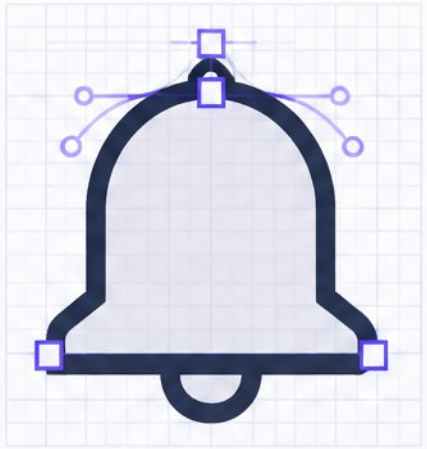
UI Design Workflow:
From Wireframe to Developer Handoff



1. Structure files with pages, frames, and clean layer names — automation only replicates what exists
2. Separate components per state or use nested toggles; separate components are easier to discover
3. Bind tokens to color, spacing, and type so names, not hex values, travel to code
4. Test interactions and responsive layouts with auto layout and constraints
5. Hand off via Dev Mode inspection, CSS custom properties, annotations, and exported assets
6. Avoid treating automation as documentation, skipping component mapping, involving developers late

Vector Editing Workflow for Icons, Illustrations, and Brand Assets

1. Draw with pen and shape tools; snap to a pixel grid
2. Icon standards: 24×24 grid, consistent stroke weight, corner radius, fill style
3. Test icons at 16–20px: simplify until instantly recognizable
4. Optimize SVGs: strip metadata, merge paths, round to 1–2 decimals
5. Use currentColor for UI icons; hard-coded fills for logos
6. Accessibility: aria-hidden for decorative, role="img" + aria-label for meaningful



24×24 grid



Corner radius



Stroke weight



Test at 16–20px

```
<svg viewBox="0 0 24 24" fill="none"
  stroke="currentColor" stroke-width="2"
  stroke-linecap="round" stroke-linejoin="round">
  <path d="M12 3C8.5 3 6 5.5 6 9v6l-2 2h16l-2-2V9
   c0-3.5-2.5-6-6-6z"/>
</svg>
```

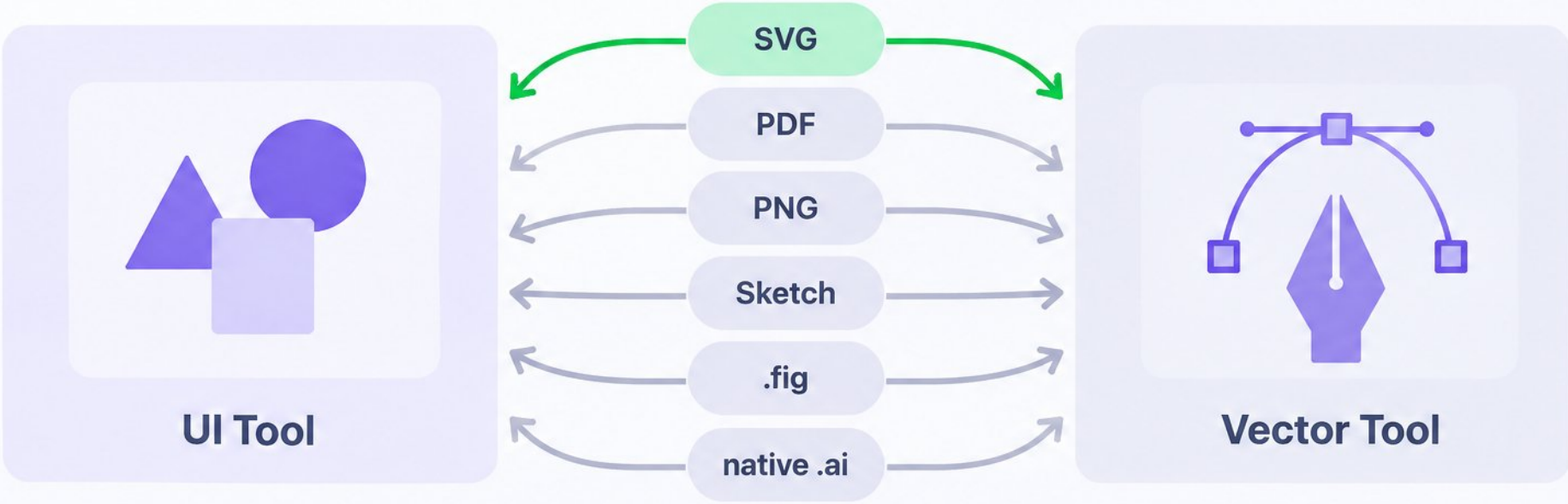
Optimized SVG

Collaboration, Version Control, and Design System Governance

- Real-time co-editing, comments, and structured review workflows
- Branching: isolate changes, review, merge to main, then publish the library
- Editing a library file does not propagate until you publish it
- Branch discipline: 48-hour lifespan, daily update from main, dual reviewers
- Direct trunk publishing only for token tweaks; tombstone deprecated components before removal
- Governance models: centralized, federated, hybrid — assign ownership by decision scope



Cross-Tool Interoperability:
Moving Assets Between UI and Vector Tools



- **Exchange formats:** SVG, PDF, PNG, Sketch, .fig, native .ai
- **Illustrator 29.7.1+:** enable "Include SVG Code" or vectors paste as flat PNG
- **SVG export/import** is the most reliable route for artwork with text
- **Pitfalls:** effects and shadows rasterize; P3 colors go blank; embedded images drop
- **Method choice:** copy-paste for quick text-free shapes, SVG for finished assets, plugins for whole .ai files

Practical Exercise:
Building a Small Design System Asset

1



Step 1: draw an icon on a 24×24 frame using boolean operations

2



Step 2: optimize the SVG with SVGO; set fill to currentColor

3



Step 3: build a button component with size, state, theme variants

4



Step 4: create a responsive card with auto layout; bind color, spacing, type tokens

5



Step 5: export assets and write a handoff note on states, tokens, deviations



Rubric: structure and naming, visual consistency, token usage, accessibility, handoff clarity

Teaching and Adoption:
Choosing Tools for Courses and Teams

People + Tools + Better Learning

What do you need to consider?



- **Platform** → **Figma Education:** free Professional tier for verified students and educators over 13
- **Offline use** → K-12 districts qualify for free Enterprise tier; under-13 requires school agreement
- **Budget** → **Adobe education:** named-user licenses for BYOD; shared-device licenses for labs
- **Self-hosting** → **Free paths:** Penpot (self-hostable), Affinity (free desktop suite), Inkscape
- **Check device constraints:** browser needs, offline use, Mac-only tools excluding Windows/Linux students
- Design assignments around transferable concepts — paths, booleans, components, tokens

Paths · Booleans · Components · Tokens

FLEXIBLE TOOLS. STRONGER LEARNING.

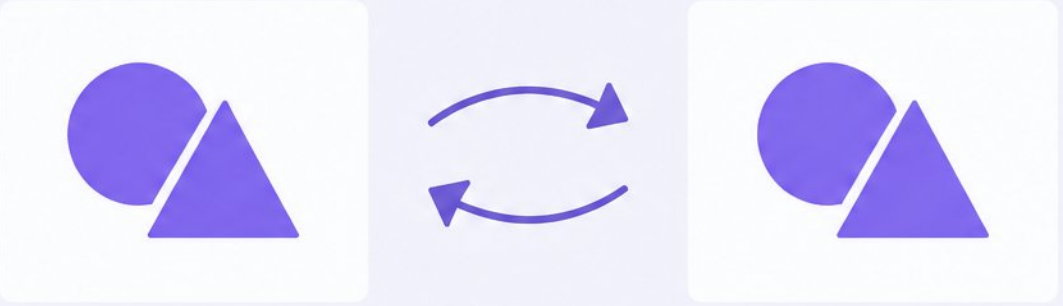
Hands-On Lab: Evaluating a Tool Against Your Own Constraints

1. Build a one-page scorecard: cost, collaboration, platform, handoff, ownership, learning curve
2. Run the same task in two tools — one icon plus one button — and note friction
3. Round-trip an SVG between vector and UI tools; record what changed
4. Document what each tool cannot do; that list usually decides adoption
5. Debrief: which constraint was decisive, and would another team answer differently?

Tool Comparison Scorecard

Cost	Collaboration	Platform	Handoff	Ownership	Learning curve

SVG Round-Trip Test



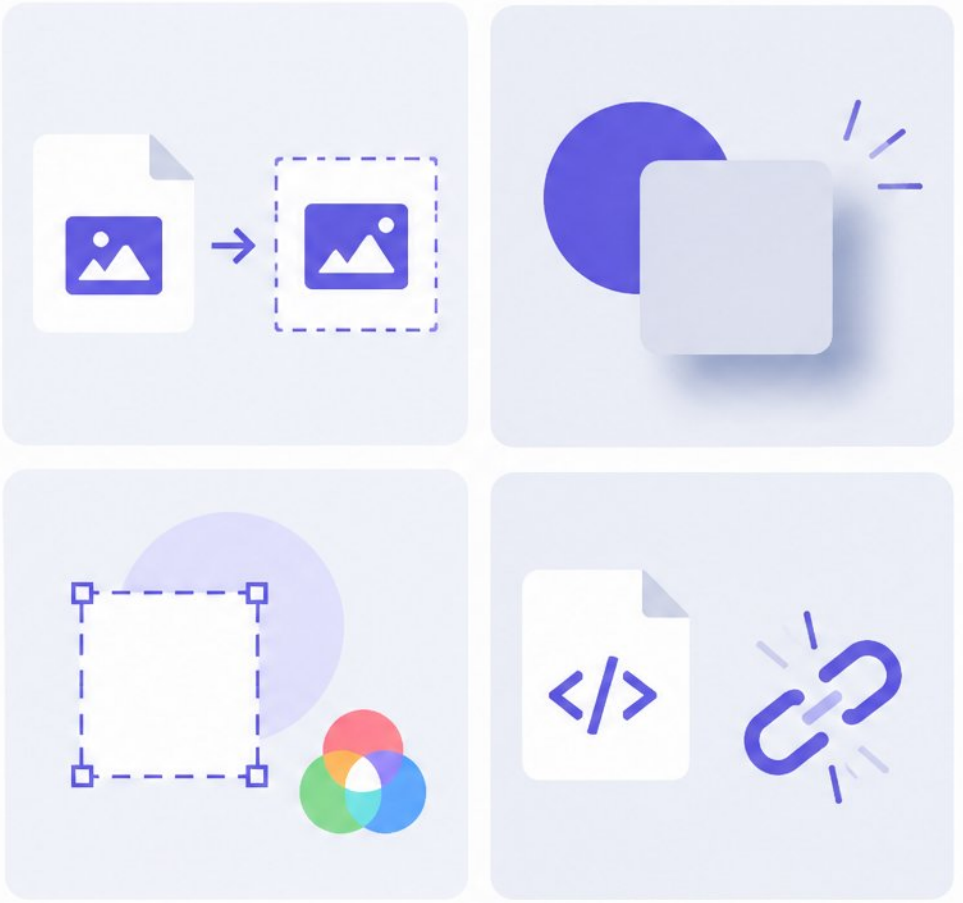
Practical Strategies:
Habits That Transfer Across Tools

- Name every component once, matching what developers see in code
- Publish libraries as releases; never edit a working file teams depend on
- Archive an unoptimized master SVG; treat optimized files as build artifacts
- Design icons at their smallest size first, then scale up
- Show developers work before it is final; structural issues stay invisible in files
- Post short release notes: what changed and what to do



Common Pitfalls and Troubleshooting

- Illustrator → Figma pastes as flat image: enable Include SVG Code in preferences
- Shadows and effects rasterize on SVG import — rebuild natively or accept the bitmap
- Blank shapes in Illustrator usually mean Display P3 — reassign to sRGB
- Long-lived branches collide; keep branches short, update from main daily
- SVG optimizers that strip IDs break CSS, scripts, and animation — audit first
- Unregulated trunk publishing erodes the system faster than any single design mistake



Key Takeaways, Resources, and Next Steps

From tools to practice — here's what to remember and what to do next.

Tool choice

Tool choice follows constraints: Figma cross-platform, Sketch Mac-only, Penpot self-hosted

Transferable fundamentals

Vector fundamentals transfer across tools; interface features do not

Design system governance

A design system is governance — publishing, ownership, and deprecation keep it alive

Starter resources

Starter resources: Figma Education, Penpot self-hosted, SVGO, vendor help centers

Next steps

Next steps: finish the exercise asset, run a cross-tool round-trip, review publishing rules

PersonWise.

PersonWise • AI digital-human course platform

Scan the code or click anywhere to watch this course live, with voice Q&A

personwise.ai/t/cd49a1ba/public