From Maker to Orchestrator: Navigating the UI/UX Designer Role Shift in AI-Augmented Design Practices

Inge, Ka Sin Cheung
Independent Researcher
Vancouver, Canada
kasincaaa@gmail.com

Kate Sangwon Lee
National University of Singapore
Lower Kent Ridge Road, Singapore
katelee@nus.edu.sg

Generative AI is reshaping digital design, yet how practitioners integrate these tools into professional workflows remains understudied. Through 13 expert interviews, complemented by contextual inquiry with a subset of participants, we examine how UI/UX designers describe and demonstrate their use of AI prototyping tools during the realisation/implementation-facing stages of the design process. Our findings suggest a shift in reported practice: designers describe moving beyond divergent ideation to using AI for convergent, implementation-facing work. With the emergence of vibe coding, where designers leverage code-aware agents to participate more directly in codebases, participants described their role evolving from visual "makers" towards technical "orchestrators" of AI outputs. This shift has implications for the traditional design-engineering divide, pointing towards an emerging hybrid "product engineer" role capable of contributing functional code. We discuss friction points in this reported workflow and derive implications and guidelines for future AI tools, workflows, and designers' roles that prioritise inspectability and closer code-based collaboration.

CCS CONCEPTS • Human-centered computing • Human computer interaction (HCI) • Empirical studies in HCI • Generative AI • UI Prototyping • Human-AI Collaboration • UX Design Workflow • Vibe Coding

1. INTRODUCTION

Generative AI is increasingly present in digital product design (Fragiadakis et al. 2024; Pinski and Benlian 2024), creating new opportunities and new frictions for user experience (UX) and user interface (UI) designers (Chaudhry 2024; Chen et al. 2025; Khan et al. 2025). Recent models and design assistants can help generate alternatives, draft layouts, and accelerate prototyping work (Eapen et al. 2023; Irawati et al. 2025; Jiang et al. 2024; Khan et al. 2025; Muller et al. 2024; Yuan et al. 2025). However, we still have limited empirical accounts of how practitioners integrate multiple AI tools into everyday work, how they coordinate with stakeholders around AI-generated artefacts, and how designers' responsibilities shift when outputs must fit real design systems and repositories (Ashktorab et al. 2024; Schecter and Richardson 2025; Shukla et al. 2025).

Scope and terminology. In this paper we use *UI* to refer to the concrete interface representation (screens, components, interaction states), *UX* to refer to the experience logic that shapes those interfaces (user flows, information architecture, interaction rationale), and *product design* to refer to the combined practice of shaping UI and UX in service of product goals within organisational constraints. Our empirical scope is *prototyping work*: creating and iterating wireframes and interactive prototypes, exploring variants, and producing implementation-adjacent scaffolding (e.g., design-to-code drafts) used to communicate and negotiate decisions. We do not evaluate final shipped UI quality, model performance, or brand strategy.

Industry reports indicate that many teams have experimented with AI-enabled design tools (Chaudhry 2024; Chen et al. 2025; Khan et al. 2025; Li et al. 2025a; Takaffoli et al. 2024), yet integration into routine workflows and cross-functional coordination remains uneven (Subramonyam et al. 2025; Takaffoli et al. 2024). Prior research has examined specific facets of AI in design—including support for divergent ideation (Chen et al. 2025; Khan et al. 2025), strategic non-use (Cha and Wong 2025), and AI as a design material (Cha and Wong 2025; Lee et al.

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2025a; Yildirim et al. 2022)—but we still have limited empirical accounts of how practitioners coordinate AI tools across prototyping activities that span exploration, refinement, and implementation-adjacent work (Palani and Ramos 2024; Takaffoli et al. 2024).

To address this gap, we conducted a qualitative study of professional UI/UX practice focused on AI-assisted prototyping. We combine semi-structured interviews with contextual inquiry sessions to examine where AI tools are adopted, what frictions emerge, and how collaboration is reconfigured in situated work. We address three research questions:

RQ1: How do UI/UX designers incorporate AI tools in their design process, and what challenges and opportunities arise in practice?

RQ2: How do AI tools mediate collaboration with stakeholders (e.g., product managers, engineers) during prototyping and delivery?

RQ3: How do designers describe changes in responsibilities when AI tools are introduced into prototyping and implementation-facing work?

This paper makes three contributions. We (1) map observed AI use and breakdowns across the Double Diamond as an analytic lens, highlighting cross-tool coordination and context loss during prototyping work; (2) characterise emerging practices such as iteration tax, rules/constraints authoring as a durable design artefact, and the use of AI output as scaffolding that must be reconciled with design systems and repositories; and (3) derive implications for tool design and team processes that support inspection, verification, and accountable handoff in AI-augmented workflows.

2. RELATED WORK

Our research builds upon three converging streams of HCI literature: the integration of generative AI into the double-diamond design process, the socio-technical dynamics of human-AI collaboration, and the evolving professional identity of UX practitioners in the age of intelligent tools.

2.1. Generative AI Across the Double Diamond

The application of AI in design has historically focused on automating routine tasks (Choudhury et al. 2025; Tang et al. 2024; Van Der Maden et al. 2023), but recent advancements in Large Language Models (LLMs) and Large Multimodal Models (LMMs) have shifted the focus towards creative partnership (Cila 2022; Muller et al. 2024; Schecter and Richardson 2025; Wang et al. 2025). Current research often segments AI usage into specific phases of the Double Diamond framework (Khan et al. 2025; Kochanowska and Gagliardi 2021; Lee and Lee 2024; Lee et al. 2025b; Wadinambiarachchi et al. 2024).

In the divergent (discovery and definition) phases, AI is increasingly viewed as a tool to overcome the blank page problem (Gmeiner et al. 2025; Wadinambiarachchi et al. 2024). Khan et al. (Khan et al. 2025) explored how designers use AI to support divergent thinking, finding that while AI significantly accelerates the generation of design alternatives, it often biases designers towards fixated solutions if not carefully managed. Similarly, text-to-image models (e.g., Midjourney) facilitate rapid mood-boarding (Marquardt et al. 2025; Wang et al. 2024a), but they often struggle to capture the specific interaction semantics required for professional UX work (Subramonyam et al. 2025).

In the convergent (development and delivery) phases, the focus shifts to fidelity and implementation (Xiao et al. 2024). A recurring limitation is the ”fidelity gap”: the difficulty of transitioning from AI-generated low-fidelity wireframes to production-ready design systems without significant manual reconstruction (Vaithilingam et al. 2024; Yuan et al. 2025). While existing literature documents these phases in isolation, empirical research examining how practitioners transition between them using AI is scarce (Chaudhry 2024; Takaffoli et al. 2024; Zhu et al. 2024). This study addresses this gap by mapping the end-to-end workflow of industry professionals.

We adopt the Double Diamond as our analytic lens: it is widely recognised in UX practice, gives us shared vocabulary for locating AI use, and no participant organised their account around an alternative framework, though others exist. This divergent-convergent structure echoes broader creativity-process research: Frich et al. (Frich et al. 2019) find that prior work clusters around ideation and implementation/realisation, and argue divergent and convergent thinking are better read as a continuum than as fixed stages, consistent with earlier models such as Wallas’s four stages and Amabile’s componential theory. We treat the Double Diamond the same way, as a heuristic rather than a literal description of practice, and return in the Discussion to where our findings sit awkwardly with it.

2.2. Agency, Steering, and Verification

Across HCI and SE, researchers have described a shift towards steering and verification as AI systems become more agentic (Cila 2022; Schömbs et al.

2025). In design contexts, work on strategic non-use and accountability highlights how practitioners preserve professional agency and responsibility when using generative systems (Cha and Wong 2025). A prevailing metaphor in recent studies is that of the AI as a ”junior designer” or intern, capable of execution, but lacking context and taste (Tian et al. 2024). This shift introduces complex socio-technical friction. Cha and Wong 2025 investigate AI non-use, revealing that designers often strategically reject AI tools not because of technical incompetence but to preserve their professional agency and accountability. They argue that ”keeping the human in the loop” is a form of ethical gatekeeping, as AI can generate high-fidelity prototypes, designers express anxiety regarding the ”loss of craft” and the potential for homogenisation of visual styles.

Furthermore, the issue of hallucination in design, where AI proposes plausible but technically unfeasible UI patterns (Gurita 2025), remains a critical barrier. Muller and Chng (Muller et al. 2024) emphasise the need for constructive negotiation interfaces, where the designer can debate and refine the AI's output rather than simply accepting it (Khan et al. 2025; Wang et al. 2025). Our research builds on this by providing empirical evidence of how expert designers implement these guardrails in high-stakes corporate environments, moving beyond theoretical models to observed industrial practice.

2.3. The Dissolution of Boundaries: UI/UX Designers' Roles as Hybrid Developers

One under-explored trend in recent literature is the role of AI in bridging the ”hand-off” gap between design and engineering. Whether designers should work directly in code is not a new question (it has recurred throughout HCI as tooling has changed), but AI-powered Integrated Development Environments (IDEs) (e.g., Cursor, Windsurf) mark a new iteration of this debate by substantially lowering the practical barrier to designers working in a live codebase (He et al. 2025; Sergeyuk et al. 2026).

Weisz et al. (Weisz et al. 2024) observed that generative AI significantly lowers the barrier to coding, enabling non-engineers to engage in ”end-user development.” In UX, this suggests designers may evolve beyond static prototypes to deliver functional front-end code (Li et al. 2025b; Subramonyam et al. 2025)—a practice termed ”vibe coding” (Fawzy et al. 2025). Despite this potential, few academic studies have documented how professional designers incorporate coding agents to bypass traditional handoffs (Kim et al. 2024; Li et al. 2025a). Our paper empirically investigates whether AI is transforming designers into hybrid ”Product Engineers” (Chaudhry 2024; Irawati et al. 2025; Khan et al. 2025; Li et al. 2025a), altering team collaboration dynamics described in prior work (Han et al. 2024; Lu et al. 2024).

3. METHOD

3.1. Expert Interviews and Participants

Interviews and contextual inquiry sessions were conducted between September 2025 and November 2025, a period during which the AI prototyping and code-generation tools discussed by participants (e.g., Claude Code, Copilot, Cursor, Visual Studio Code, and Windsurf for code-aware prototyping; Figma Make, Framer, UX Pilot, Relume, Replit, and Lovable for visual/vibe-coding prototyping) were undergoing active development; we note this temporal context given the rapidly evolving nature of the AI tooling landscape.

We recruited 13 industry practitioners via social media and professional design communities using purposive sampling, requiring current employment in UI/UX or product design with at least two years of experience using AI-supported prototyping tools. The sample included 4 female and 9 male participants aged 20-55 with 2-20 years of experience, spanning roles such as UX strategist, UI/product/web designer, head of product design, and design technologies (Table 1), and based in Canada (n=6), the US (n=4), Nigeria (n=1), Bangladesh (n=1), and India (n=1). Organisations ranged from 2-person teams to companies of 1000-5000 employees, across domains including government, real estate, media, SaaS, fintech, data/analytics, and design/software consultancies, allowing us to observe AI adoption across both resource-constrained and well-resourced contexts, though we did not systematically compare these subgroups given our sample size.

Interviews were conducted in English via Zoom, recorded with consent, and ranged from 27:00 to 1:29:42 (M=45m14s). Five participants additionally completed contextual inquiry sessions, sharing their screens to demonstrate AI tool use in situ; to protect confidentiality, we recreated demonstrated interfaces rather than reproducing raw screen content. All participants gave informed consent, could withdraw at any time, and had identifying details removed from transcripts and reconstructed materials.

3.2. Interview and Context Inquiry Protocol

The study utilised a semi-structured interview protocol designed to investigate how AI tools are integrated into the ”Double Diamond” design process. The protocol was organised into four distinct phases: (1) Background, (2) Tool Adoption,

Table 1: *Participant profile*

No	Age	Gender	Role	Company size	Years	Location	contextual inquiry tool
E01	30–35	F	UX Strategist	1000–5000	10	Canada, Vancouver	N/A
E02	30–35	M	UI Designer	50–200	6	Canada, Vancouver	Relume, Stitch, Lovable
E03	50–55	M	Head of Product Design	50–200	20	Canada, Vancouver	Claude Code
E04	30–35	M	Product Designer	10–50	7	US, Illinois	UX Pilot, Bolt
E05	30–35	M	Senior Product Designer	10–50	7	US	N/A
E06	30–35	F	Senior Product Designer	1000–5000	10	US, Seattle	Figma Make
E07	20–25	M	Product Designer	2–10	2	US, New York	N/A
E08	25–30	M	Web Designer	2–10	4	Lagos State, Nigeria	N/A
E09	25–30	M	Junior Product Designer	2–10	2	Chattogram, Bangladesh	Figma Make
E10	25–30	M	Product Designer	2–10	4	India, Pune	N/A
E11	35–40	F	UI Designer	10–50	4	Canada, Montreal	N/A
E12	30–35	F	Product Designer	10–50	4	Canada, Vancouver	N/A
E13	35–40	M	Design Technologies	10–50	10	Canada, Vancouver	N/A

(3) Workflow Context inquiry/Walkthrough, and (4) Future Reflection. The questionnaire is provided in Appendix A.2.

3.2.1. Contextual Inquiry Protocol and the Double Diamond Framework

The contextual inquiry phase (approximately 20-30 minutes) was designed to verify reported behaviours against actual practice. Five participants (E02, E03, E04, E06, E09) consented to remote screen sharing, live-demonstrating their actual AI-assisted workflow; the remaining eight provided detailed verbal walkthroughs instead. Each screen-sharing session was later reconstructed into a scenario demo, a short walkthrough reproducing the participant's sequence of actions with placeholder content in place of real project materials, to support analysis while protecting confidentiality (Section 3.1.2). We mapped this observational data onto the Double Diamond framework to identify where AI serves as a divergent tool (ideation, option generation) versus a convergent tool (refinement, code generation, delivery), capturing interaction sequences, friction points, and how AI outputs were packaged for downstream stakeholders.

3.2.2. Contextual Inquiry Data Capture and Analysis

We utilised an observation checklist to capture (1) interactions (prompts used and subsequent manual corrections), (2) friction points (moments where AI-to-human handoff failed), and (3) collaboration (how AI outputs were packaged for downstream stakeholders). To protect confidentiality within live corporate environments, we reconstructed anonymised "scenario demos" from field notes and transcripts, focusing on task sequences and prompt strategies rather than specific design content. The research team cross-checked these reconstructions for accuracy.

3.3. Qualitative Data Analysis

All audio recordings were transcribed via Otter.ai and manually verified. We employed inductive thematic analysis following Braun and Clarke (Braun and Clarke 2006), conducted collaboratively by three researchers to mitigate individual bias. Each researcher independently open-coded a transcript subset, generating codes around AI usage, workflow friction, and professional identity. The team then convened to cross-examine codes and refine the codebook before applying the agreed-upon framework to remaining transcripts. A final synthesis session organised validated codes into five themes and 13 codes.

4. FINDINGS

We present five themes, as shown in Table2 and Figure 1. Tool and workflow adoption varies across contexts—from solo freelance use to lean startups to in-house teams embedded in a live repository—yet common challenges (Theme 2) and opportunities (Theme 3) emerge consistently across settings.

4.1. Limitations of Current AI Prototyping Tools

Across interviews, designers consistently describe current AI prototyping tools as useful for early exploration and stakeholder communication, but insufficient for production work. While these systems accelerate concept creation, they struggle with brand-accurate visuals, clear information hierarchy, and compatibility with existing design systems and codebases (Figure 1). In practice, this mismatch leads to more prompting, fragmented tool use, and substantial manual rework—eroding the time savings that initially motivated adoption.

4.1.1. Visual Homogeneity and the Loss of Hierarchy

Experts reported that AI tools fail to provide precise control over brand-specific details such as code components and motion rules, instead producing generic designs that rely on standard colours and stock fonts rather than a company's unique identity. This results in poor visual hierarchy where headlines, buttons, and background information appear equally

Table 2: *Overview of dimensions and themes discovered from qualitative analysis.*

Theme	Subtheme
Theme 1. Limitations of Current AI Prototyping Tools	1.1. Visual Homogeneity and the Loss of Hierarchy 1.2. The Iteration Tax: Context Loss in the Multi-Tool Hop
Theme 2. Challenges in the Current AI-Integrated Workflow: Integration Frictions with Codebases & Design Systems	2.1. Repository Rejection: The Gap Between "Vibe" and Production Code 2.2. System Breakers: How AI Ignores the "Constitutional" Rules of Design Systems
Theme 3. Opportunities: Where AI Fits Best in the Workflow	3.1. Efficiency of Conversational AI for Research & Synthesis 3.2. Structure First, Pixels Later: AI as Generative Scaffolding 3.3. Disposable Design: Rapid Exploration Without Attachment 3.4. Code-Aware Prototyping (Designers in IDEs)
Theme 4. Collaboration shifts across Product Management and Design Engineering	4.1. Prototypes as Promises: Anchoring Stakeholder Expectations Early 4.2. Changing Team Topology & Small Team Leverage: Compressing the PM-Designer-Dev Triangle
Theme 5. From Maker to Orchestrator: The UI/UX Designer's Evolving Roles	5.1. Designing the instructions, Not Just the Pixels 5.2. The Vibe Verifier: Human Judgement as the Ultimate Guardrail

	Discover Problem Exploration & Research	**Define** Sense-making & Framing	**Develop** Ideation & Prototyping	**Deliver** Testing & Implementation
Phase	Divergent **Discover**	Convergent **Define**	Divergent **Develop**	Convergent **Deliver**
UI/UX Design Process	**From meeting to documentation pipeline:** Convert the client meeting transcript to a prompt. **Build structure:** Text-first information architecture (IA) and then generate wireframe.	**Design-system(DS) first prompting:** Provide DS guideline or visual reference. **Style-guide ingestion:** Provide guideline to ai tool. **Prompt patterns library:** Capture effective prompts.	**Spec-first prompting:** Define requirements and constraints consistent with the company codebase and environment. **Personalise design:** Polish the design & micro-aesthetics.	**Use Pull Request (PR) review/merge as the"handoff" milestone:** Ensure changes are grounded in the code base. **Speed-to-demo:** Track time to first low-fi/ interactive demo.
Tools	**Conversational LLM tools** e.g., ChatGPT, Claude **Limitation:** Fragmented tool ecosystems and context loss, shallow understanding and inconsistent outputs, high setup and prompting overhead	**Semi autonomous AI tools** e.g., Cursor, Claude code **Fully autonomous AI tools** e.g., Figma Make **Limitation:** Limited support for complex problem framing, weak alignment with design intent and brand strategy, prompt-driven iteration tax	**Semi autonomous AI tools** e.g., Cursor, Claude code **Fully autonomous AI tools** e.g., Figma Make, Framer, UX Pilots, Relume, Replit, Lovable **Limitation:** Constrained creativity and aesthetic depth, effective for early ideation, not refinement, slow progress on the final 20-25% of quality	**Code base handover** e.g., Claude code, Copilot, Cursor, Visual Studio Code, Windsurf **Visual base handover** e.g., Figma make, Figma Dev Mode **Limitation:** Not production-ready or shippable, heavy integration burden with real systems, design system, and code handoff misalignment, code quality and engineering review friction
UI/UX designers' roles	Conduct **background research** and synthesise **user journeys**. Establish **information architecture (IA)** and **user flows**. Generate and compare **flow variants** for different audiences.	Align generation to an **existing system** (tokens/components/style guide). **Merge existing design assets** into the working system.	Build **communicative prototypes** for internal/external stakeholders. Use prototypes to **bridge with non-design stakeholders**.	Handover the design with **implementation-ready detail**. Operational handoff via **repository (repo) workflow**.

Figure 1: *Overview of our findings in the AI-assisted UX workflow across the Double Diamond, indicating the tools, processes, and UI/UX designers' roles.*

important. E13 described this frustration: "*Whatever I'm prompting, I'm getting the same kind of design layout, which I don't like because they use the same kind of library to build the UI*" (E13).

This inconsistency creates drift where designs feel stitched together rather than unified. Spacing and font sizes shift randomly between screens, and layouts acceptable on mobile frequently break on larger screens, forcing significant time spent fixing small errors rather than progressing. As E05 noted: "*You'll get something close, and then you spend so long polishing the last 10–20%, little CSS spacing and font issues everywhere*" (E05). E01 similarly explained: "*Those tools are fine for a quick mobile mock, but for our product, it wasn't usable. We couldn't carry them into the code base*" (E01).

Furthermore, generated components often ignore design tokens, and AI misses subtle brand details such as micro-interaction behaviours. E06 noted: "*The code I generate from Cursor doesn't always match what engineers are actually working with... there's different constraints I can't really plug in to the actual code base*" (E06). What starts as a shortcut often becomes a rebuilding task, as teams manually reconstruct the hierarchy and brand identity the AI failed to capture.

4.1.2. The Iteration Tax: Context Loss in the Multi-Tool Hop

While text-prompt design often feels fast initially, efficiency disappears as projects grow complex. Designers discover mid-process that AI has ignored critical requirements like accessibility or data rules, forcing repetitive prompt rewrites. Even minor

adjustments can cause hallucinations that discard prior progress. E07 described this: "*A small direction change and it won't stop where you want—it gives a completely different screen. Then you must revert to a previous version and redo things*" (E07). As work moves across tools—from chatbot to visual editor to IDE—project constraints are stripped away, forcing designers to restate the same instructions at every stage. E02 explained: "*I'm hopping between ChatGPT, Figma, and other prototype tools... every time I switch, I must clarify the details again. It doesn't remember the constraints from the last tool*" (E02). Integrating this output into real codebases then creates a high verification burden, effectively cancelling the earlier speed gains.

4.2. Challenges in the Current AI-Integrated Workflow: Integration Frictions with Codebases & Design Systems

Across interviews, experts describe a repeated pattern: AI helps them explore options, but fitting outputs into live repositories (repo) and established design systems (DS) is the hard part. This friction manifests as code that diverges from project conventions, tools that ignore tokens/variants, and prompt-driven flows that require extra verification and the restatement of constraints. Tools commonly cited in these accounts include Figma/Figma Make, Cursor, Claude, Copilot, UX Pilot, Lovable, Windsurf, and DS/token pipelines.

4.2.1. Repository Rejection: The Gap Between "Vibe" and Production Code

Designers discovered that while AI can write functional code, it frequently struggles to fit into the complex, established systems used by professional companies. This problem creates a gap where AI outputs work perfectly for small personal experiments but fail when added to a large corporate codebase, often requiring significant rewriting. E06 noted this limitation by stating that "*AI-generated code often doesn't match our existing code base or design system, so engineers have to rework it to fit constraints*."

Consequently, many designers are abandoning simple visual tools and moving directly into technical coding environments to try and force the AI to respect these boundaries. Yet even with this shift, the process is never fully automatic because humans must still strictly review and approve the work before it is accepted into the final product. As E03 explained, "*The engineering team will still do the pull request... approve that it's going to merge into the main (GitHub) branch when I'm done... Can you merge this into the main branch?... they're not writing any code. They're just reviewing my code... the code that the agent wrote."*

4.2.2. System Breakers: How AI Ignores the "Constitutional" Rules of Design Systems

For large companies, a design system (DS) acts like a strict constitution defining how software should look and behave—yet AI tools frequently ignore these rules. Visual vibe builders often lack deep integration with the project code, so designers prefer coding environments where they can better control the output, though even there the generated code rarely fits complex systems without human edits. Teams must therefore explicitly force the AI to follow their rules. E03 described creating manual instruction files: "*We write rules like: you must use components from this UI library... use the colour tokens from "tokens.css." If I see inline hex, I tell the agent to check the rules and fix violations*."

Other designers link code generation directly to their design files, reasoning that an accurate visual source should yield matching code. E05 explained: "*Connecting Claude to Figma and being able to build code just directly from what you're building in Figma... As long as what you have in Figma is aligned with your design system, and the code is rendered correctly, then everything will be in line with the design system already*." Yet a disconnect remains between the design definition and the final product, since current AI tools only partially respect these constraints—leaving designers to bridge the gap manually. E13 summed up the struggle: "*Many companies... use Dev Mode in Figma, and they can easily hand off tokens and variables and UI components into Figma to actually in React... I want to make it fill that gap and make it speedy*."

4.3. Opportunities: Where AI Fits Best in the Workflow

Despite those challenges, by the time of our research AI had moved from early brainstorming to core prototyping. Interviews reveal a strong fit in conversational research and synthesis, early information architecture and wireframing, low-stakes exploration, and code-aware IDE prototyping. These tools produce higher-fidelity designs faster and anchor team communication from pitch to handoff.

4.3.1. Efficiency of Conversational AI for Research & Synthesis

Interviewees consistently reported using conversational AI chatbots for early-stage research interviews, a leading use case in UX design workflows. Designers rely on conversational models to speed up landscape scans, persona/use-case familiarisation, and first-pass synthesis. One sole product designer described using ChatGPT (with fallbacks to Claude and Perplexity) to understand markets and personas, then to condense documents into working summaries, explicitly because it is faster than manual

web search and memo writing: "*I'll drop transcripts into ChatGPT, get bullet points and flows back—basically a first-pass synthesis to brief the team*" (E04).

Others use "deep research" features across ChatGPT/Claude/Gemini to browse large corpora and compare cross-tool outputs before trusting a result. Some participants also run "*synthetic research*" to generate directional briefs quickly, while noting that high-quality studies still benefit from traditional interviews: "*I use deep research function across the different AI platforms (Claude & Gemini)... After that, I will... compare the research result... Imagine, I can do deep research in one hour*" (E07).

4.3.2. Structure First, Pixels Later: AI as Generative Scaffolding

Experts use AI to draft a product's initial structure (Figure 2), such as the information architecture or sitemap (Figure 3), immediately after receiving a brief. This text-first approach helps them identify essential elements quickly and saves significant time. E07 described this efficiency: "*I just develop everything by text and also use AI to generate the information architecture...Then I put everything into Figma to make the first prototype... keeping prompting until you're satisfied...I can compress this...and develop the first draft MVP...[it takes] about one week...[in] traditional process, at least one month.*"

In this early phase, teams treat AI output as scaffolding, not the final interface, using emerging tools for conceptual edits while planning to refine visuals manually later. Designers produce low-fidelity wireframes with AI before polishing in Figma. Coding-comfortable teams instead open IDEs such as Windsurf/Cursor (Figure 6) to build flows inside the company codebase (often with Claude Code), using AI agents to write specs or seed structures that engineers refine—reducing blank-page time while staying close to production. E03 explained this workflow: "*I'm using Cursor or Windsurf as an IDE... sometimes I use Claude Code as well... we are really plugged into our code base. The designers are actually doing pull requests, contributing to the code base... The engineering team will still do the pull request... approve that it's going to merge into the main branch.*"

4.3.3. Disposable Design: Rapid Exploration Without Attachment

Historically, digital design required creating precise static files in software like Sketch or Figma, which developers would subsequently rebuild manually. Current vibe coding and designing tools, such as Figma Make, Lovable, UX Pilot, and Relume, have shifted this paradigm by transforming ideas into interactive prototypes almost instantly. This capability allows teams to test concepts directly within the codebase using text commands before committing to high-fidelity production work. The primary advantage of this approach lies in exploration, enabling the rapid generation of user flows, design alternatives, and lightweight conceptual studies (Figure 4). For instance, tools like Lovable assist teams in overcoming creative blocks and accelerating the prototyping phase. E04 illustrated this efficiency by noting that "*When you're copying your transcripts from a meeting you have with the clients...you're designing directly to whatever conversation held with the client... in eight days, your design is done without a lot of back and forth.... By the time you're going to Figma, you already know what flow you're going for... and you just finish it.*"

Consequently, some design teams now utilise an accelerated workflow progressing from meeting transcripts to ChatGPT-generated user flows, then AI-generated system assets, before refining in Figma (Figure 5). Although these tools remain most effective for quick, disposable experiments rather than daily production tasks, they significantly reduce the time needed to validate initial concepts.

4.3.4. Code-Aware Prototyping (Designers in Integrated Development Environments)

Designers are increasingly moving their prototyping work directly into the technical stack by shifting from visual interface tools to Integrated Development Environments, or IDEs, such as Cursor and Windsurf (Figure 6). This transition allows teams to maintain their work within the central code repository, ensuring that designs align with the established system and can be merged through standard development processes. A parallel approach involves using Claude and Figma to generate code for finished screens, followed by Copilot or Cursor to integrate and format the output. E05 explained the benefit of this alignment by stating that "*Connecting Claude to Figma and being able to build code just directly from what you're building in Figma...As long as what you have in Figma is aligned with your design system, and the code is rendered correctly, then everything will be in line with the design system already.*"

Because AI output frequently conflicts with the complex structure and rules of a codebase, workflows centred on IDEs outperform visual generators by constraining the creation process to the live code environment. To mitigate errors, teams codify specific guardrails by uploading rule files, such as Claude.md or AI_rules.md, which provide the model with concrete constraints and allow it to validate its own output. One interviewee noted that while a developer must still review and manually

merge the final code, this method significantly reduces rework compared to using visual generators like Lovable or Figma Make for professional company projects.

4.4. Collaboration Shifts across Product Management and Design Engineering

Designers are increasingly prototyping directly in the code repository, allowing engineers to review and merge work through standard processes such as feature branches and pull requests. This workflow clarifies boundaries: design leads structure and UX while engineering focuses on backend architecture. Teams restrict AI agents from complex architectural changes, keeping designer contributions front-end focused. Designers also calibrate fidelity to purpose—low-detail for communication, pixel-precise for handoff.

4.4.1. Prototypes as Promises: Anchoring Stakeholder Expectations Early

Teams increasingly use AI-accelerated prototypes as strategic communication artefacts to facilitate early stakeholder alignment. Rather than waiting for polished visuals, designers generate initial structures and low-fidelity screens as interactive discussion points for scope and priorities. E12 noted: "*I use prototypes to communicate ideas with PMs and engineers—clickable screens make it easier for them to understand the scope before we polish*." Similarly, E11 remarked: "*Figma's AI helps me get past the blank canvas—quick wireframes and options I can refine*." By securing approval on structure before investing in visual detail, teams accelerate review cycles and reduce late-stage rework.

4.4.2. Changing Team Topology & Small Team Leverage: Compressing the PM-Designer-Dev Triangle

Design teams are moving away from the traditional handoff between disciplines to a collaborative model centred directly on the code repository. Designers now use integrated development environments like Windsurf and Cursor to open technical branches, draft specifications, and submit code changes directly. To ensure these outputs remain on brand, teams embed strict design system rules within the repository that mandate specific icon sets and libraries, often asking the AI agent to audit its own work before submission. E03 described this workflow by stating, "*I'll open Windsurf and [Claude] Code... I'll use it to write specifications, requirements... then... 'Claude Code, go look at the document... and implement it.' ...Then, engineers do the pull request review and merge it into the main branch*."

This operational shift effectively changes staffing structures and roles. One agency eliminated its project management team entirely, replacing managers with technical leads and an integrated workflow where designers and developers edit code together. E04 explained that "*We've even removed our whole project management team... What we have is like technical leads for each project... And simultaneously, the dev and the designers are working together, prompting on the same tool... whatever I'm doing to change the look and feel is also updating on GitHub as well. There's no need for handover... It's just both of us working in the same space*."

Consequently, designers are increasingly adopting hybrid roles that blend design with frontend engineering. E05 noted, "*I'm moving to a little bit more of a UX engineer role... instead of asking a front-end developer to change something that doesn't look right, I can just go in myself and change the code and create pull requests*." In this new topology, design leads the structure and user experience while engineering concentrates on backend architecture and data flows. Although AI compresses the timeline, the most critical product judgements remain led by humans.

4.5. From Maker to Orchestrator: The UI/UX Designer's Evolving Roles

Across interviews, participants describe designers moving closer to code and systems while keeping uniquely human responsibilities such as taste, product judgement, and risk control. AI accelerates scaffolding and variant exploration, but designers still decide what 'good enough' means, protect brand intent, and verify outputs before anything ships, keeping human judgement and accountability at the centre of product delivery.

4.5.1. Designing the instructions, Not Just the Pixels

Designers are increasingly focusing on designing the instructions rather than manually placing pixels. This shift involves authoring the prompts, rules, and constraints that compel AI models to adhere to brand guidelines and technical realities. Practitioners now treat these digital guardrails as essential design deliverables, translating engineering feedback into specific rules that agents can enforce, such as code styles or token usage. E03 illustrated this reliance on explicit documentation by stating that "*We have... Claude.md... and AI_rules.md... you must use icons from this icon set... components from this UI library... use the colour tokens from tokens.css."*

Because effective outcomes depend heavily on the precision of these instructions, teams view prompt

specificity as a core professional competency. E13 emphasised: "*Prompt is the biggest thing... If you write a wrong prompt, you will get a wrong output... You have to ask for every request, small, small request*." Designers now orchestrate multi-step workflows to control scope and quality before targeted review, shifting effort from drawing interfaces to sequencing the steps of creation—moving fluidly between text instructions, visual canvases, and code while preserving the ability to make direct manual edits.

4.5.2. The Vibe Verifier: Human Judgement as the Ultimate Guardrail

While AI agents effectively draft code and scaffolding, participants emphasised that critical product judgement remains a human responsibility, particularly concerning scope, visual hierarchy, and brand integrity. E04 noted that "*I don't think AI is going to entirely take out the design thinking and the creativity of humans*." Similarly, E07 argued that strategic oversight depends on personal expertise: "*The strategy is... using your expertise, using your own taste... if you don't have your own taste, the output gonna be really ordinary... you're still the driver*."

AI served as an assistive layer rather than an autonomous decision-maker throughout research and prototyping: AI-generated layouts frequently appeared generic, requiring human intervention to establish clear page structure and enforce brand specificity. Accountability remained anchored in the code repository process, as engineers still had to review and merge agent-implemented features. E13 highlighted this necessity: "*AI don't know how to structurise the layout as a designer...Human touch [is] required for each and every section to manipulate the design and launch it in your perfect way*."

Consequently, the role of the designer is expanding to become a systems author and steward of product criteria. This involves crafting the prompts and guardrails that reflect team standards and exercising the judgment to approve or reject what eventually ships. Fidelity is deliberately adjusted according to purpose, with lower detail used for communication and pixel-perfect precision reserved for handoff. Ultimately, while AI accelerates execution, the human designer remains the final verifier of quality and safety.

5. DISCUSSION

Our findings provide a situated account of how professional UI/UX practitioners integrate generative AI tools into prototyping work, including both ideation-oriented use and implementation-facing activities. Rather than claiming an end-to-end transformation of the profession, we highlight empirically grounded shifts in practice observed in our sample: (1) increased use of AI for refinement and implementation-adjacent tasks alongside continued use for exploration, (2) the growth of orchestration work (e.g., specifying constraints, coordinating tools, and verifying outputs), and (3) evolving handoff arrangements in which some designers contribute code artefacts while accountability and review practices remain central.

5.1. From Divergent Ideation to Convergent Implementation

Existing research on generative AI in design has predominantly focused on the divergent phase of the Double Diamond process—using tools like Midjourney or ChatGPT to overcome the blank page problem (Doshi and Hauser 2024; Hu et al. 2025; Wang et al. 2025), generate variations (Wadinambiarachchi et al. 2024; Wang et al. 2025), or support brainstorming (Khan et al. 2025; Takaffoli et al. 2024). Our data both confirms this continued use and surfaces additional implementation-facing adoption: participants described using code-aware agents and prototyping assistants to refine, translate, and troubleshoot UI behaviour in ways that move closer to production constraints.

Rather than treating this as a simple shift from divergence to convergence, we interpret it as an expansion of where AI is applied during prototyping work. In our sample, some practitioners used AI agents to help bridge parts of the fidelity gap by generating scaffolding code and mapping designs onto existing component libraries or token systems, while still requiring substantial human verification and reconciliation with repositories and design systems. This suggests that AI may support new forms of designer–developer coordination and implementation-adjacent contribution without eliminating the need for engineering review and accountability.

5.2. Orchestration Work: Specifying, Coordinating, and Verifying

As AI tools gain agency, the nature of design expertise is undergoing a profound transformation (Guo et al. 2023; Windl et al. 2022). Previous frameworks for human-AI collaboration have often characterised the user as an "operator" (Cila 2022) who manipulates parameters or selects from AI-generated options (Weisz et al. 2024). However, our participants described their relationship with AI differently: as a senior lead managing a "junior designer" or "intern."

This "Managerial Orchestration" model fundamentally alters the definition of "craft" in the design process (Liu et al. 2024; Shi et al. 2023) In traditional practice, craft was defined by the manual manipulation of pixels and vectors (Zhang et al. 2020). In the AI-augmented workflow, craft evolves into the ability to articulate intent (Gmeiner et al. 2025; Zhang et al. 2025), verify output (Long et al. 2024; Wang et al. 2024b), and maintain strategic oversight (Tankelevitch et al. 2025), a skill set we term "Vibe Verification." This aligns with Cha and Wong's (Cha and Wong 2025) observations on "AI non-use" as a form of agency (Cha and Wong 2025); our participants did not reject AI, but selectively restricted its autonomy to maintain quality control. The friction described by our participants (e.g., "hallucinations" in code, generic visual styles) is not merely a technical error but a failure of this new managerial dynamic. Therefore, future design tools should not just aim for automation, but for "Inspectability," providing designers with the controls to audit and correct the "junior" AI's work, much like a code review or design critique.

5.3. The Shift of the Handoff: The Rise of the Product Engineer

The most disruptive finding is the potential obsolescence of the traditional "Designer-Developer Handoff" (Lin et al. 2023; Lu et al. 2025). Our study suggests that AI is rendering this translation layer redundant: by generating production-ready code from natural language or visual inputs, designers are becoming hybrid "Product Engineers" who design through code rather than static mockups.

This shift carries significant implications for design education and organisational structure (Shen et al. 2025). If designers are expected to ship code, curricula must evolve beyond "design thinking" to include "computational thinking" and "prompt engineering" as core competencies (Asadi et al. 2025; Hegemann et al. 2023; Liao 2021; Prpa et al. 2024; Sandhaus et al. 2025). Organisations may also need to restructure product teams away from siloed design and engineering departments towards integrated "Product Creation" units where the boundary between designing and implementing is increasingly blurred.

5.4. Implications for Tools, Education, and Teams

Based on our empirical observations, we propose several key implications for the future of UX design tools, education, and professional roles.

For AI design tools, **designing for inspectability**: Future design tools should not just aim for automation but for inspectability. Since designers now act as managers of AI output, they require interfaces that allow them to audit and correct the work of the AI easily. Tools should provide controls similar to a code review or design critique, enabling designers to verify that the generated output aligns with brand standards and technical constraints.

For UI/UX design education, **computational thinking**: If designers are expected to ship code, the educational curriculum must evolve. This extends a long-running debate about designers and code, and should complement, not replace, core UX skills. We recommend shifting focus to include computational thinking and prompt engineering as core competencies. Students should learn how to structure instructions for AI agents and understand the logic of code repositories, even if they do not write every line of syntax manually.

For organisational structure, **integrated product creation**: Organisations may need to restructure product teams by moving away from siloed design and engineering departments. We suggest forming integrated product creation units where the distinction between designing an interface and implementing it is blurred. In this model, UI/UX designers use AI to contribute directly to the codebase, reducing the need for rigid handoff processes and allowing for faster iteration cycles.

6. CONCLUSION

This paper presents an empirical analysis of how professional UI/UX designers are transitioning from using AI for divergent ideation to convergent technical implementation. We identify a fundamental role evolution from "maker" to "orchestrator," where practitioners leverage code-aware agents to bypass traditional handoffs and assume responsibilities previously reserved for frontend engineering. By adopting a "vibe coding" workflow, designers are bridging the fidelity gap and redefining the product development lifecycle, suggesting that the future of design lies in democratising implementation rather than just creativity.

While these findings highlight a significant operational shift, our study is limited by its qualitative scope and the rapidly evolving nature of the specific tools examined. Future research should prioritise longitudinal studies to understand how these hybrid "product engineer" roles sustain over time and investigate the potential long-term risks to foundational skill development for junior designers. Additionally, further work is needed to explore how these agile, code-centric workflows can scale within large enterprises that require strict governance and compliance standards.

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A APPENDIX

A.1 contextual inquiry Protocol Demo Screen

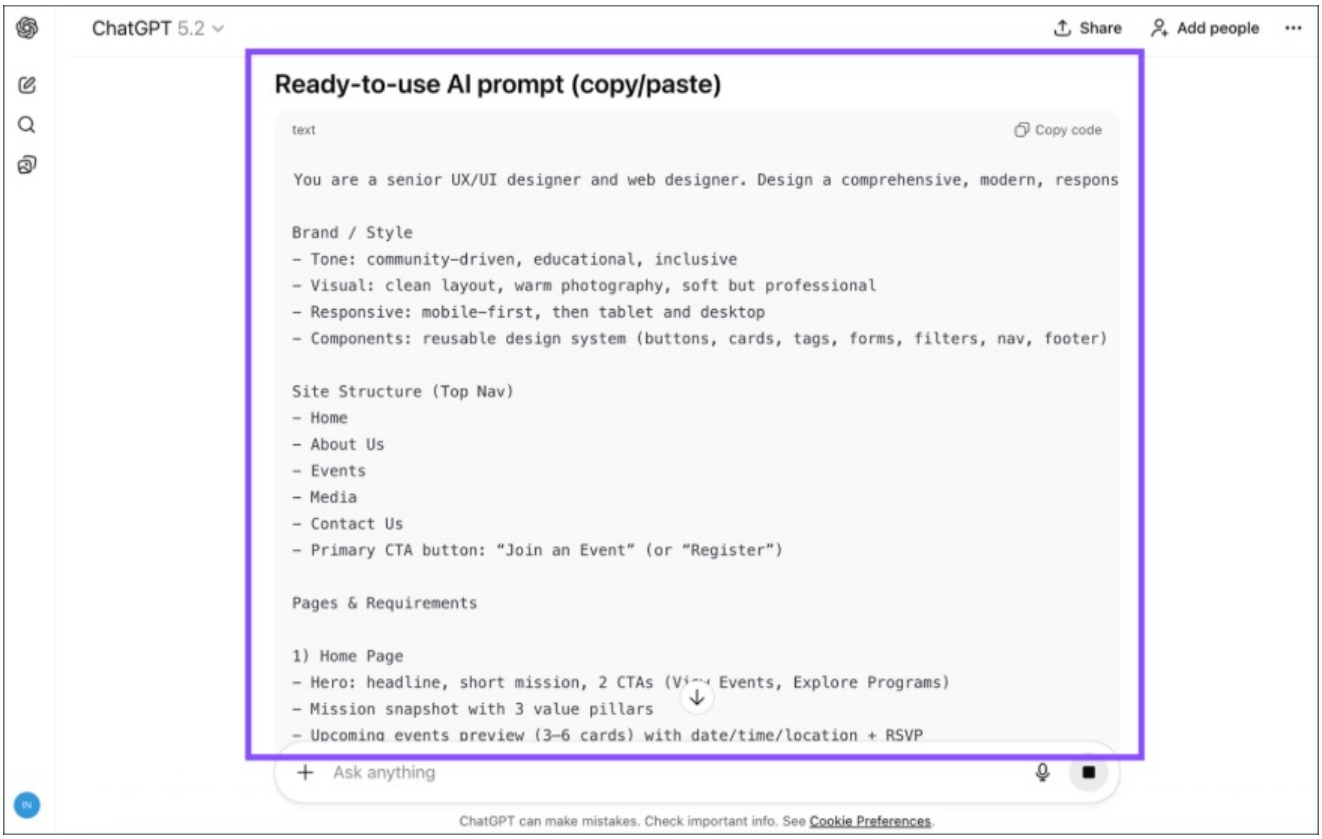


Figure 2: *E02's prototype screen using ChatGPT-assisted prompt refinement for site creation. By matching natural language with system constraints, conversational AI translates human ideas into executable tool logic.*

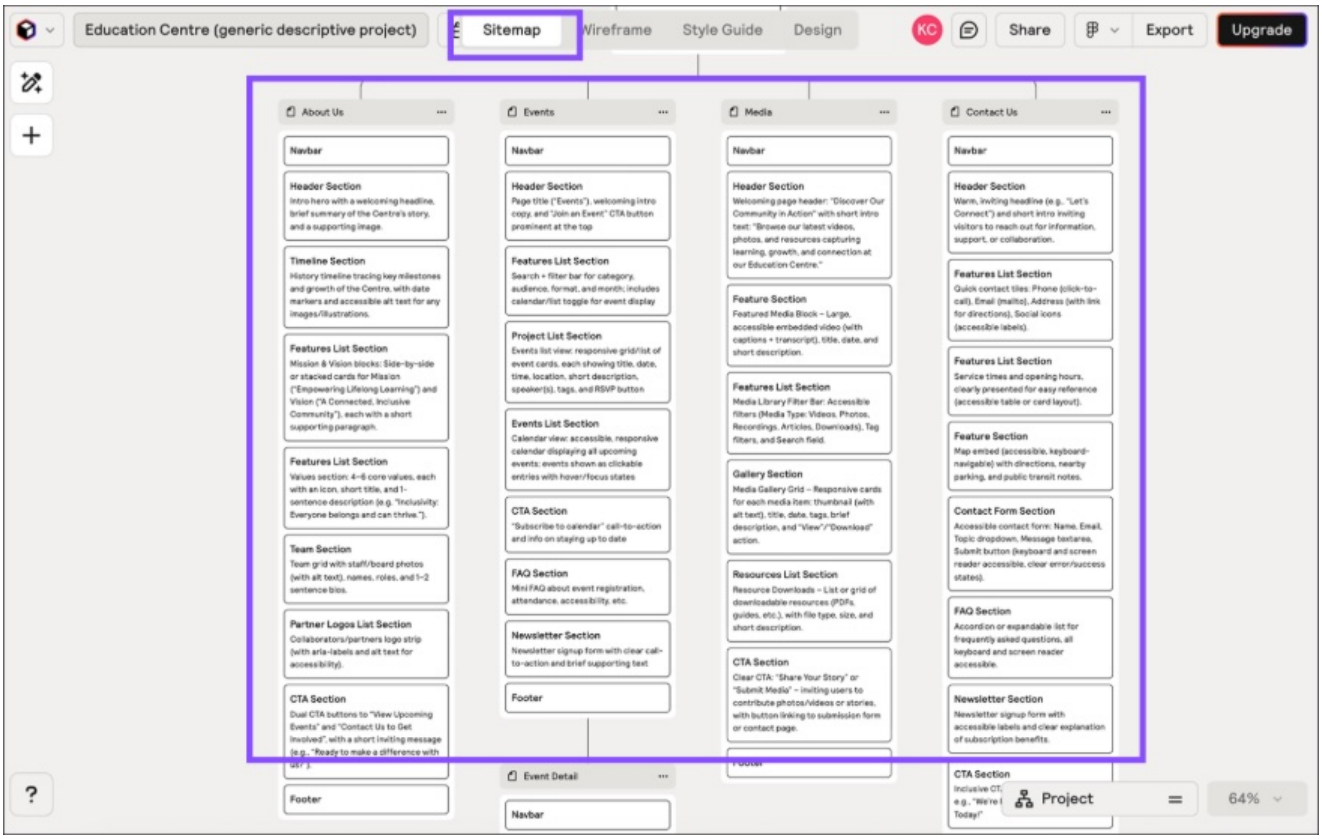


Figure 3: *E02's prototype screen using Relume to generate the project's sitemap. Presenting the structure prior to design helps govern generated content and prevents uncontrolled iteration.*

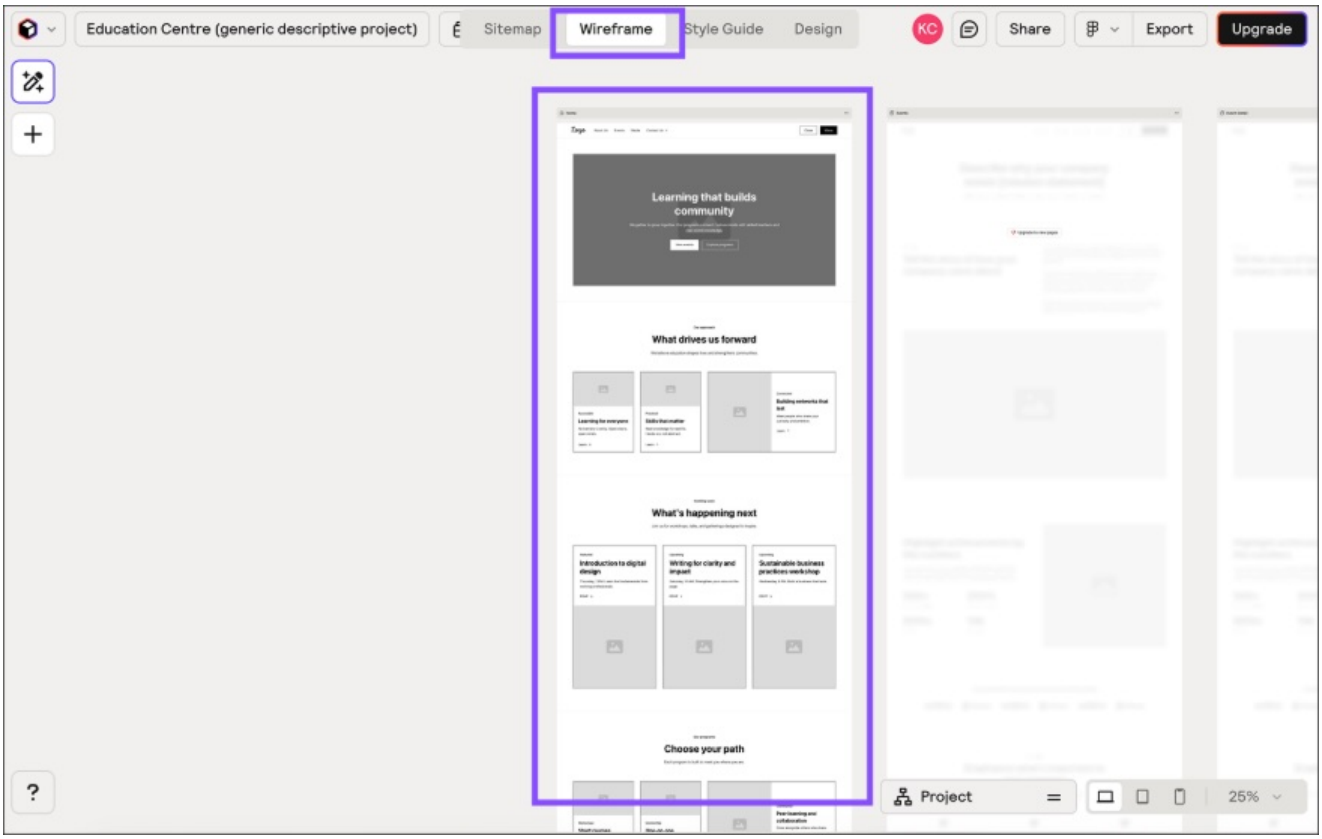


Figure 4: *E03's prototype screen displaying the Relume-generated wireframe to validate the site structure with the team and establish the information architecture before visual production.*

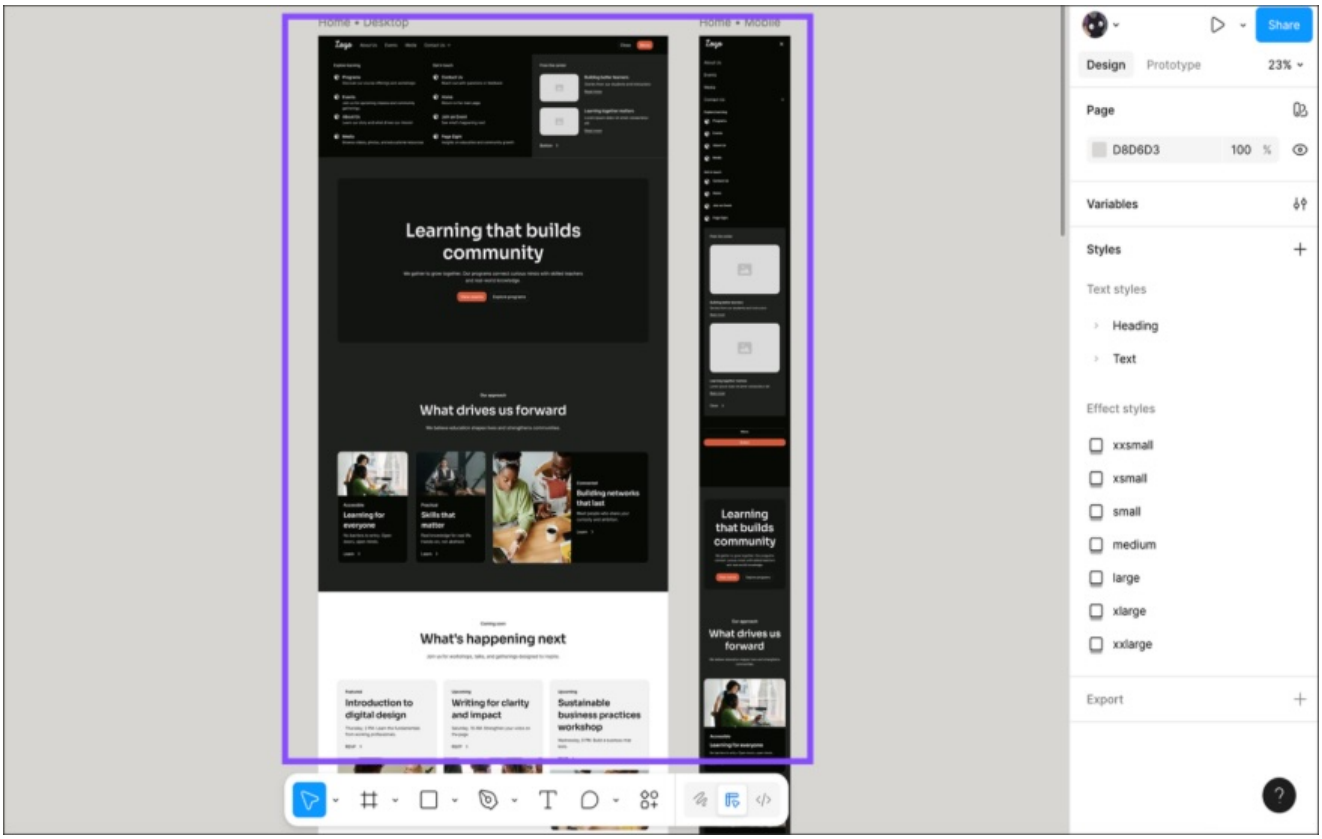


Figure 5: *E04's prototype screen showing the designer exporting a Vibe-built prototype to Figma for refinement to implement specialised and customised Figma styles to streamline foundational development.*

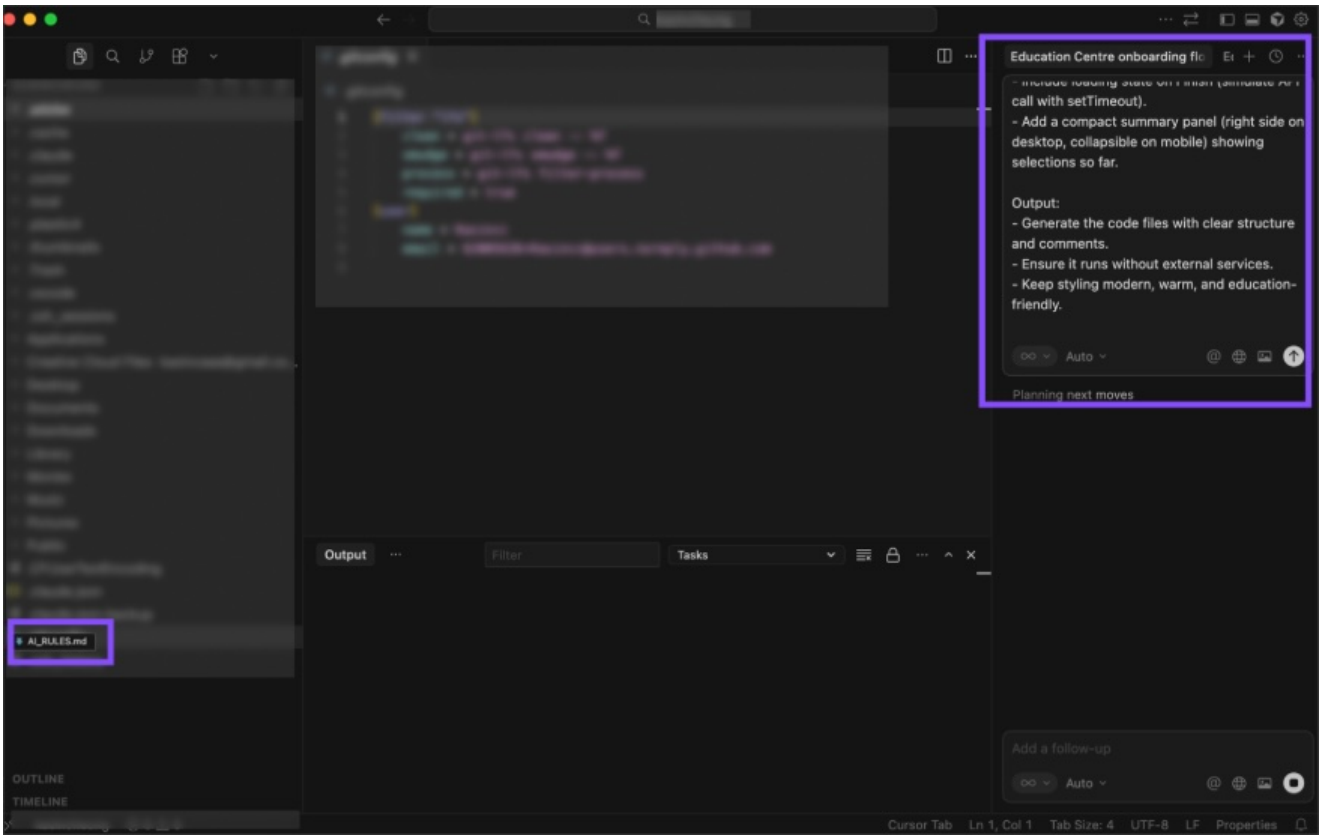


Figure 6: *E03's prototype screen using Cursor and Claude AI as primary tools for end-to-end prototyping. Incorporating the company design system with AI-generated governance rules improves control over codebase outputs.*

A.2 Expert Interview Questionnaire

Section	Question
Section 1. Background & Context	1-1. Can you tell me a little about your role and experience as a UI/UX designer?
	1-2. How many years have you been working in design, and what types of projects do you typically work on (e.g., web, mobile, enterprise systems, etc.)?
	1-3. Have you used AI tools in your design process? If so, which ones (e.g., ChatGPT, MidJourney, Figma AI, Galileo AI, Uizard, etc.)?
Section 2. Incorporation of AI tools in Design Processes (RQ1-1)	2-1. At what stages of your design workflow do you usually integrate AI tools (e.g., research, ideation, wireframing, prototyping, usability testing)?
	2-2. Can you share a specific example where AI meaningfully changed or enhanced your design process? (especially in prototyping?)
	2-3. What criteria influence your decision to use—or not use—AI in a project?
Section 3. Challenges of Using AI in UI Prototyping (RQ1-2)	3-1. What difficulties have you encountered when using AI tools for UI prototyping?
	3-2. How do these challenges affect your productivity, creativity, or quality of output?
	3-3. Are there particular limitations (or opportunities & benefits) with AI-generated prototypes (e.g., accuracy, consistency, usability, ethics)?
	3-4. What kinds of workarounds or strategies have you developed to address these issues?
Section 4. Collaboration with Stakeholders (RQ2)	4-1. How do you use AI tools when working with other stakeholders (e.g., product managers, developers, clients)?
	4-2. Do AI prototypes help or hinder communication with non-design stakeholders? Why?
	4-3. How have AI tools changed collaboration dynamics within your design team or cross-functional teams?
	4-4. Can you describe a situation where AI helped (or created conflict) in collaborative prototyping or decision-making?
Section 5. Addressing Current Needs & Future Improvements (RQ3)	5-1. From your perspective, how well do current AI prototyping tools solve real-world design challenges?
	5-2. What gaps remain unaddressed by existing tools?
	5-3. If you could design the “ideal” AI-powered prototyping tool, what features or capabilities would it have?
	5-4. How do you see the role of AI evolving in UI design over the next 3–5 years?
Section 6. Wrap-Up	6-1. What advice would you give to UI/UX designers who are just starting to explore AI tools in their practice?
	6-2. Is there anything else you’d like to share about your experiences—positive or negative—with AI in the design process?