

Designing with AI

Final Report

Summer / Fall 2023

HealthworX + IDEO

Foreword

The intersection of design thinking and Generative AI presents a new era of innovation, where human creativity meets computational agility. As industries evolve and consumer expectations shift, leaders are seeking frameworks that harmoniously integrate human intuition with AI's analytical prowess. This deck shares our exploration and learnings from a transformative collaboration with [Healthworx](#) Venture Studio, shedding light on the synergies between traditional design thinking and cutting-edge AI capabilities and offers a blueprint for businesses striving to stay ahead in an AI-augmented world.

To the right are the members of the team who led this project and authored of this report.



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01 The Brief

Design Challenge

How might we develop new ventures through novel methods utilizing a *human-centered design* approach and *generative AI*?

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Create a new ***healthcare venture*** that addresses (access or quality) of healthcare for ***rural communities***

Design Challenge

How might we develop new ventures through novel methods utilizing a *human-centered design* approach and *generative AI*?

Scope

Currently, we are not sharing details, because Healthworx is still incubating the venture

Create a new ***healthcare venture*** that addresses (access or quality) of healthcare for ***rural communities***

Context

Leaning on the capabilities of Generative AI to *design alongside humans* required us to intimately understand what it's *uniquely positioned to do* and *where we shine*.

HUMAN unique values

Empathy and Emotional Understanding:

Humans can understand and empathize with the emotions of others, playing a crucial role in social interactions and emotional support.

Creativity and Innovation:

Humans can think outside the box, generating new ideas and solutions that are not directly suggested by the data they have.

Intuition:

Humans can make decisions based on intuition or a 'gut feeling', which might not be supported by data.

Consciousness and Self-awareness:

Humans possess self-awareness and consciousness, enabling reflection on their own thoughts, feelings, and experiences.

'Design with AI' Principles

AI unique values

Processing Speed:

AI can process and analyze large volumes of data far quicker than humans. *However, it still struggles to interpret and contextualize what to do without a human prompt.*

Consistency:

AI can perform the same task consistently without experiencing fatigue or performance fluctuation. It also maintains a more even attention to the entire input content (based on context) in a manner that's significantly more consistent than humans ever could be.

Broad and Various Perspectives*

AI can maintain some neutrality when dealing with topics, making decisions purely based on data, devoid of emotions or personal biases. *However, it is not aware and unable to critically evaluate biases in the training data it may be drawing on.*

Multitasking:

AI can handle multiple tasks simultaneously without a drop in efficiency or effectiveness. This can greatly improve human performance but *could potentially replace certain repetitive human jobs, like customer service.*

**title WIP*

Context

These Principles served as a roadmap, helping us determine where to incorporate, or perhaps more importantly, where to avoid, Generative AI in our design and innovation process.

02 Insights: What we learned

01

Subject matter expertise transforms how one uses AI.

SMEs can ask better questions and critically evaluate the answers. Having expertise in the topic area and GenAI tools and methods is ideal.

02

Generative AI can not replace designers*.

While Generative AI optimizes efficiency, human input remains crucial for intentional, nuanced, and innovative outcomes.

**yet?*

03

In a vast and growing landscape of AI tools, choosing the right ones is key.

The effective use of AI tools can significantly enhance research through reference sourcing and speed up the iterative design process.

04

The true challenge of using Generative AI lies in validating and making sense of the outputs.

Human evaluation of the AI output remains crucial due to AI's potential for bias and limitations in holding context.

05

Designing with AI affects collaboration.

The one user - one agent interface of AI tools enables working in silos and can impede team cohesion.

Insights 01

Subject matter expertise transforms how one uses AI.

Subject matter experts can ask better questions and critically evaluate the answers. Having expertise in the topic area and Generative AI tools and methods is ideal.

Asking the right questions is as important as the output

Informational and contextual input is needed before directly diving into the AI tool

An **expert talking to AI** and critically evaluating its output **leads to better outcomes** than a novice interacting with the tools



Insights 02

Generative AI can not replace designers*.

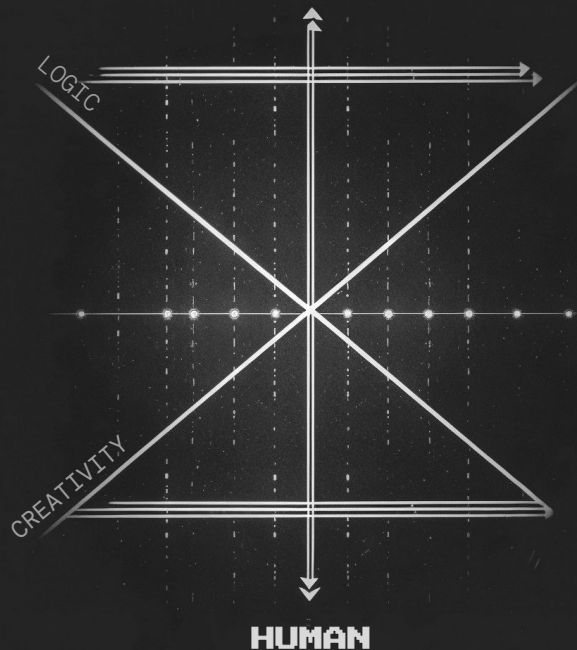
While Generative AI optimizes efficiency, human input remains crucial for intentional, nuanced, and innovative outcomes.

*yet

AI increases efficiency in:

- summarization
- writing (discussion guides, storytelling)
- brainstorming
- visualizing

Can't replace human intuition and intelligence when it comes to insights and coming up with solutions that are **both creative and logical**



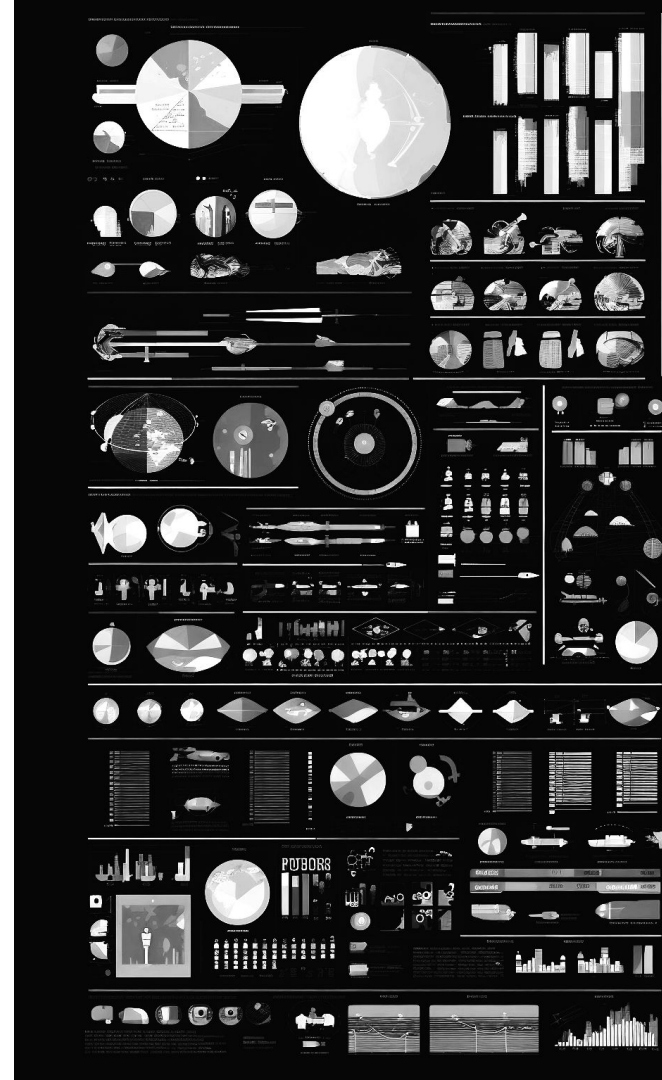
Insights 03

In a vast and growing landscape of AI tools, choosing the right ones is key.

The effective use of AI tools can significantly enhance research through reference sourcing and speed up the iterative design process.

Tools like perplexity and chatpdf **save time** in wading through academic papers

Perplexity and ChatGPT plugins can **combine important evidence** from multiple sources and help **make conclusions**



Insights 04

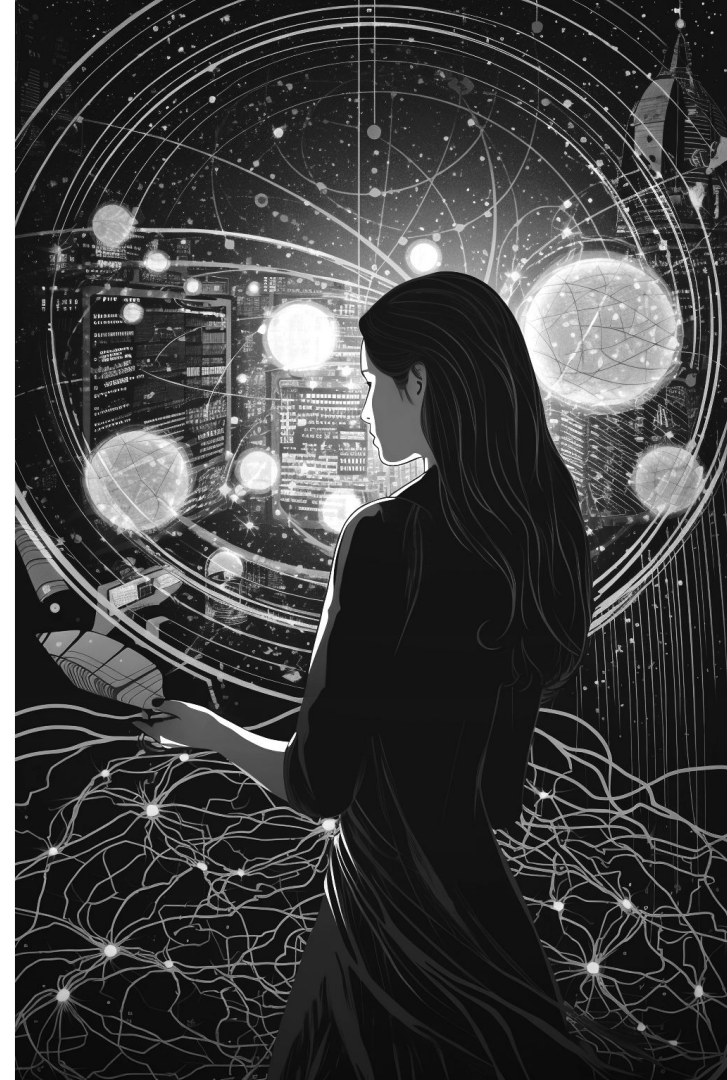
The true challenge of using GenAI lies in validating and making sense of its outputs.

While Generative AI optimizes efficiency, human evaluation of the AI output remains crucial due to AI's potential for bias and limitations in holding context.

GenAI will always give you an output, but it might be wrong.

For some things that doesn't matter, but for other things it does

For example, using GenAI to pull factual data to use in analysis such as a return on investment calculation or market sizing may be wrong and **each assumption must be validated manually.**



Insights 05

Designing with AI affects collaboration.

The one user - one agent interface of AI tools enables working in silos and can impede team cohesion.

GenAI is as of yet predominantly an intimate 1 on 1 interaction. If you use the tools right, you are going in-depth with your conversation. However, **going in-depth with AI makes it more difficult to share your work with others**

AI tools can be used in different ways even if it only has one interface. Finding a collaborative way of using it, and integrating your searching result in one collective work space is needed for team work.

It felt like at times that **we all had our own GenAI buddy we we working with on the side**



03 Design with AI

The Scale of AI Utility

To contextualize where we believe Generative AI can play a role in the design and venture process, we created the Scale of AI Utility framework.

It has four levels:

Novel: Generative AI enables new capabilities that were not possible before. These represent a completely new way of approaching a design task.

Transformative: Generative AI leads to significant improvements in efficiency, quality, or capabilities compared to conventional methods. It transforms how a design task is approached versus incremental changes.


















Inspirational: Generative AI provides inspiration but still requires significant human judgment and creativity to produce quality outcomes. It serves as a source of ideas.

Unreliable: Tasks where generative AI struggles to match human abilities and should be avoided. Today, where humans are irreplaceable.

This framework will be used to describe the Generative AI methods we experimented with throughout our three phases of work.

Phase 1: *Research*

HMW leverage AI's *processing speed* to gain *broad insights* into our stakeholders' pain points and typical behaviors quickly and efficiently?

	Domain Knowledge	Synthesis & Insights	Data & Multimedia Analysis
 Novel	Contextual Awareness   perplexity		Data Insights  Code interpreter <small>Alpha</small>
 Transformative	Survey Design  Desk Research  perplexity 	Summarization   notably	Multimodal Research  Whisper  notably  Code interpreter <small>Alpha</small>
 Inspirational		Insights & Key Moments   notably	
 Unreliable	Subject Matter Expertise	Design Research	

Research

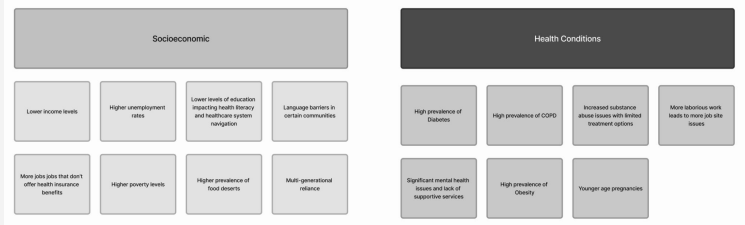
Novel Methods

Contextual Awareness

Domain Knowledge & Research

We were able to get to a strong starting point by understanding the mindsets and constraints of rural communities incredibly quickly.

Consideration: Consider an **AI-generated ‘mindsets & constraints framework’ a good starting place that should to be validated** and built on throughout the project as you learn more.



Data Insights

Data & Multimedia Analysis

We leveraged the availability of Code Interpreter to quickly analyze an aggregate of data from the [RuralHealthInfo](#) website.

Consideration: Tools like Code Interpreter can help a data scientist quickly arrive to preliminary insights, but their **capabilities are limited when it comes to comprehensive data solutions.**

Code interpreter Alpha

- For Primary Care, about 71% of the nonmetropolitan areas are designated as shortage areas, compared to 45.4% of the metropolitan areas.
- For Dental Care, about 77.1% of the nonmetropolitan areas are designated as shortage areas, compared to 48.4% of the metropolitan areas.
- For Mental Health, about 95.7% of the nonmetropolitan areas are designated as shortage areas, compared to 73.4% of the metropolitan areas.

Research

Transformative Methods

Survey Design

Domain Knowledge & Research

After providing a template and an example for the kind of questions we wanted in a survey, AI tools were easily able to understand and replicate for subsequent questions. We then reviewed and improved on the suggestions. This **human-AI iterative design significantly shortened the time it took to design and launch the survey, and improved the overall quality of the questions we asked.**

Consideration: **AI struggles to design a good survey from scratch.** Providing it examples of questions, reviewing and building on its suggestions is what helped it come up with better and more insightful questions.



Desk Research

Domain Knowledge & Research

Using tools other than ChatGPT proved immensely helpful in desk research with features and functionalities that make desk research a breeze.

- ChatGPT plugins and perplexity.ai have the capability to search and reference websites, academic journals, Reddit posts, etc.
- Chatpdf allows quickly retrieving specific content from pdfs and being able to interact with them through questions.

Consideration: Before relying on a new tool for desk research, test it for accuracy and whether its features give you **options for cross-checking and validating the results.**



Research

Transformative Methods

Summarization

Synthesis & Insights

Generative AI tools provide **substantial time savings with their summarization capabilities**. They can efficiently condense recorded interviews, video clips, and data, helping humans grasp key points quickly.

Consideration: AI may struggle to maintain context throughout the research discovery process. **Without human intuition to pinpoint truly compelling insights, these tools risk missing crucial details.**



Multimodal Research

Data & Multimedia Analysis

Various machine learning methods allow us to access and analyze various non-traditional sources of data such as video, audio and social media to gather insights. **Generative AI adds the ability to rapidly interpret and derive value from vast, unstructured data sources**, which represents not just an incremental improvement but a transformative approach to research. Our experiment leveraging OpenAI's Whisper and ChatGPT serves as a testament to this potential. We used ChatGPT's long context model to quickly identify speakers, key themes and insights from a number of podcast episodes centered on rural health.

Consideration: **The longer the input content, the more AI struggles** to hold attention to the context and identify meaningful parts for summarization and insights.



Research

Inspirational Methods

Insights & Key Moments

Synthesis & Insights

While GenAI offers inspiration, it falls short in producing compelling insights on its own, particularly in grasping the depth of thematic areas. **Designers can use AI to obtain an initial pass on insights and key moments, but human-derived deep insights invigorate designers' creativity, guiding them to craft user-centric solutions and experiences.**

Consideration: in our exploration of various tools, Notably.ai stood out among the GenAI platforms, offering a rich array of insight-gathering methods. Yet, its **inability to capture the intricate nuances of a human conversation** highlighted the limitations of relying solely on AI for design insights.



 notably

GenAI excels in summarization and creative tasks, but human intuition and insight remain irreplaceable in nuanced decision-making.

AI insight

Generative AI can not replace designers*.
*yet

Researcher insight

Research

Unreliable Methods

Subject Matter Expertise

Domain Knowledge & Research

With AI, **knowing the right questions to ask is worth more than the answer itself.** When researching a new problem area, SMEs can quickly identify what is meaningful knowledge to the task at hand. On the other hand, GenAI experts can identify the right ways to interact with AI to speed up research. Today, it may be hard to find these in a single person, but working collaboratively will optimize the output.

Consideration: A few of our designers had little industry experience and experimented with trying to get an in-depth understanding of the healthcare landscape using GenAI. **It wasn't until those designers talked to the experts at Healthworx and IDEO, who deeply understood our problem space, that it really opened their eyes to what was important to focus on and what to avoid.**

Design Research




















Synthesis & Insights

A key takeaway from this project was the **irreplaceable value of traditional design research.** Despite extensive experiments with GenAI tools, they couldn't match the depth, nuance, and empathy achieved by interacting with people in their environment.

Consideration: No matter how many iterations we tried of prompting AI to reach compelling insights that we emotionally resonated with, **we could never recreate the deep, nuanced insights we got from talking to Nicole who lived on a ranch the size of San Francisco 2 hours away from the nearest hospital, or Lauren, who has dedicated her life to building healthcare solutions and policies** for rural and underserved urban communities.

Phase 2: *Prototype & Test*

How effectively leverage AI tools to *rapidly prototype ideas* and facilitate an *iterative development process*?

	Concepting		Prototype & Iteration
 Novel	<i>Recursive Generation & Evaluation</i>  	<i>Agents</i>   	<i>Dynamic User Simulation</i> 
 Transformative			<i>Define & Build Venture</i>    
 Inspirational	<i>Ideation</i>   		<i>Visualization</i>  
 Unreliable			

Prototype & Test

Novel Methods

Recursive Generation & Evaluation

Concepting

After prioritizing our concepts, we tasked GenAI to devise a scoring system to evaluate each benefit and drawback. We then asked it to bolster benefits and counter drawbacks.

Iterating this process with our oversight interjecting our opinions and direction led to more compelling features. It also allowed us to consider viability and feasibility earlier in our process.

Consideration: Rather than the conventional agent-user interaction, this approach lets the tool assess its own outputs and refine them. **Humans play the role as Supervisor.**



Agents

Concepting

To bolster our venture and get feedback on our concept from many perspectives we used the Agents, where GenAI takes on diverse roles to answer a prompt. By enabling plug-ins, ChatGPT acted as a patient, provider, payer, hospital admin and community leader. It gave us a **more holistic understanding of who we were solving for and who was being discounted.**

Consideration: Agents can make responses more diverse, but still may default to “pleasing” the human. We asked ChatGPT to act as a McKinsey analyst to develop and evaluate a business model. **Its logic made perfect sense, but its assumptions were misguided requiring human intervention.**



Dynamic User Simulation

Prototype & Iteration

In our venture development, we meticulously crafted personas for a patient and a provider. Armed with a discussion guide, we "interviewed" these dynamic AI users, obtaining insightful quotes and feedback on our concept. This method provided a **snapshot of potential user reactions, even before any real user engagement took place.**

Consideration: We have more to learn here. In our initial experiments, **we could not determine whether our bias was affecting responses or if the LLM was deriving them from its training data set.**



Prototype & Test

Transformative Methods

Define & Build Venture

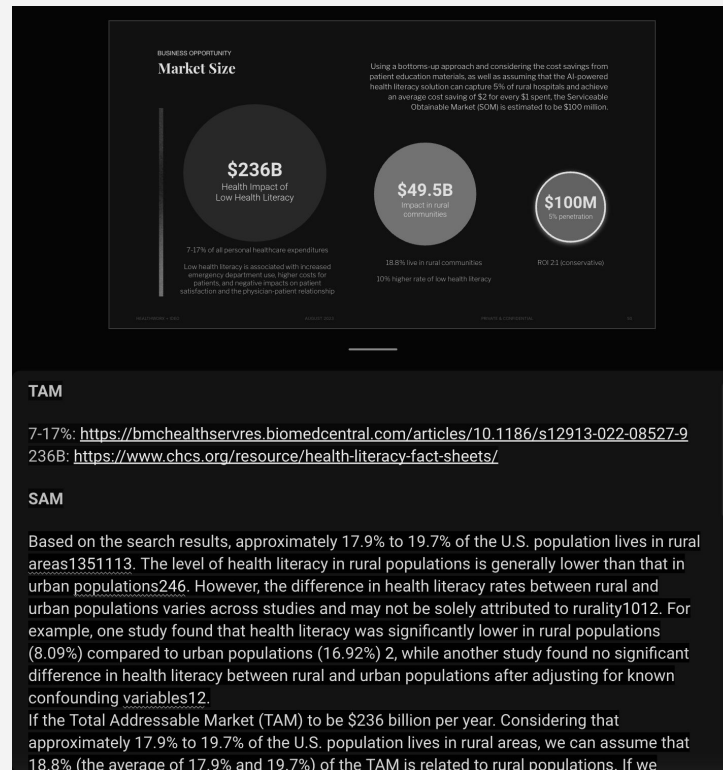
Prototype & Iteration

GenAI tools were fantastic at taking a kernel of idea and transforming it into more detail and depth. We used the pitch deck as a template to go into detail on its many parts (eg. elevator pitch, solution, features, problem, opportunity, MVP strategies, defensibility considerations).

Consideration: It's incredibly important to go deep with reciprocal conversation, question the assumptions GenAI is making, and validate everything. **When in need of actual evidence stick with tools like perplexity.ai and your own desk research. Hallucinations were all too common.**



AI



Prototype & Test

Inspirational Methods

Ideation

Concepting

After many experiments of trying to use GenAI tools to “tell us” the answer for the perfect venture, **it seemed to either default to 3 generic opportunity areas (mobile health clinics, telemedicine, community health workers) or provide wild illogical ideas.** It wasn’t until our designers used their own intuition and creativity and reframed Generative AI’s outputs as inspiration that a compelling venture was conceived.

Consideration: Acknowledge that Generative AI will give you as many answers (outputs) as you want. **Use this solely for inspiration. It will not give you “the answer”.**



Prototype Visualization

Prototype & Iteration












After creating a detailed user persona, we used ChatGPT to draft a six-scene scenario, detailing how a user might interact with our proposed features. This insight became instrumental when deciding upon the constraints and parameters for our screen designs. **This iterative process, enhanced by AI's perspective, further optimized our design and highlighted considerations for its feasible implementation.**

Consideration: **Visual assets that can be generated by GenAI via prompts or sketches is on the way** likely moving this to Transformative, saving time and \$\$\$.



Phase 3: *Storytell & Finalize*

How can we harness the potent capabilities of AI to elegantly *culminate the venture's design* while concurrently crafting *a compelling and resonant storytelling narrative*?

	Storytelling	Product Content & Pitch Deck
 Novel		Brand & logo design 
 Transformative	User Interactions 	Pitch Deck Visuals  Prototype copy  
 Inspirational	User journey  	
 Unreliable		Prompt-generated AI decks

Storytell & Finalize

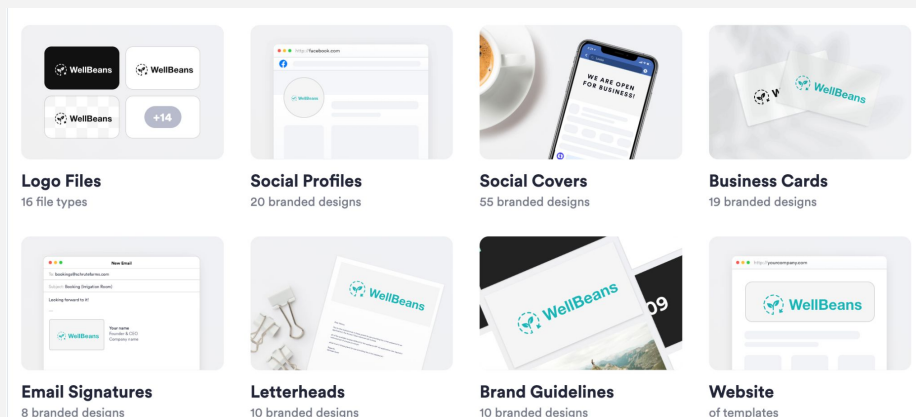
Novel Methods

Brand & Logo Design

Product Content & Pitch Deck

To design the logo and look of our venture, we used Looka.ai, a new tool that leads you through choosing an industry, logo examples, colors and symbols, as well as generate assets including physical material mockups . **The amount and variety of generated logos allowed us to choose one that we really liked for the prototype and pitch deck.**

Consideration: Depending on the client, a generative AI logo maker may not be the best option. **It is ultimately a derivative from existing logos and could lead to potential copyright issues if not used properly.** There is also no functionality to edit the generated logos as of yet.



Storytell & Finalize

Transformative Methods

User Interactions

Storytelling

After creating a foundational user persona, we turned to ChatGPT to co-create a six-scene narrative. This AI-augmented approach shed light on potential interactions a user might have with our product. Surprisingly, **this narrative significantly influenced our design choices, enriching the entire narrative experience.**

Consideration: GenAI chatbots can act as a wonderful writing companion. Preliminary narrative concepts are infused with depth, detail, and creative inspiration. **Humans should lead, but GenAI can play a significant role as co-writer, editor and muse.**



Pitch Deck Visuals

Storytelling

To breathe life into our AI-aided story, we explored several text-to-image platforms for quick and efficient generation of visuals to accompany our storytelling. Our search culminated with Midjourney, which, when given specific style directions such as 'black and white pen sketch', **produced images that truly captured the essence of our tale.**

Consideration: Many artists believe that current AI tools have to some extent violated their copyrights, and such **considerations needs to be taken into account when using AI-generated images in production.**

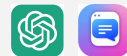


Prototype Copy

Product Content & Pitch Deck

Our prototype relied on digesting medical content and manipulating it through different user interactions. **We turned to AI to prototype the outputs and copy of those interactions (translation, simplification, summarization) and included them in the prototype screens as a proof of concept.**

Consideration: This approach would work for producing draft copy for many different scenarios quickly, **as long as the content isn't primarily being showcased in the prototype.**



Storytell & Finalize

Inspirational Methods

User Journey

Storytelling

We started experimenting with ChatGPT to outline the user journey of a rural patient accessing and receiving care for a health issue. This anchored us in all the typical steps a patient needs to go through **helping us quickly iterate on the design of our research interviews, survey, prototype and user story.**



USER JOURNEY



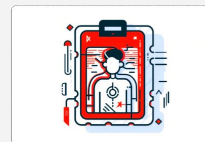
Diagnosis

After diagnosing John Doe with Type 2 Diabetes, you explain his condition and the necessary steps for management. You inform him about HealthTranslate and its benefits.



Registration

You assist John in registering for HealthTranslate. This involves creating a secure account with his basic details.



Integration

HealthTranslate integrates with your clinic's EMR system. You can share John's medical records and diagnosis directly to his account via the API.



Translation

The app's AI will begin translating the medical documents into simple, easy-to-understand language. The tailored medical terminology library and rural cultural contexts are particularly useful in this step.

Storytell & Finalize

Unreliable Methods

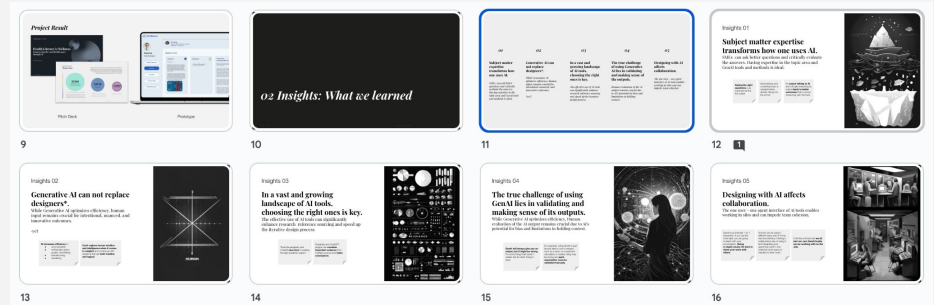
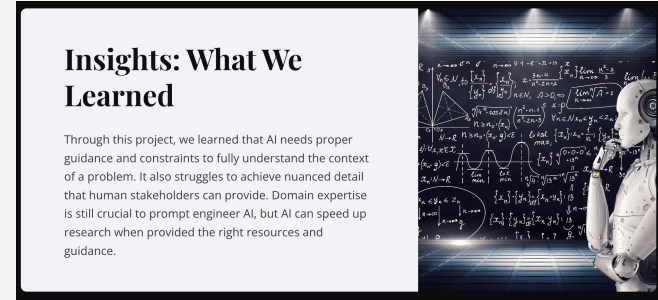
Prompt-generated AI decks

Product Content & Pitch Deck

We explored GenAI for quick generation of the pitch deck. It tried to generate slides around our topic, problem area and the outline. The generated content was appropriate albeit short and simplistic, and the interface makes it easy to play around with visual styles. However, these tools are still **incredibly limited and unable to achieve the level of visual and contextual impact humans can produce.**

Consideration: if you have no inspiration or no idea how to outline and quickly visualize your deck, these tools can provide some starting points. **But they will not get you across the finish line.**

Example: Prompt-generated AI deck



Insights slides in this deck

Conclusion

The Future is right in front of us. New tools. Better methods.

At IDEO, we see the potential for a symbiotic relationship between humans and AI that centers humans—a partnership that helps us bring more rigor to our work and iterate our learning loops at lightning speed to achieve more tangible results. Most inspiring of all is its potential to enable designers to bring humans closer together by designing novel products, experiences, and systems we've never imagined before. We believe the future is bright – with humans flourishing in it.

Jaime Goff, Lead Product Design Manager at Healthworx, articulates it best.

“I think humans will become significantly more valuable. With these tools, you can always get the cookie-cutter ideas, really fast now. This collaboration made me realize that bringing your brain, your nuance and collaboration actually has higher value to me now.”

Thanks!

Other Readings:

Five ways we used AI to work [\[link\]](#)

A legal and ethical framework for AI [\[link\]](#)

IDEO AI & Design [\[link\]](#)

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