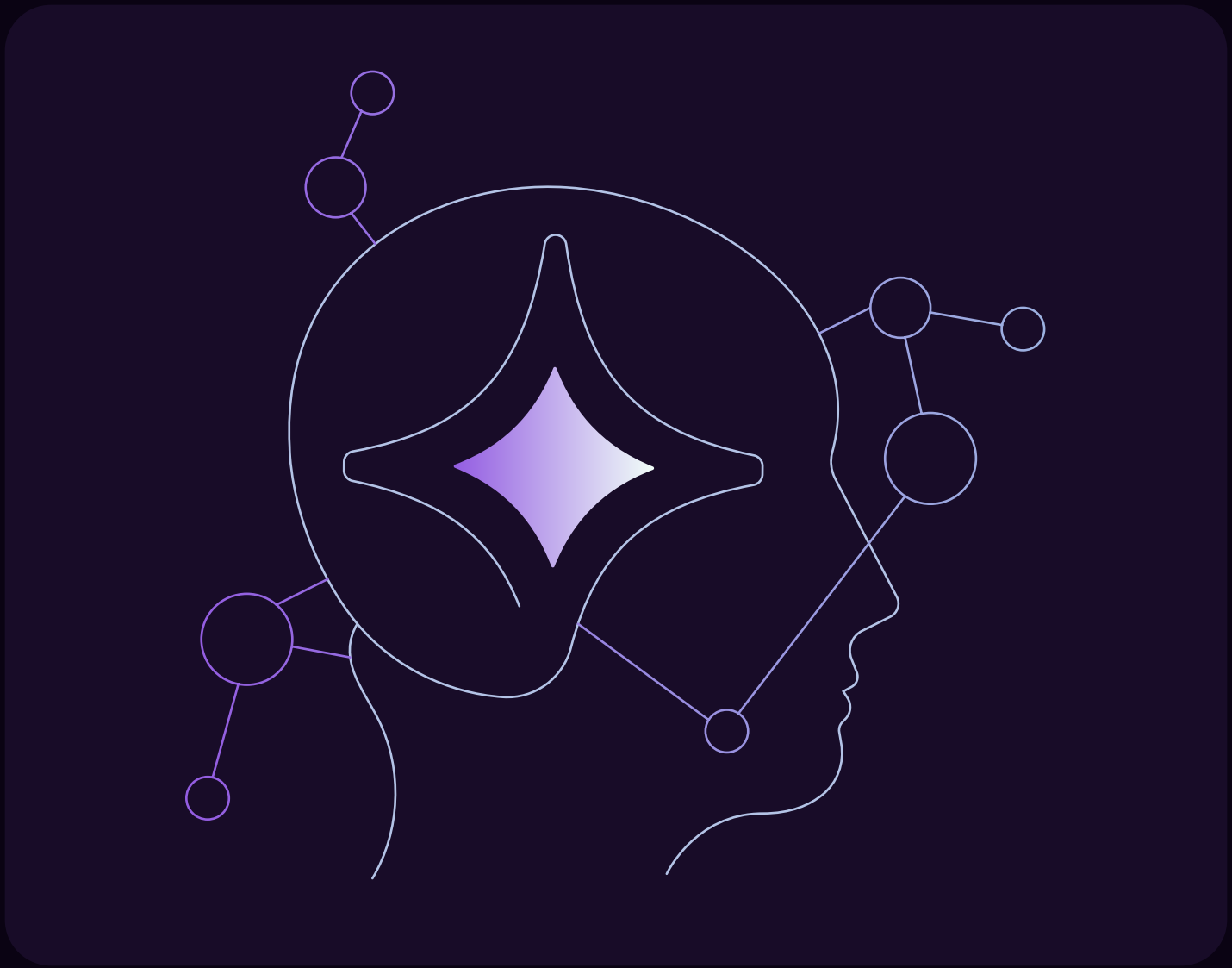
eBook

Cognitive jobs vs. Jobs to be done:

Which is better for AI-augmented design?



Content

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Introduction

As artificial intelligence (AI) evolves at a rapid pace, companies across industries are using the technology to build more personalized and intuitive products.

Product designers, in particular, are tapping into AI's ability to understand and adapt to human behavior, enabling them to craft experiences that align with how people think, process information, and make decisions. This is crucial because we interact with products every day — whether to manage our schedules, improve our health, streamline media consumption, or transport us to our destinations.

A cognitive design methodology, which combines the deep behavioral analysis of AI with traditional design, is perfectly suited for today's tech-savvy consumers who expect a user experience that adheres to their individual behavior and needs.

Research confirms that product designers should be adopting AI-based cognitive design. Survey data from Statista shows that most consumers across all generations support brands that use AI to design products and services.

> "A cognitive design methodology is perfectly suited for today's tech-savvy consumers who expect a user experience that adheres to their individual behavior and needs."

With the rising popularity of AI-powered products, design frameworks have to be adjusted. Conventional design approaches like jobs to be done (JTBD) — a design methodology that focuses on practical outcomes — aren't going to fit the bill for AI-centered design. While JTBD offers valuable insights that help users accomplish tasks, it often overlooks nuances in human cognition and behavior.

This is where the concept of "cognitive jobs," developed by HTEC Momentum, comes into play. In the world of cognitive design (an approach that prioritizes human thought patterns over practical tasks), cognitive jobs refer to what users are thinking, perceiving, and feeling when interacting with a product.

Armed with this information, product designers can use AI tools such as machine learning (ML), natural language processing (NLP), and predictive analytics to examine user behavior and guide users through complex tasks with personalized recommendations.

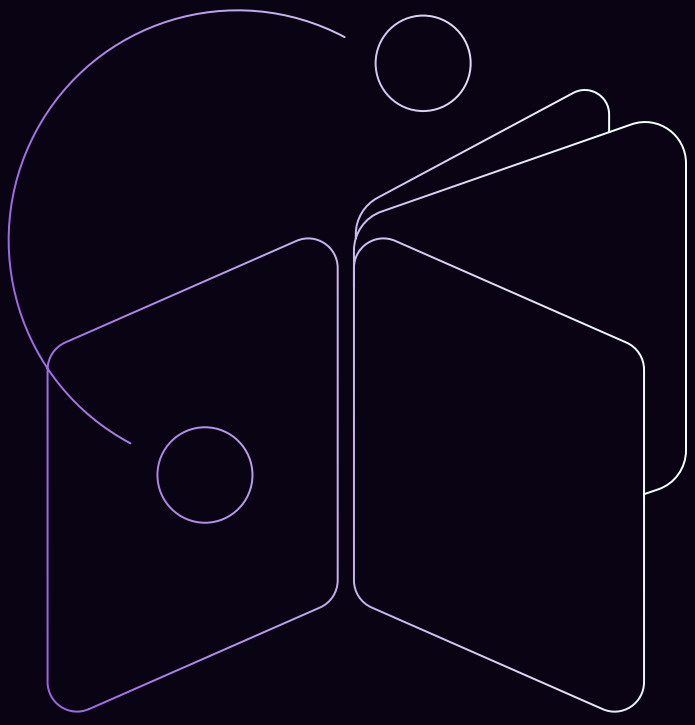
With cognitive jobs as a foundation, companies can launch a new era of AI-augmented product design that feels natural and human.

In this eBook, we'll explore:

- The limitations of JTBD in AI-augmented design.
- The benefits of cognitive jobs in AI-augmented design.
- Brands that have evolved from a JTBD to a cognitive jobs approach.
- Techniques for shifting from JTBD to cognitive design.
- Why cognitive jobs are now the blueprint for AI-augmented design.

Jobs to be done: A surface-level solution for an AI world

Definition of JTBD: A jobs to be done approach to product design involves understanding the job a person expects a product or service to do. It prioritizes the practical task the user wants to accomplish. For example, for a travel app or website the JTBD would be “find a hotel based on price and location.”



JTBD has traditionally focused on the tangible outcomes (i.e., “jobs”) customers need. Designers then build products that efficiently meet those requirements. Here are a few examples of JTBD:

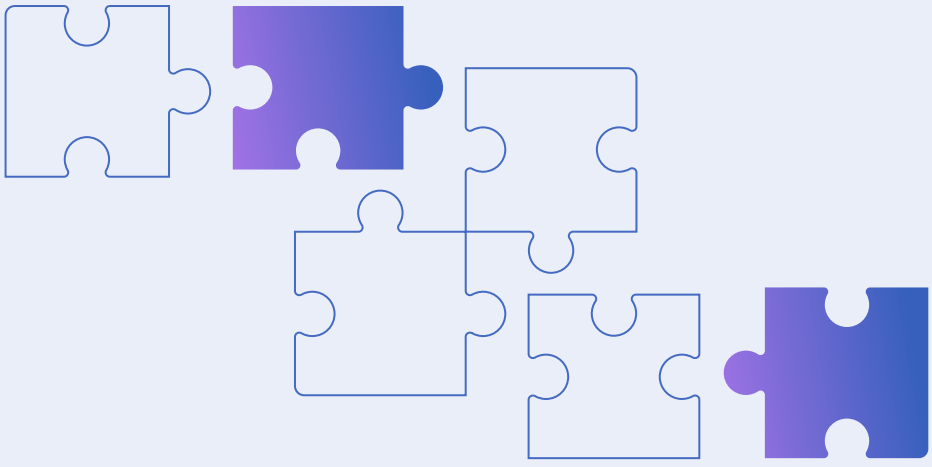
For a streaming service, the job would be “find and play movies and TV shows.”

For a fitness app, the job would be "log workout times and duration."

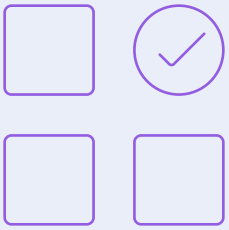
For a budgeting app, the job would be "keep track of monthly expenses."

In each example, the job identifies the customer's needs, which designers use to build the product. For the fitness app, if the job is to log workout data, then the app would include easy-to-use features that let users enter workout information and track trends over time.

However, as AI advances, JTBD paints an incomplete picture and fails to fully capture the complexities of user needs. Even though users may be focused on an outcome, or job, there are additional variables that impact a product’s usability and customer satisfaction. JTBD tasks will always be a crucial part of a product's features — we still need to track workouts or expenses. But simply focusing on surface-level jobs misses an enormous opportunity to utilize cognitive design and AI to anticipate what users need and deliver a more comprehensive solution.



The limitations of a JTBD approach



By designing a series of tasks that end users want to complete, JTBD misses deeper insights about users' behavior, emotions, and thought patterns.

JTBD solves a single, narrow "job":

Having an inflexible view of a "job" in product design stifles innovation. For a streaming app (e.g., Netflix, Hulu), a JTBD approach defines the job as "finding and watching movies and TV shows." While this is helpful, it would only result in a traditional search and discovery platform and offer no insights into why, when, and on what devices the user consumes content. On the other hand, cognitive design would harness AI to analyze behavior patterns to deliver features that enhance the user experience (UX) — such as recommending movies/TV shows based on genre, director, time of day, or viewing history — and send alerts for upcoming content that the user may find interesting.

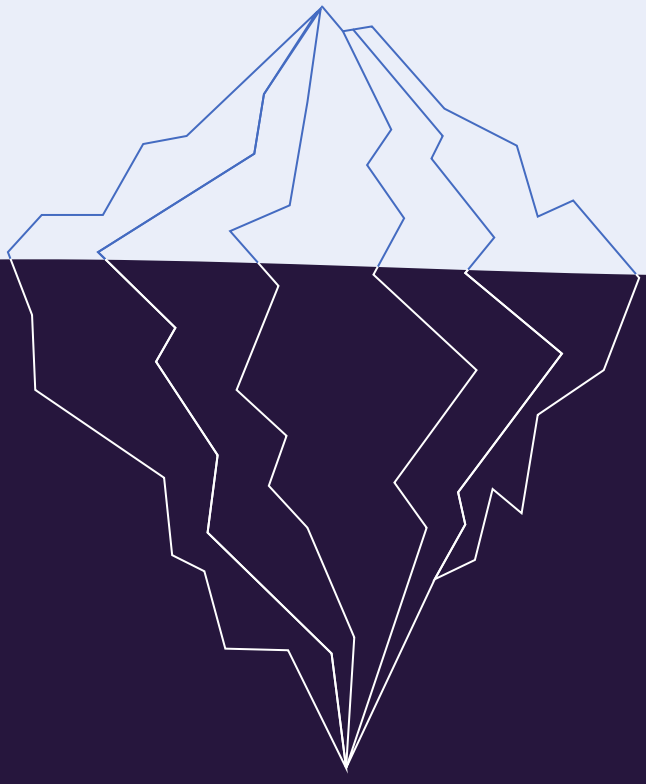
JTBD is strictly task-focused:

Using a fitness app as an example, the JTBD of "tracking workout information" would result in a product with static workout logs, which are certainly useful but too one-dimensional for today's digital consumer. With cognitive design and AI, the app could expand to offer behavioral-based features such as automated alerts to get moving if you haven't exercised recently or reminders to stay hydrated and eat recovery foods if you've been exercising intensely.

With these limitations, JTBD simply can't keep pace with increasing consumer demand for personalization. A recent survey found that 81% of consumers prefer companies that offer a personalized experience, and 70% say a personalized experience in which the company knows your purchase history is important.

AI-based cognitive design provides a great framework to help product designers fill in the gaps left by traditional product design and create products that stay one step ahead of fast-moving consumers.

> "Simply focusing on surface-level jobs misses an enormous opportunity to utilize cognitive design and AI to anticipate what users want and deliver a more comprehensive solution."



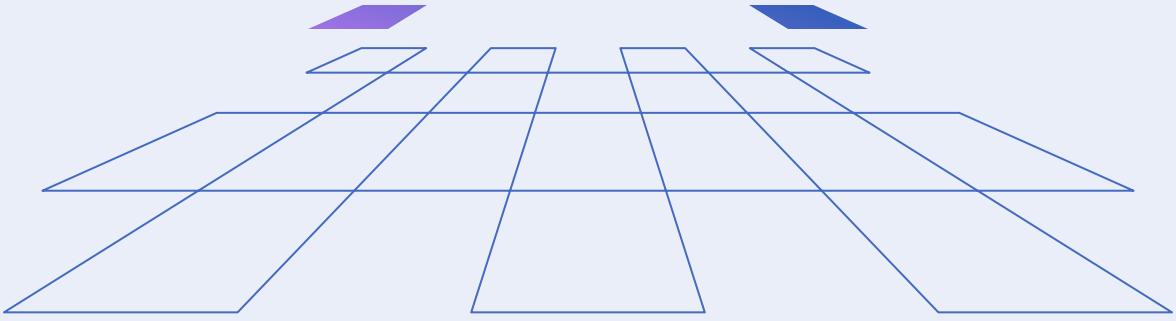
Cognitive jobs and the importance of analyzing user behavior

Definition of cognitive jobs: Cognitive jobs are a foundational component of a cognitive design framework. In a cognitive design approach, cognitive jobs focus on the mental steps and behaviors the average person experiences while engaging with a product. Design teams use research participant data about these steps and behaviors to create AI-augmented products that mimic the jobs and anticipate customer needs.

With cognitive jobs, the emphasis shifts from a surface-level understanding of the user's needs to an approach that considers the user's cognitive processes in decision-making, especially those that are subconscious. For example, when using a navigation app, the obvious job might be getting directions to the destination. However, the cognitive jobs will include:

- Recalling the exact address of the location.
- Estimating the amount of time it will take, based on traffic.
- Deciding between different routes.
- Remembering personal preferences like avoiding specific highways at certain times.

Designing around these cognitive jobs and integrating AI allows companies to build products that cater to users' curiosity and decision-making patterns.



The benefits of AI in cognitive design

The combination of cognitive design and AI creates opportunities for:

AI that enhances working memory:

Working memory, our brain's temporary storage, often gets overwhelmed. It's why we forget to buy eggs after we made a mental note to add them to the shopping list. A smart fridge that uses cognitive design principles and AI could send your digital shopping list to your phone while you're at the store.

AI that expands creativity:

AI can be used to analyze datasets and present users with new, creative ideas. For example, graphic design platforms Canva and Adobe both integrate AI features that generate design templates, suggest colors, and even build entire visual elements.

AI that fills cognitive gaps:

People often lack the knowledge or context to complete a task (or even remember it). Smart calendar apps, like Google Calendar, excel at filling cognitive gaps by using AI to suggest event times and locations, send event reminders, and detect scheduling conflicts and suggest alternative times.

AI that recognizes patterns:

AI tools notice patterns that elude most people. Fitness and health apps such as Fitbit and Apple Fitness+ thrive on pattern recognition. These apps use AI to monitor heart rate, sleep, and activity levels to identify physical performance concerns and potential health issues — such as a rising heart rate caused by stress and poor sleep habits.

Cognitive jobs are the backbone of cognitive design as they help designers build products based on how users process information and make decisions. Modern AI technologies — including ML, NLP, sentiment analysis, and predictive analytics — help put these concepts into practice by identifying patterns and generating actionable insights to create more responsive and personalized products.

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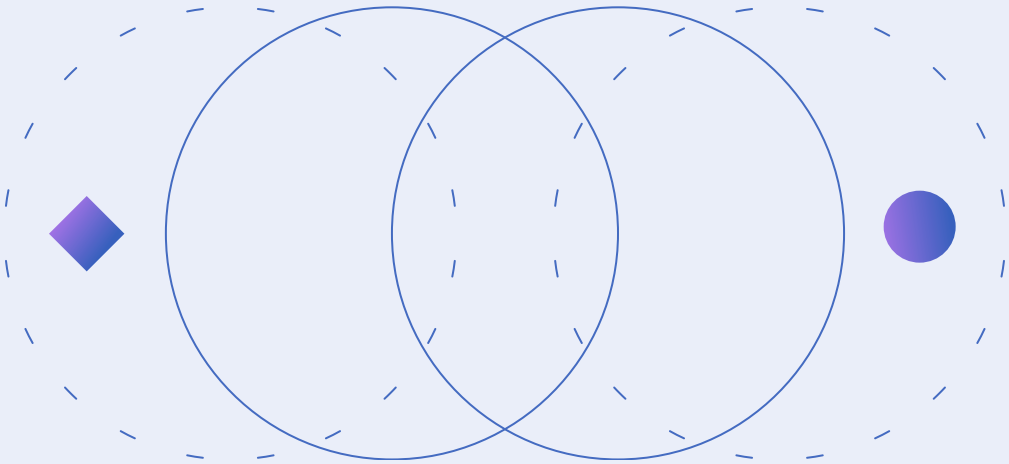


The cognitive jobs approach: Diving deep for better product design

JTBD: A surface-level solution in an AI world

With the rise of AI-powered products, conventional design approaches like jobs to be done (JTBD) are too one-dimensional for digital consumers. While JTBD focuses on a single user task, it misses additional user needs and thought processes.

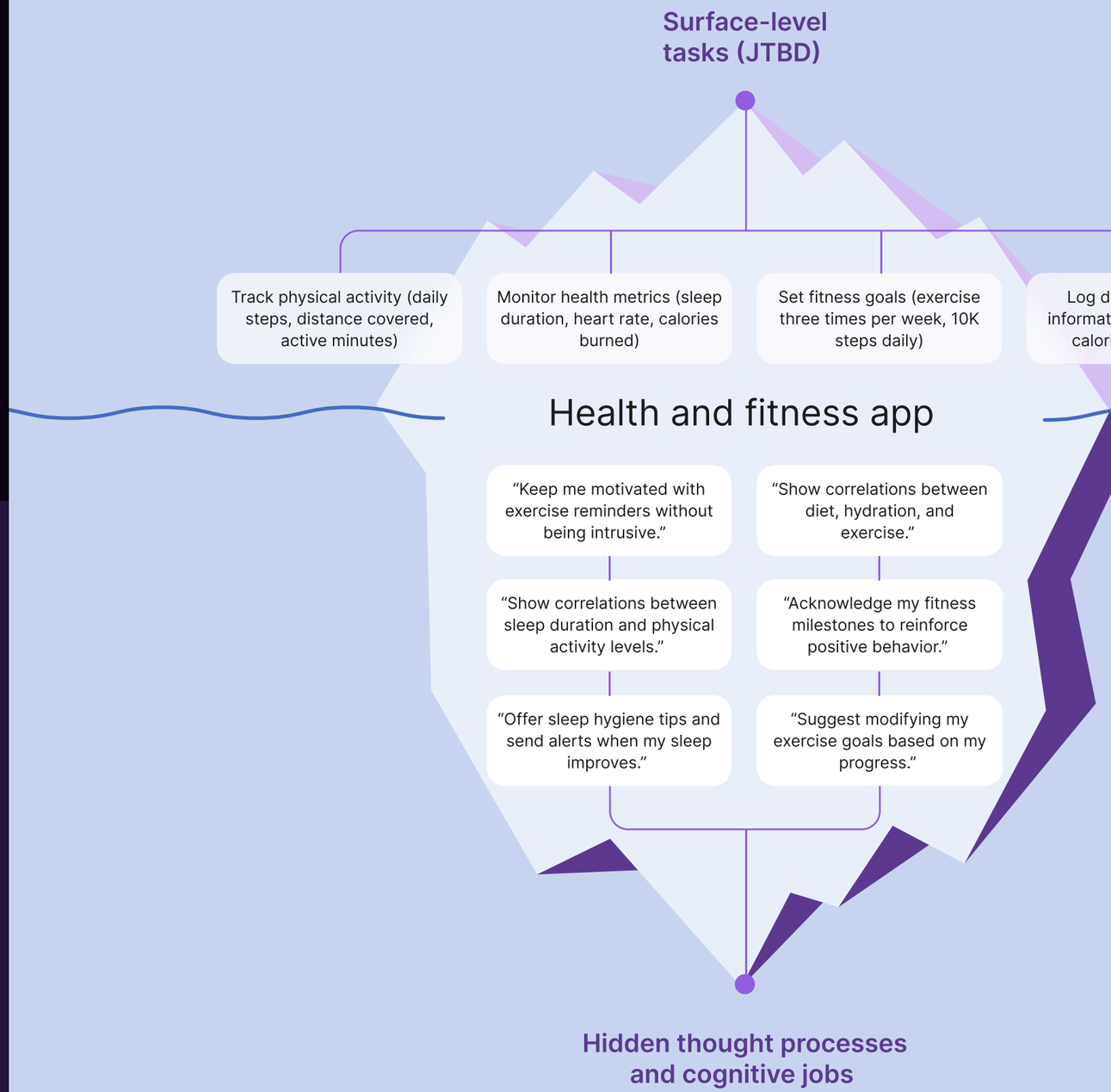
Cognitive jobs: Diving deep to merge human thinking, AI, and design

Here's where cognitive jobs can help. Cognitive design prioritizes human thought patterns over practical tasks. It considers how users think and feel when interacting with a product — the "jobs" they complete when making decisions and solving problems.

Using both approaches, design teams can create products that fulfill basic outcomes (JTBD) and enhance them with cognitive jobs analysis and artificial intelligence (AI) to create more responsive and personalized products.

Let's explore the differences between JTBD and a cognitive jobs approach using a health and fitness app (i.e. Fitbit, MyFitnessPal, Apple Health) as an example.

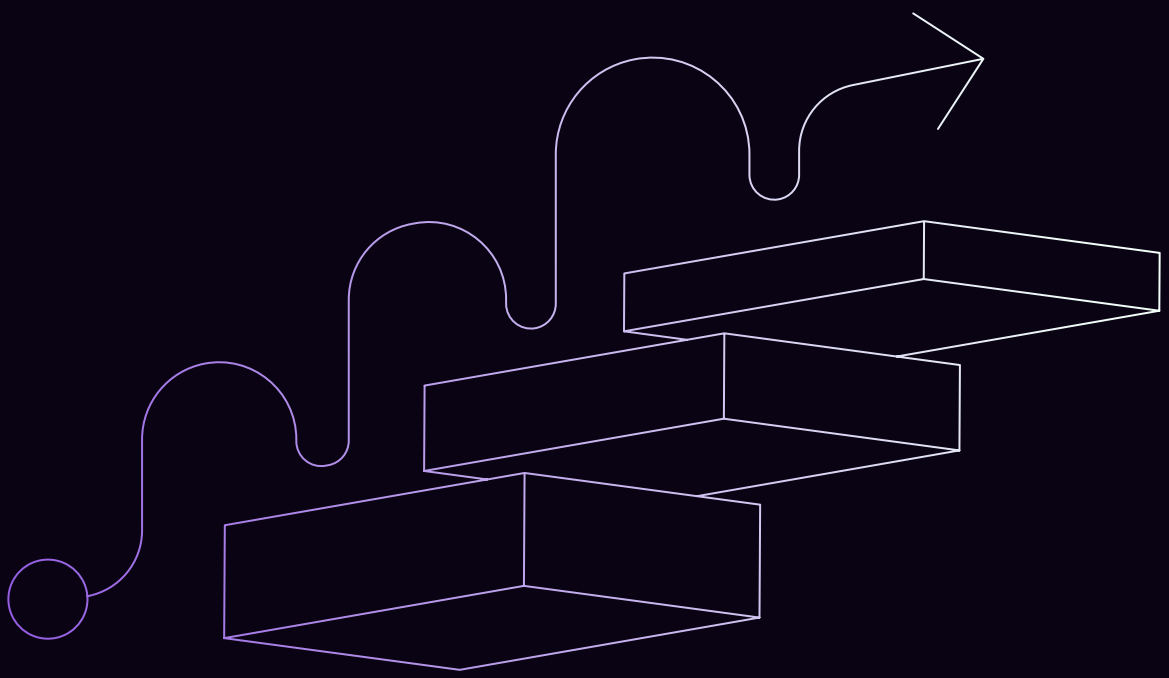
In our iceberg metaphor, the tip represents the app's surface-level tasks while the underwater portion represents the hidden cognitive jobs that inform how users think, decide, and act when tracking health and fitness goals.



Evolving from jobs to be done to cognitive jobs

The stakes are getting higher to enhance product design with AI. According to research firm IDC, worldwide spending by businesses on AI, including AI-enabled applications, will more than double over the next four years, reaching $632 billion by 2028.

Various companies are shifting towards cognitive design as they adapt their apps and products to carry out cognitive jobs and leverage AI. Highlighted on the following pages are three examples of JTBD-to-cognitive-job product evolutions.



Fitbit
(Health and fitness tracking)

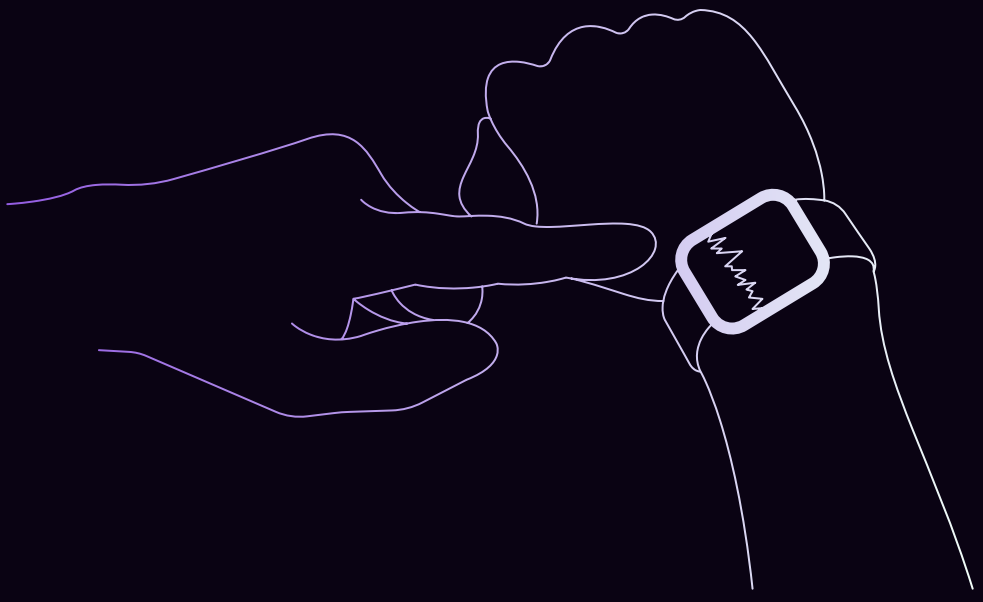
01

JTBD:

A common job for Fitbit users is to “lose weight and track my progress”. Using the traditional JTBD approach, older Fitbit models included features such as daily activity tracking, calorie counting, and visualization tools that show progress. The app was designed to help users accomplish specific, outcome-oriented tasks.

Cognitive jobs:

With a cognitive jobs approach, Fitbit still features tracking and metrics but is evolving with AI to help users understand their health and make decisions. For example, Fitbit could identify that a user logs fewer steps during the weekends and send motivational reminders. Additionally, the company’s Fitbit Labs program developed Insights Explorer, an AI-based voice activation feature for users to ask questions about activity, sleep, and heart-related metrics and get personalized answers from the app.



Spotify (Music streaming)

02

JTBD:

A typical job for a Spotify user is to “discover new music and artists” and with a JTBD approach, Spotify addressed this goal through features such as a search engine, pre-made playlists, and artist recommendations.

Cognitive jobs:

With a cognitive jobs approach, Spotify uses AI to analyze behavior patterns to recommend music based on themes, moods, or time of day. Spotify is pushing AI innovation with a new feature called AI Playlist where the app creates a customized playlist based on user prompts, such as: “I’m looking for an indie folk playlist to feel all warm inside.” This feature is a smart pairing of cognitive design and AI as the playlists are based on your listening history (user behavior analysis) and songs the algorithm thinks you’ll like (NLP and deep learning).

Waze (GPS and navigation)

03

JTBD:

The main task for Waze users is to “reach their destination as quickly as possible.” To address this specific outcome, the JTBD approach for Waze included real-time traffic updates, automatic rerouting based on traffic conditions, and alerts for delays due to accidents.

Cognitive jobs:

A cognitive jobs approach maintains the goal of providing the fastest route, but it also focuses on enhancing the overall driving experience. For instance, Waze uses AI to detect a driver approaching a complex intersection and offer audio prompts to help the driver prepare. Additionally, Waze recently rolled out a new safety feature that uses AI to analyze crash report data, send alerts if a street on your trip has a history of crashes, and then suggest alternative routes.

These three apps are great examples of how successful companies are always evolving. For each company, the original “job to be done” remains the heart and soul of the app, but they’ve all used AI and cognitive design to examine users’ thought processes and provide them with additional features and functionality they didn’t know they needed.

Techniques for shifting from JTBD to cognitive design

The previous three examples showed cognitive jobs in action, but integrating this framework into product design requires deeper analysis. Traditional JTBD approaches rely on identifying the user's circumstances and tasks, but cognitive design goes further, uncovering hidden thought processes, emotions, and decision-making patterns.

To leverage cognitive design principles, companies must first identify and validate potential cognitive jobs. This process demands empathy to help reveal the user's mental models, reasoning patterns, and emotional drivers.

Most cognitive design teams research, analyze, and validate insights from real users. The right research techniques can show the invisible cognitive work involved in tasks and help determine which cognitive jobs are ripe for human-AI collaboration.

Let's explore the main research techniques for cognitive jobs, including:

- Cognitive interviews
- Concept mapping
- Behavioral experiments
- Emotion detection
- Interactive feedback loops
- Cognitive walkthroughs
- Longitudinal studies

Cognitive interviews

Cognitive interviews ask users detailed questions with the goal of uncovering how they think, make decisions, and solve problems when interacting with a product. Typical cognitive interview questions include:

- Which factors take up most of your mental focus when making decisions? Which ones do you gloss over?
- What knowledge or past experiences inform your thinking?
- What data would help strengthen your reasoning?
- When do you feel cognitively overwhelmed?
- How might you think through this problem differently with an AI agent to assist you?

Cognitive interviews are recorded and analyzed by product teams to identify where AI could assist users more effectively. For instance, if interviewees using a budgeting app are struggling to understand how certain expenses will affect their monthly budget, designers can use AI-based predictive analytics and visual cues to provide spending estimates.

Concept mapping

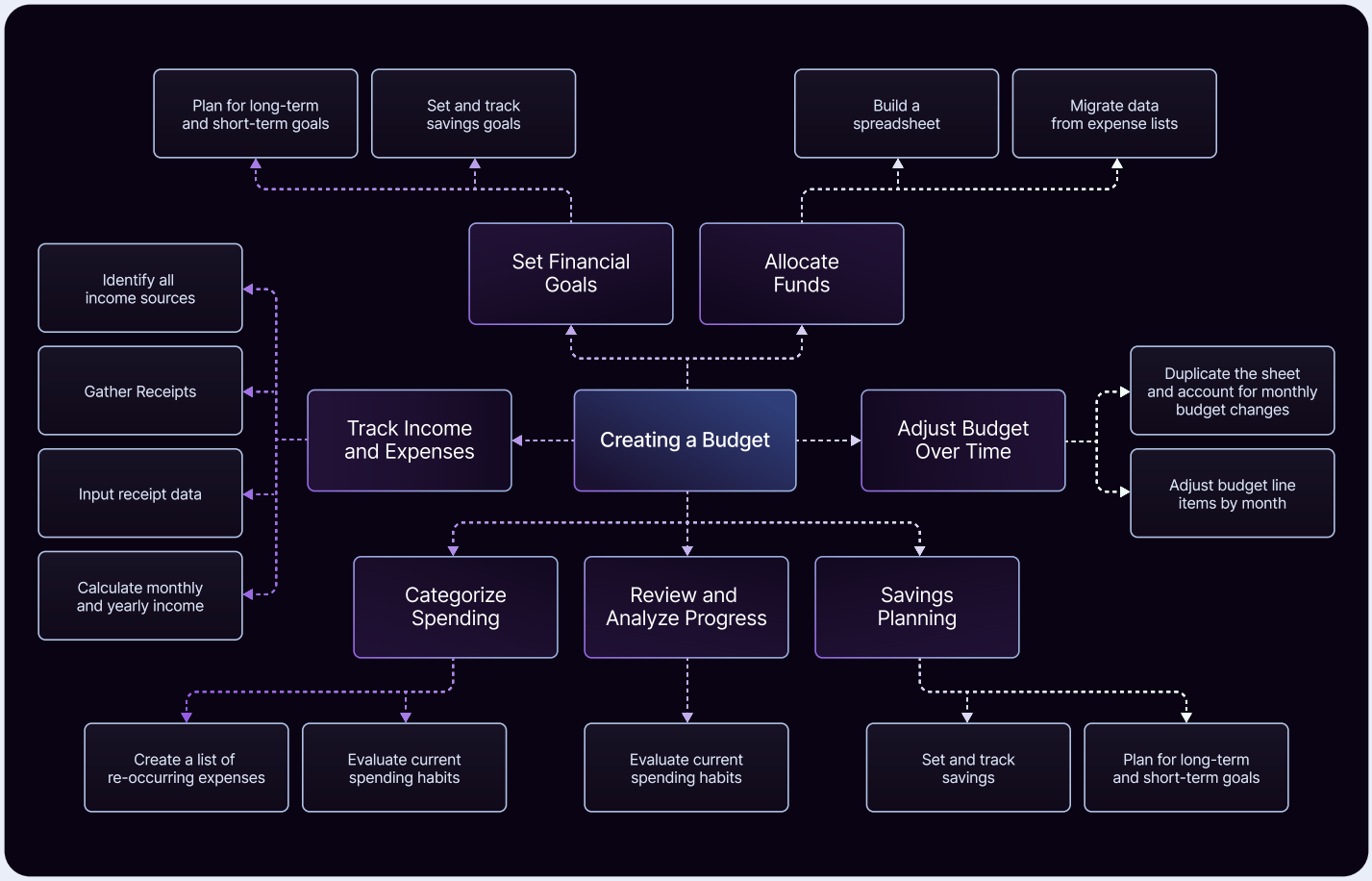


Fig. 1. Example of a concept map for budget creation.

With concept mapping, a user helps create a visual map of the mental steps, thoughts, and decisions necessary to complete a task. This process helps designers pinpoint specific moments in the cognitive journey where users feel uncertain or require additional information. These maps highlight opportunities for AI tools to step in, offering guidance or automating repetitive tasks to reduce cognitive load.

What does this look like? Unlike surface-level observations and a JTBD approach that focuses on “what” users are doing, cognitive jobs focus on "how" they are thinking. By understanding these deeper layers, designers can identify opportunities where AI can enhance cognition, providing targeted support to combat mental overload and support complex decision-making or problem-solving scenarios.

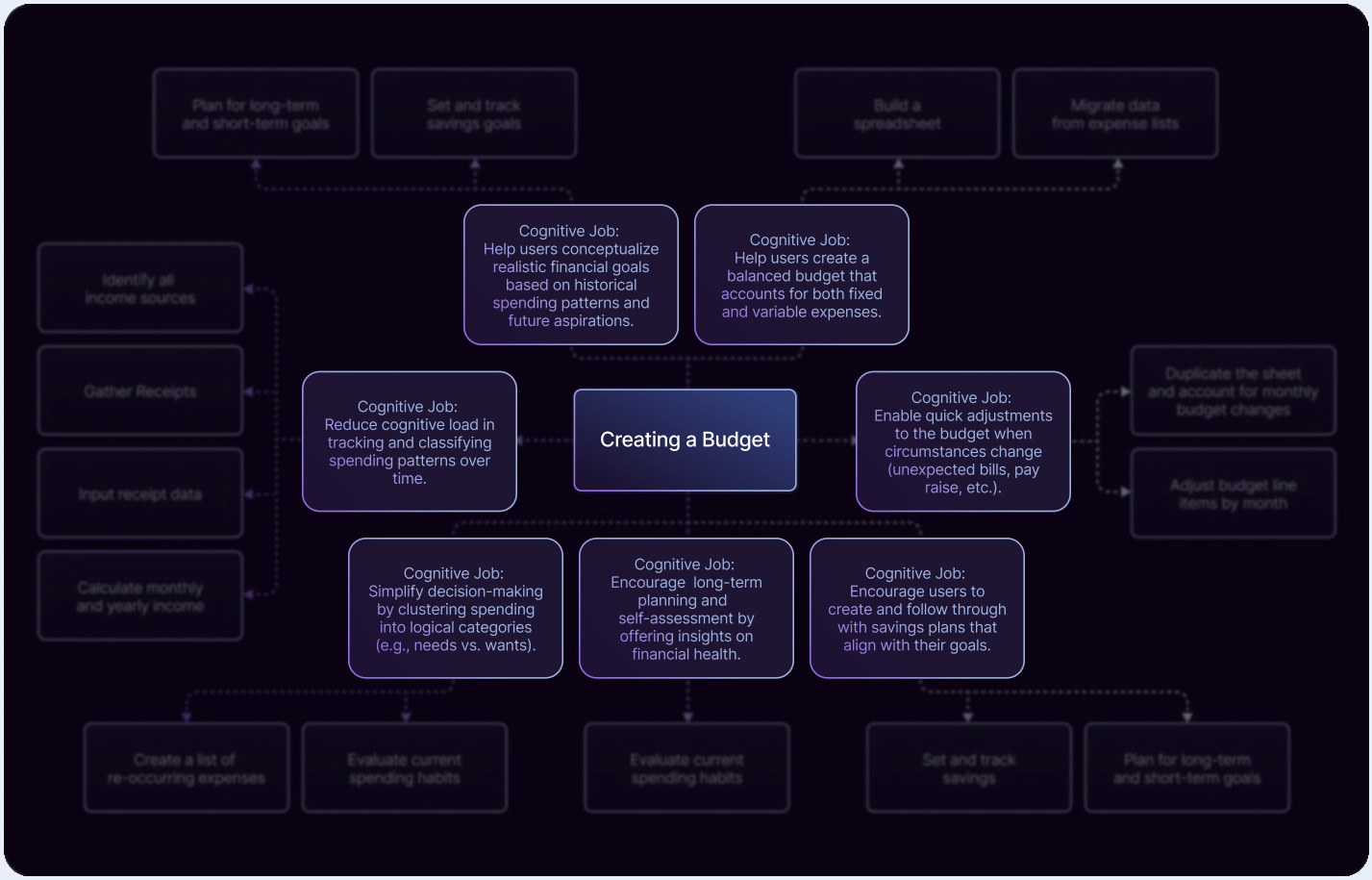


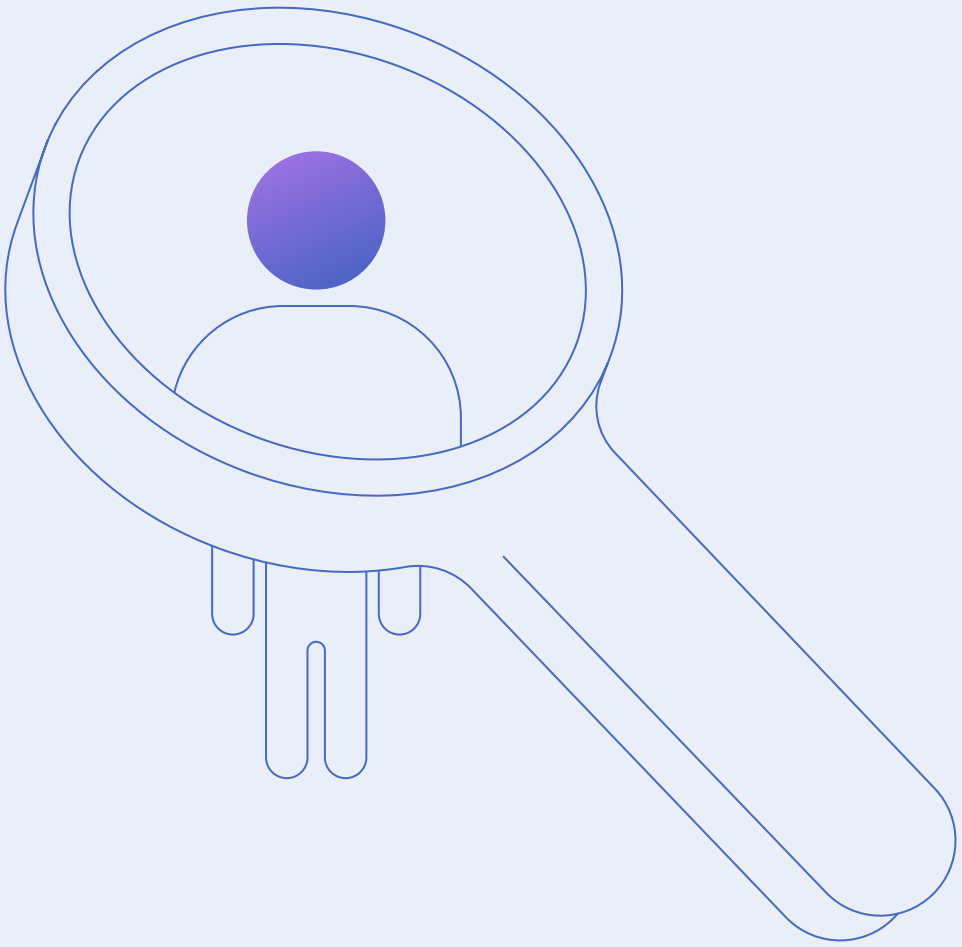
Fig. 2. Example of concept map for budget creation with cognitive jobs overlay.

> “Research techniques show the invisible cognitive work involved in tasks and help determine which cognitive jobs are ripe for human-AI collaboration.”

Behavioral experiments

Behavioral experiments test how users interact with a product under real-world conditions. For instance, with a personal finance app, a behavioral experiment would test users' reactions to an AI agent giving them spending recommendations.

The negative (and positive) feedback designers collect from behavioral experiments helps them refine AI features early in the development cycle, avoiding costly fixes later in the process or, worse, after the product is launched. Also, discovering user pain points and fixing them early greatly improves the chances the final product will align with user needs.



Emotion detection

Emotion detection uses AI to uncover cognitive jobs related to a user's feelings. With this research technique, designers rely on the nuances of human expression and movement to indicate a user's pleasure, confusion, or frustration with a product. Designers can then adjust the user interface to be clearer and more visually calming or offer simple audio prompts for guidance.

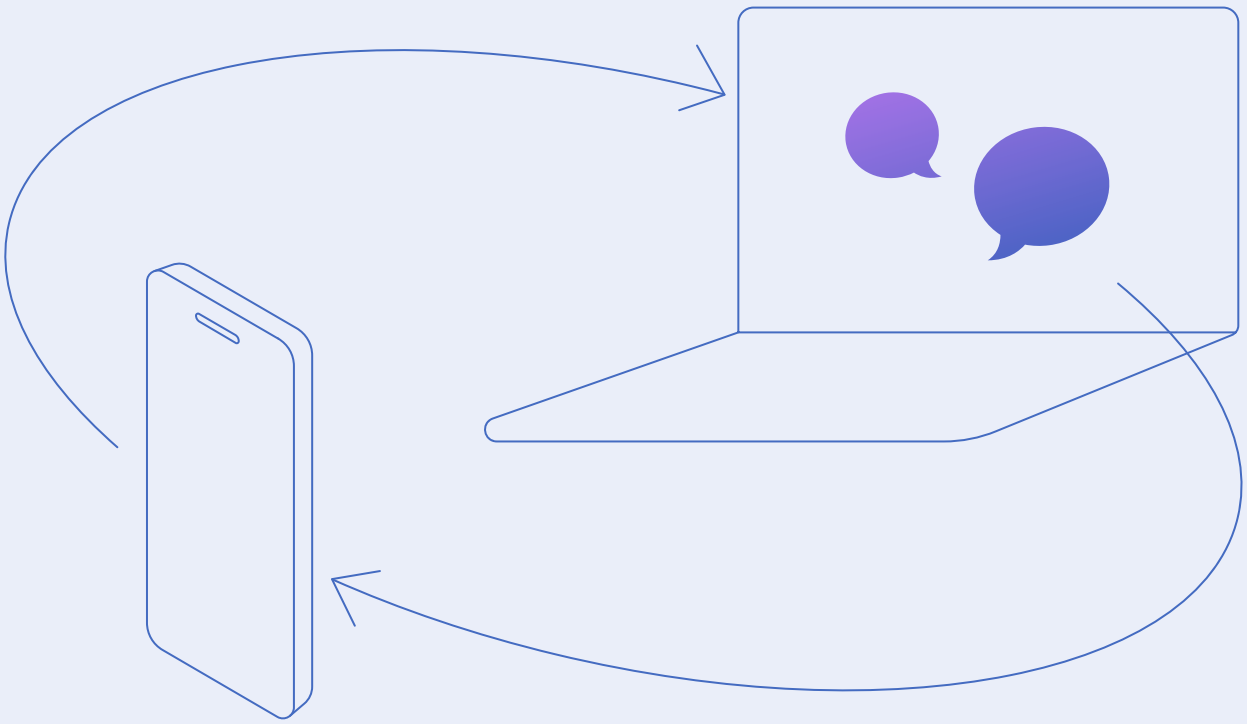
Common emotion detection analysis includes AI-based techniques such as:

- Facial expression analysis using deep learning models trained on facial images.
- Voice analysis via deep learning to discern emotions from vocal signals.
- Text examination via sentiment analysis and NLP to detect emotions in written language.
- Behavioral analysis via computer vision to analyze gestures or posture for insights about emotional states.

Interactive feedback loops

An interactive feedback loop in a product utilizes its AI system to continuously gather data on users' interactions with the product. User responses are gathered in various ways, including in-app surveys and interviews as well as active, structured feedback and spontaneous, passive data.

This ongoing feedback cycle builds upon itself, helping designers measure if the product's features are supporting users' cognitive jobs. If users consistently report confusion, it's an indication the cognitive support provided by the product is falling short. Designers can use this feedback to simplify a user interface or modify an algorithm to make more helpful suggestions.



Cognitive walkthroughs

Cognitive walkthroughs are sessions where designers record users' thought processes as they use the product. During walkthroughs, users navigate different task scenarios and vocalize their thoughts while researchers ask questions.

Typical cognitive walkthrough questions include: What information did you find helpful here? How did you decide to take this action? Did anything confuse you during this process?

Walkthrough data reveals cognitive friction points in a product such as uncertainty or repetition as well as "a-ha!" moments in which a user's understanding crystallizes. These "a-ha!" moments help designers validate that the app is intuitive and easy to navigate. But regardless of whether feedback is positive or negative, designers should always be using cognitive walkthrough data to improve the product.

Longitudinal studies

Longitudinal studies observe, via surveys and interviews, how the same user interacts with a product over weeks, months, and even years.

By gathering data from longitudinal studies, designers see how user behavior changes over time. For instance, a longitudinal study of an exercise app would show that user engagement fluctuates with the seasons, which helps designers know when users need more motivation or workout recommendations. Ultimately, these studies allow designers to maintain high retention rates because they are using real-world cognitive jobs data to continually finetune the product.

Some key insights uncovered by longitudinal studies:

- Novice users tend to focus cognitive jobs on skill building. As they gain experience, the jobs transition to quick pattern recognition and nuanced judgment calls.
- Users' priorities often shift from learning facts to contextualized decision-making grounded in practical wisdom.
- Expertise may create biases in users such as overconfidence in their intuition.

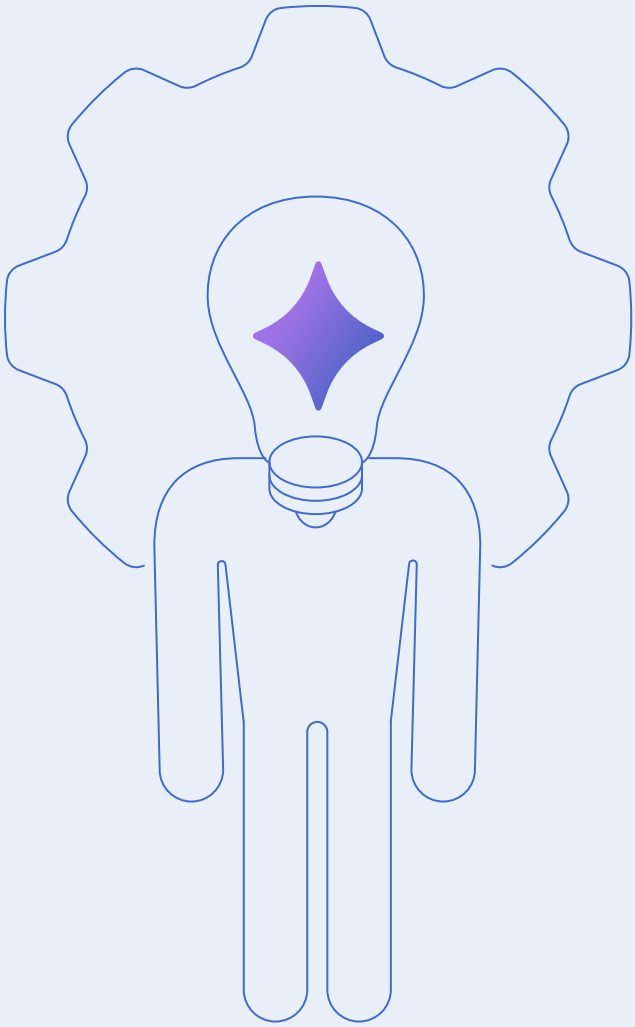
Cognitive jobs: The blueprint for AI-augmented design

The transition from jobs to be done (JTBD) to cognitive jobs highlights a monumental shift in product design in the age of AI.

While JTBD provides valuable insights into the practical tasks users want to accomplish, it often lacks the depth to understand human thinking. Cognitive jobs, on the other hand, support human behavior in all its complexity, allowing designers to craft experiences that resonate with users on a deeper level. By integrating AI tools with cognitive design principles, companies can not only meet explicit needs but also anticipate subconscious ones.

As AI-augmented design expands, the application of cognitive jobs will be crucial for product teams. Using research techniques like cognitive interviews, concept mapping, and longitudinal studies, designers can continuously uncover cognitive patterns and validate their designs to increase customer satisfaction and launch successful products to market.

"By reconceptualizing JTBD as cognitive jobs and implementing a cognitive design methodology, we help companies design AI-powered products that support working memory, mitigate cognitive bias, promote long-term learning, and ensure cooperation between machines and humans."



Embracing cognitive design and AI

At HTEC Momentum, our ethos is human-focused design. Our goal with AI-augmented design is always to enhance human potential rather than merely optimize workflows with automation.

By reconceptualizing JTBD as cognitive jobs and implementing a cognitive design methodology, we help companies design AI-powered products that support working memory, mitigate cognitive bias, promote long-term learning, and ensure cooperation between machines and humans.

AI-based cognitive design depends on companies embracing these core principles—but they also need to embrace change. Companies can only make the leap from JTBD to cognitive jobs if they are willing to perform real-world testing and validation that allows human-centered AI design to flourish.

Are you ready to leverage cognitive design in your product design process?

Connect with an expert today!

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