

The Intersection of design thinking, AI and healthcare UX



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Abstract

This whitepaper explores how AI is re-engineering design to address the evolving needs of the healthcare industry and enhance user experience (UX). It presents a structured narrative around key principles, methodologies, brand-led case studies and practical recommendations for improving healthcare UX. The objective is to help stakeholders design AI-powered, human-centered solutions that are both effective and adaptable.

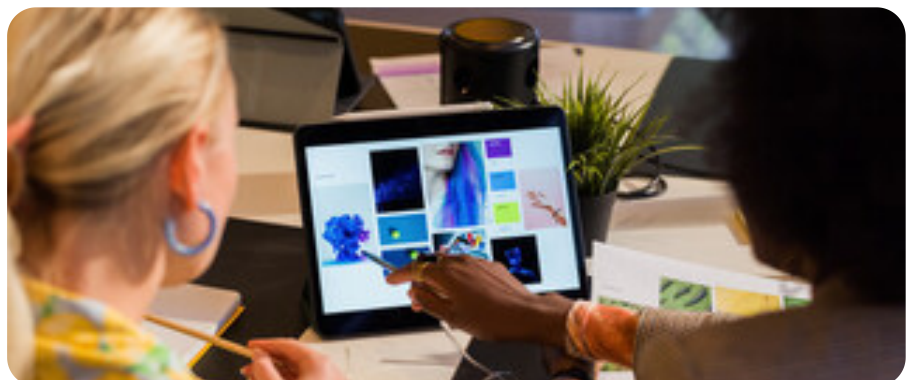
Introduction

Design thinking is evolving, requiring teams to identify problems continuously and respond to ever-changing needs. AI helps ease this time-intensive process while enhancing creativity by bringing computational capabilities that improve accuracy, speed and scalability. It enables teams to process large datasets more efficiently and accelerate prototyping, allowing them to understand problems from a more cohesive perspective. As a result, teams are better equipped to make informed decisions that are often undervalued across industries. While supporting stronger decision-making, AI also gives individuals greater space to uphold essential values such as safety, empathy and ethical judgment, all of which are critical in the healthcare industry.

Intersection of design thinking and AI

Design thinking is fundamentally centered on addressing human needs – something that requires human understanding and empathy. While AI cannot replicate human creativity or empathy, it can significantly enhance the design process by providing incremental feedback, analyzing trends and identifying unmet user needs across diverse user groups. By combining human strengths such as creativity and empathy with AI's computational power, teams can accelerate forecasting and facilitate a more informed and effective decision-making process.

To better understand its impact, let us examine how the convergence of design thinking and AI can drive comprehensive benefits across the system.



Source: Adobe Stock
Image Represents how design thinking and AI benefit the system

AI enhances design thinking

Human empathy is rooted in understanding the user. Now, imagine having the ability to understand thousands of users simultaneously. That reflects just one dimension of what becomes possible through the convergence of AI and design thinking.

When two distinct sets of capabilities come together, they can significantly enhance creativity and innovation. Human strengths such as empathy, creativity, innovation, intuition, consciousness and self-awareness, intersect with AI capabilities such as rapid pattern recognition, accuracy, multidimensional data synthesis and parallel data evaluation. Together, they create a more AI-enhanced approach to innovation. In simple terms, AI enables deeper and faster insights into user analysis, helping teams make better design decisions at scale.

AI enhanced innovation



Human values

- Empathy and emotional understanding
- Creativity and innovation
- Intuition
- Consciousness and self-awareness



AI values

- Processing speed
- Consistency
- Broad and various perspectives
- Multitasking

AI-design thinking analysis

AI enables teams to collect, process, analyze and interpret user data at a scale with greater accuracy and efficiency. As a result, it strengthens the empathize and define phase of design thinking. It also helps designers uncover emotional, behavioral and contextual insights during the requirements of sign-off and pain-point discovery — insights that might otherwise go unnoticed.

The following techniques illustrate how AI supports user understanding and decision-making in practice:

Sentimental analysis

AI can evaluate social media posts, reviews and other forms of digital feedback to generate indirect user insights at scale. In addition, it can consolidate and surface findings from focused surveys, helping teams analyze and group user perceptions and emotions more effectively. This supports a deeper understanding of user needs, experiences and expectations.

Example: A simple sentiment analysis example with three categories placed side by side

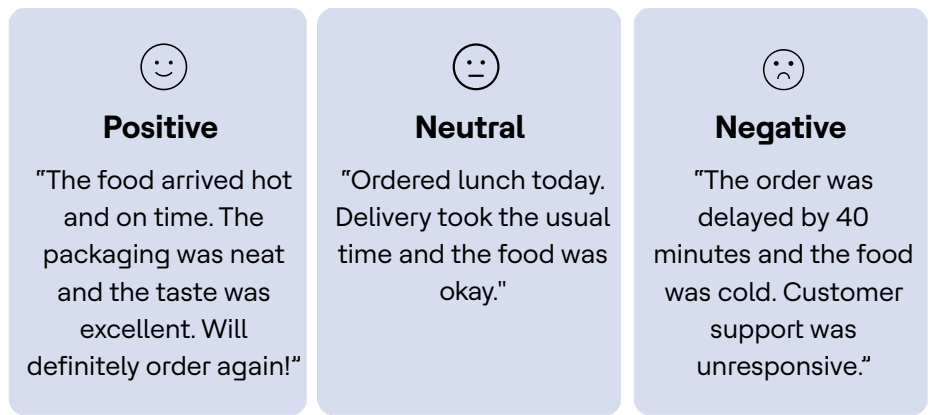


Image represents sentiment analysis categorizing feedback

Behavioral pattern recognition

AI can identify correlations in usage patterns, account for seasonal peaks and troughs over time, and analyze trends within historical data. This helps teams uncover recurring behaviors and make more informed design decisions based on real-world usage insights.

Example: In a healthcare setting, AI can be used to analyze patient walking patterns within hospitals to help design more intuitive, accessible and user-friendly environments.



Image represents AI analyzing behavioral patterns in healthcare using digital data insights

Persona development

By analyzing demographics, user behavioral patterns and other relevant insights, AI can help create evidence-based user profiles from large volumes of patient data. This enables teams to build more informed and representative profiles that support better design decisions.

Predictive analysis

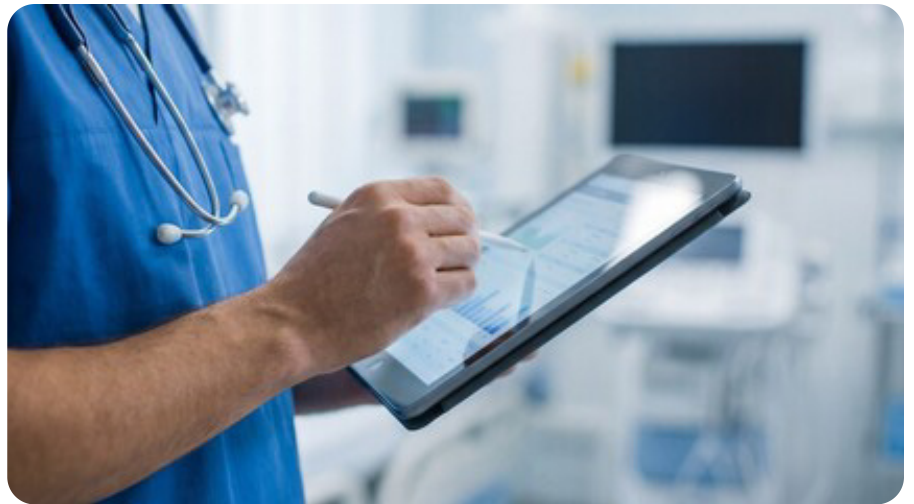
AI can help anticipate user behavior, as well as potential risks and challenges in advance, by drawing predictive insights from large-scale data. This allows teams to plan more proactively and design with greater foresight.

Data visualization

AI supports the interpretation of patterns by translating complex datasets into visual formats that are easier to understand, analyze and act upon.

AI operationalizes design thinking

As healthcare accelerates its transformation journey globally, AI, with its built-in computational capabilities, is enhancing human-centered design and driving a meaningful shift in clinical workflows. In combination with design thinking, AI helps ensure that technology is aligned with real-world needs and delivers value across stakeholders.



Source: Adobe Stock

Image represents AI improving healthcare through smart, design-driven clinical workflows

Essential UX principles that guide development

Human-centered AI systems in healthcare must be built on processes that are transparent, supportive and accountable. The following UX principles can help guide the development of such systems:

- The system should present its decision-making process through clear explanations that communicate both the reasoning behind its recommendations and the basis on which those recommendations are made.
- The design of Human-Centered AI should encourage stakeholder ownership, with AI systems functioning as trusted assistants rather than replacements.
- The system should deliver experiences that reflect the needs of various stakeholder groups, including medical staff, healthcare providers and patients.
- To reduce unnecessary effort and workflow disruption, AI capabilities should be integrated directly into EHRs (Electronic Health Records) and other clinical tools.

- The system should safeguard patient information through encryption, control access and clear consent mechanisms.
- The interface should remain simple and intuitive, with easy navigation, voice commands and predictive text features that support usability.

Brands and AI in UX

Let us look at how leading brands are thoughtfully applying AI-driven UX in their systems.

- **Duolingo:** The language-learning app uses GPT-4 along with its in-house model, Birdbrain, to analyze learning patterns and deliver real-time feedback. Following the roll-out of AI-driven features, the platform has reported strong growth and deeper user engagement.
- **Spotify:** This leading Swedish audio streaming platform uses an AI DJ to curate personalized playlists and provide voice-based commentary. It has resulted in a more interactive listening experience, with users spending a notable share of their active listening time engaging with the feature.
- **Sephora:** This global beauty retailer uses AI to enable virtual try-on experiences and personalized product recommendations. These capabilities have contributed to stronger online performance, including a reported 35% increase in online makeup sales following AI adoption.

Importance of UX design in healthcare

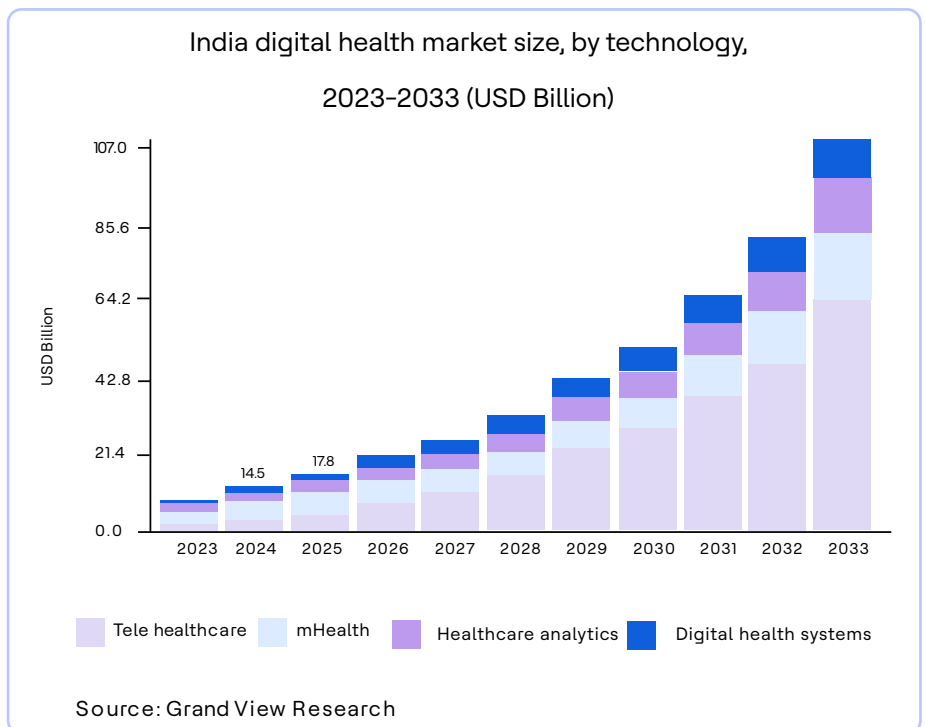


Image represents Indian Digital Health Market Statistics Grand View Research

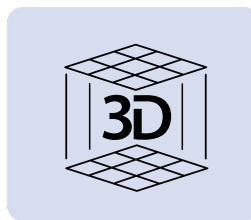
According to [Grand View Research](#), the healthcare tech industry is one of the fastest-growing in the world, with projected global revenue of USD 2,864.39 billion in 2033. In this context, the convergence of UX design in healthcare is essential to ensuring that complex data and high-stakes decisions are handled in ways that are accurate, effective and empathetic. As a result, stronger UX can improve adoption, outcomes and trust across stakeholders.

UI/UX medical trends 2025

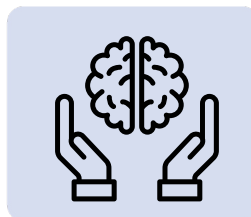
Let us look at how UI/UX is evolving across the healthcare technology ecosystem to improve trust and usability -



Digital healthcare is shifting from generic tools to more specialized medical-grade software. Personalized UX plays an important role in this transformation by ensuring that patient information is captured and interpreted in the context of each individual's health profile, age and progress.



3D printing is also emerging as a valuable innovation in healthcare. Its ability to support the development of organs, tissues and medical models can simplify certain aspects of clinical and research work, while also creating new opportunities for precision and planning. These solutions should be designed to support medical professionals, with intuitive interfaces that reduce complexity and make day-to-day work easier through user-friendly tools and systems.



The growing demand for mental health and telepsychiatry applications highlights the need for highly focused, purpose-driven experiences. These platforms should be clearly aligned to the category of care they serve and designed to feel calm, comforting and easy to use. In particular, the user flow should be seamless so that individuals feel safe, supported and secure while engaging in digital therapy.



Healthcare chatbots are becoming another important area of UX innovation. Integrating bots into medical settings can help reduce pressure on frontline hospital staff by enabling patients to communicate their needs, describe complaints and schedule appointments more easily, without long waits on phone lines.



Another significant development is the integration of VR and AR into healthcare. These technologies can help doctors practice procedures in advance, while also supporting patient wellbeing, for example by reducing stress and fear through immersive experiences during treatment.



The shift toward digital libraries is also transforming healthcare access and efficiency. Reports, consultation documents, bills and prescriptions can increasingly be retrieved from anywhere in the world at any time, improving convenience and continuity of care.



Biometric identification is another advancement that can simplify access while strengthening security. Since people often forget passwords and medical documentation requires strong protection, features such as facial recognition and fingerprint authentication can make the process both easier and more secure.



Finally, technology-enabled connected devices are making remote monitoring more practical and efficient. These tools allow patient data to be tracked and shared with doctors remotely, saving time while supporting more continuous and responsive care.

Best strategies and practices for designing healthcare UX

Minimalistic UI

Visual clutter can severely hinder decision-making. This is why a minimalist UI in virtual systems supports efficient navigation and helps users focus on essential actions, improving the overall experience.

Design for accessibility

Key design practices, such as large fonts, strong color contrast, simple language, intuitive user flows, Text-to-Speech (TTS) capabilities, help ensure inclusive experiences across diverse user groups.

Data visualization

Clear data visualization transforms complex medical reports into simpler

data formats, helping healthcare professionals identify trends, insights and potential errors more effectively.

Chatbots and Virtual Assistants

AI-powered chatbots and virtual assistants can manage repetitive, time-consuming and administrative interactions, significantly improving patient experience without increasing the operational workload of healthcare staff.

Personalization and Automation

AI-driven personalization, including tailored recommendations and reminders, can enhance patient engagement while maintaining user privacy.

Case study

AI chatbots can enhance experiences of patients and medical professionals

Case study overview

HCLTech implemented AI chatbots by partnering with healthcare organizations and leveraging Natural Language Processing (NLP) and GenAI models to enhance patient communications.

UX impact

UX area	Improvements
Patient interaction UX	AI-enabled chatbots improve patient interactions by providing easier access to medical information such as diagnostic reports, scans, dosage guidance, post-surgery instructions and more.
Engagement and satisfaction	Chatbots, with natural language interactions make the experience more intuitive and approachable, helping improve user engagement and satisfaction.
Employee experience	AI chatbots enable 24/7 automated communication, improving responsiveness while reducing the administrative burden on front-desk teams, nurses and support staff.

Key learnings

This case study shows how AI-powered chatbot automation supports a highly personalized healthcare journey for patients while reducing administrative burden for care teams.

Case study 2: AI-Powered clinical advisor to reduce clinician burnout and improve point-of-care UX



Source: Adobe Stock

Image represents a doctor advising a patient using an AI-enabled device for clinical support.

Case study overview

HCLTech developed a GenAI-powered clinical advisor for a US healthcare provider to deliver context-aware guidance and address inefficiencies in the clinical decision system.

UX Impact

UX area	Improvements
Clinician workflow UX	The clinical advisor integrates seamlessly into existing workflows, providing healthcare professionals with real-time, evidence-based guidance.
Data organization UX	By eliminating manual searches through clinical libraries, the system delivers concise, relevant responses that improve speed and usability.
Burnout reduction	Medical professionals save over 4,000 clinician hours per day, by enabling them to focus more on patient care and less on administrative tasks.

Design and AI elements

- Built on NVIDIA AI Enterprise to support high performance
- Supports compliant data handling aligned with HIPAA- and GDPR-requirements
- Uses a hybrid edge-and-cloud architecture for secure access
- Delivers tailored clinical insights that help build trust in AI-assisted recommendations

Key learnings

This case study demonstrates how AI-led design enhances UX within clinical workflows without compromising patient details and maintaining security and privacy of information.

Real-life AI apps in healthcare

The most impactful AI applications in healthcare are those that augment human expertise while addressing critical challenges. A few examples include -

Category	Leading app/ platform	Primary benefit
Admin	Abridge	AI-driven transcription and summarization save clinicians more than two hours of paperwork every day.
Radiology	Aidoc	Supports faster triage in life-threatening cases and enables time-critical decision mak
Oncology	Tempus	Uses large-scale clinical data to support more personalized, precision-based cancer treatment decisions.
Pharmacy	PharmBot AI	Automates routine clinical assessments and documentation while maintaining compliance in processes.

Key takeaways

- AI does not replace human-centered design; it strengthens it by making process more efficient.
- When implemented thoughtfully and optimized effectively, AI can help identify the right problems and automate appropriate solutions.
- The right AI integration can significantly reduce cognitive and administrative burden, while prioritizing transparency and privacy.
- For maximum impact, AI should combine assistive capabilities with human-centered sensitivity and emotional awareness.

Conclusion

The future of healthcare will depend not on AI alone, but on the combined strength of AI and human judgment. As the industry evolves, the greatest gains in efficiency, usability and patient value will come from closer collaboration among designers, clinicians and intelligent systems. Looking ahead to 2026 and beyond, healthcare organizations will benefit most from human-centered experiences enabled by thoughtful automation.

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Author information

Rakshitha Samudrala

Rakshitha serves as a UX Lead at TX CU, bringing over a decade of experience in creating innovative design solutions grounded in design thinking. Her diverse industry background spans healthcare, automotive, telecom and gaming. In every engagement, she strives to simplify the interaction between people and digital products, while aligning user needs with business objectives and technological realities.



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