

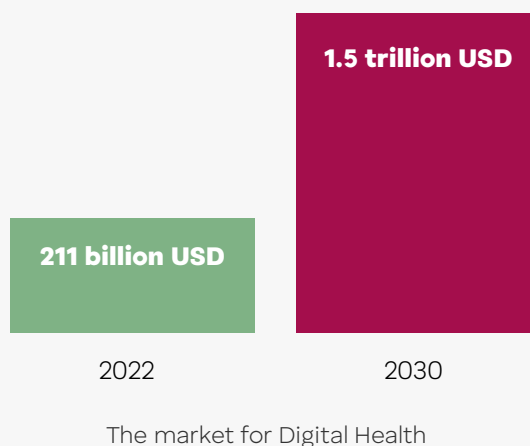


# Digital Health

white  space

# Digital Health is **big** business

The global Digital Health industry was valued at approximately \$211 billion USD in 2022 and is predicted to rise to as much as \$1.5 trillion USD by 2030<sup>1</sup>. This has led to a huge investment into Digital Health, with a dramatic rise in the number of Digital Health startups and companies from other industries venturing into healthcare, such as Google and Apple.



## Is digital health still a great investment?

The short answer is yes, however, great investment does not guarantee great success. Accenture concluded half of all Digital Health companies would fail back in the 2010s<sup>2</sup>. And in early 2023, the world leading digital therapeutic company Pear Therapeutics filed for bankruptcy. Without the right knowledge and skills, not to mention the right regulatory and reimbursement frameworks, investing in digital health can be hazardous.



*"Technology is transforming healthcare, and Whitespace is working to ensure that the needs of patients and clinicians are always in focus."* - Jesse Anton, CEO, Whitespace

Digital Health has already brought many advanced to the global healthcare industry, such as digital tools helping to manage chronic illnesses, and the active use of AI in healthcare. Despite this, there is still a lot more that can be done. The potential of Digital Health has yet to be reached, and promises must now become reality. Fortunately, the future of Digital Health is bright. For example, countries like Germany are leading the way, with 40 digital health products approved under the new DIGA guidelines since launching in October 2020 to March 2023.

Thus, it is evident that working in Digital Health, albeit lucrative and impactful, is also complex and requires strong cooperation between governments and industry. For companies seeking to enter this market, successful Digital Health projects require healthcare-specific expertise in designing, building, deploying, and maintaining regulated innovative Digital Health products.

#### Sources:

1 - <https://www.grandviewresearch.com/industry-analysis/digital-health-market>

2 - <https://newsroom.accenture.com/news/half-of-healthcare-it-start-ups-will-fail-within-two-years-of-launch-accenture-finds.htm>

# What is Digital Health?

Digital Health is the broad term that encompasses the uses of digital and digitally-enhanced physical products to deliver healthcare services. This is beyond the expected use of surgical equipment and medical devices used in modern medicine. It does however include electronic health records, digital therapeutics, telehealth, and wearable medical devices. It also involves the healthcare-specific application of artificial intelligence, robotics, biotechnology, and nanotechnology.

## Patients want to be seen quicker, more conveniently, with more control

There are many ways Digital Health can improve healthcare. In principle, healthcare needs Digital Health solutions that can save time and money, whilst improving health outcomes. But patients, providers, and payers each have unique expectations and demands of Digital Health. Patients want to be seen and treated quicker, more conveniently, and with more control. Providers want to work more efficiently, with clinicians spending more of their time treating patients than working on a computer completing administrative tasks. Payers want to reduce their costs and in the case of insurance companies, improve their profit margins.

Patients, providers, and payers can often benefit from the same Digital Health solutions. For example, payers can save money on long-term healthcare costs when patients use a digital therapeutic to manage a chronic illness. Patients get advice and instructions at their fingertips through the use of said digital therapeutics. This in turn leads to providers spending less time on data collection and/or conducting reviews on patients who are well. The use of wearable technology and AI can further increase the benefits for all involved too.





# Our services in Digital Health

At Whitespace, we pride ourselves in having the knowledge, skills, and expertise in Digital Health to best serve our clients in the healthcare industry. Our services are varied, involving the fields of strategy, research, design, engineering, and training. These services are as follows:

## Healthcare product design

With an innovative approach, and a keen understanding of patient, provider, and payer needs, we design various digital and physical healthcare products. When built right they can have a competitive edge over comparable products in the market.

## Healthcare software & medical device engineering

We have expertise in building digital solutions and physical products for regulated healthcare purposes. We follow a structured, product development process that ensures software medical devices solutions are delivered as expected, and to the highest of standards.

## Clinical UX heuristic evaluation

A formal, systematic assessment of the functionality and usability of a digital product or service within healthcare, designed to identify clinical risk. This clinical risk could directly affect patients, or the clinicians that serve them.

## Product/service concept review

An extremely useful process to prevent business failure, this is an evaluation of the feasibility, viability, and desirability of a new or existing healthcare product or service.

## Accessibility audit

A structured analysis of how a product or service meets the needs of users with accessibility requirements. This helps project teams and organizations to identify accessibility issues with their product or service before they can become a problem for end users.

## Clinical UX services

Specialist UX services for healthcare product development and service design. Satisfying mandatory regulatory requirements and navigating the complexity of the healthcare system demands specialist knowledge of healthcare and the application of UX principles in healthcare.

## Clinical UX training & coaching

World-leading education on optimizing user experience in healthcare, supporting new and existing UX professionals and teams. This service arms UX professionals and their colleagues with the necessary knowledge and skills to work on ambitious and innovative healthcare projects.

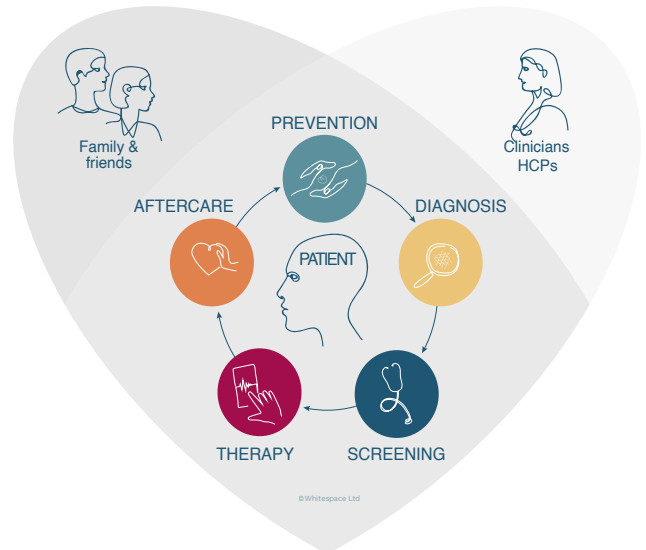


# Healthcare product design

## The design of healthcare solutions for patients, providers, and payers

Product development in any industry is complex. The creation of healthcare-specific products is a particularly complex process due to the intricate nature of healthcare delivery models, and the patient, provider, and payer relationship. Add to this the regulatory needs of the healthcare industry, and suddenly there is a need for specialists with healthcare experience. This includes the need for data security expertise for GDPR and HIPAA compliance.

The myriad of Digital Health products can work with each other and physical devices in unique ways, wrapped by a specific healthcare service offering in the pursuit of improved health outcomes. With an innovative approach, and a keen understanding of patient, provider, and payer needs, healthcare products designed and built right can have a competitive edge over comparable products in the market. The main products to consider include:



### ● **Digital Therapeutics**

Evidence-based digital tools – often working in conjunction with a wearable or physical device – that prevent, manage, or treat disease. Great for supporting patients with chronic illnesses to manage their health independently and confidently.

### ● **Electronic Health Records**

Digital medical documents, primarily created by providers. These systems are most powerful when access is available to all appropriate clinicians and provides information to patients in a way that supports them in making informed decisions about their health.



● **Wearable Technology**

Physical devices designed to be worn, permitting regular, if not constant health tracking or therapeutic benefit of the wearer. This significantly enhances the ability of providers to assess and treat patients remotely, whilst reducing the demand for real-time clinician input for patients on a one-to-one basis.

● **Telehealth**

The provision of remote healthcare services leveraging the use of audio and video equipment. This can be further enhanced through the use of robots allowing for remote surgical procedures to take place. Consequently patients can have many of their healthcare needs met, and providers perform their duties from virtually anywhere on the planet.

● **Clinical Decision Support**

The use of sophisticated algorithms and artificial intelligence with an electronic health record system to rapidly assess risks, diagnoses, and appropriate interventions for individual patients. This technology supercharges the efforts of providers, offering them more time to focus on the human and technical aspects of their craft.

*The Whitespace team took our initial idea and ran with it!  
They helped us gather insights and deliver impact well  
beyond the originally intended scope.*

Senior Director, Technical Excellence & Innovations Team Head, Top 10 Pharma

# Healthcare software & medical device engineering

## Expertise in building digital solutions and physical products for regulated healthcare purposes

The development of healthcare software solutions and medical devices requires significant technical skill and knowledge of the unique needs of people and processes in the healthcare industry. Failure to have this skill and knowledge on a Digital Health project makes an already difficult and complex pursuit unnecessarily risky. This risk is further reduced by following a structured, product development process that ensures software medical devices solutions are delivered as expected.

In addition, having clear metrics of success for products and projects enables business leaders to invest in software development confidently. Finally, relevant laws and regulatory requirements must be followed to permit sales of the product in international markets and to be reimbursed by willing health insurers.





There exists a wide variety of software development, product engineering, and associated administrative tasks required to make a significant impact in healthcare. These tasks comprise the following:

● **Web & app development**

Involves the development of web, native, and progressive applications that leverage device-specific functionality. This includes SaaS and Software as a Medical Device (SaMD), which may or may not require the use of one or more medical devices.

● **Medical device engineering**

Any medical grade physical device that can assess for, prevent, treat and manage disease. This can include wearable technology, as well as devices to be operated by patients and non-clinical individuals. Such devices are always regulated, with strict rules on how they are proven to work as expected and reduce risk of harm.

● **Artificial intelligence - AI & Machine learning - ML**

This includes the use of Natural Language Processing (NLP), computer vision, and intelligent chat bots. The use of AI/ML significantly improves the ability for humans to perform complex tasks, removing or reducing the effort of simpler tasks. In healthcare, this is of particular benefit when assessing for disease, decision support and identifying patients to target for new or personalized treatment.

● **Extended reality - XR**

Encompasses virtual, augmented, and mixed reality (VR, AR, and MR respectively). Part of a rapidly growing, emerging technology which has, and continues to, revolutionize the healthcare industry. Applications include simulations for medical education, telesurgery, and rehabilitation therapy.

● **Agile project management**

A project management methodology which encourages iterative development, and adapting projected work based on current working conditions and evidence-backed requests. This is ideal for working on complex, innovative projects, even more so if new technology is being invented.

● **Healthcare data security**

High level data security algorithms and processes, to prevent inappropriate access, corruption, or deletion of protected health information. This includes protection against cyber attacks, but also the facilitation of interoperability and the preemptive sharing of health data with future healthcare professionals and their associates.

● **Medical device regulation**

Mandatory country- and region-specific compliance with regulation of medical devices, permitting their investigation for clinical safety and sale. This includes Regulation (EU) 2017/745 for EU countries and the FDA's Center for Devices and Radiological Health for the USA.



# Clinical UX heuristic evaluation

## A formal assessment of the usability and clinical risk of a healthcare product or service

Sometimes known as a UX audit, a traditional heuristic evaluation is a formal, systematic assessment of the functionality and usability of a digital product, but can also be done for services. Heuristics are practical problem-solving techniques used when someone faces an unfamiliar situation. Products that acknowledge heuristics tend to be easy to use and help users to complete their tasks.

A Clinical UX heuristic evaluation takes this a step further by identifying how a healthcare product or service impacts a clinical workflow or patient journey. This helps uncover potential risk factors of using the product or service, including patient harm, clinician error, or failure to meet existing healthcare standards.

A typical Clinical UX heuristic evaluation involves the following:



### ● **Product/service walkthrough**

A review of the product or service, provided by the client. This allows the client to show the general functionality and the different types of users they serve.

### ● **Assessment**

Conscientious interrogation of all features and functionality with the goals of real users in mind. Details of issues found are documented, with an explanation of why the issue has been identified and the impact it has on users.

### ● **Recommendations**

Issues are ranked based on the impact of the issue, impact on the business, and effort required to resolve issues. This is further tailored based on the client's business goals and constraints.

# Product/service concept review

## An evaluation of the feasibility, viability, and desirability of a new or existing healthcare product or service

Before embarking on a costly period of product development or service creation, it is essential to know that there will be a return on investment. Business planning can help identify competitors and offer income projections but often lacks sufficient details on how a business can mitigate product and service failure. This is especially true when businesses are venturing into Digital Health and health tech for the first time.

Thus systematically reviewing a product or service at the concept level can determine how successful said product or service will be.

During a product or service concept review, a holistic approach is taken to assess the key influencing factors of success. They broadly fit within the categories of feasibility, viability, and desirability.

### ● Feasibility

The technology and resources required to make a product or service are known to exist, and can be maintained. The end result should be technically possible and not just theoretical. Additionally, there should be a clear source for the technology and resources which should be plentiful for the lifecycle of a product.

### ● Viability

The product or service can support a sustainable business model, taking into consideration healthcare reimbursement models and out-of-pocket costs for patients. If there is no direct income source, then in the very least the product or service should indirectly help a business generate revenue, such as through improved brand awareness.

### ● Desirability

Users and consumers want to use the product or service because it can help them complete relevant tasks. Products and services should serve a real purpose and not exist simply because it can exist. Use of the product or service should meet, if not exceed the expectations of users compared with any currently available, appropriate alternatives.



# Accessibility audit

## A structured analysis of how a product or service meets the needs of users with accessibility requirements

Businesses have a legal obligation and moral responsibility to ensure their products and services are accessible to all potential customers and employees. Accessibility needs are diverse ranging from supporting physical and mental disabilities to overcoming perceived barriers such as age or language competency. This can include a need to provide content in multiple formats, such as braille and large print, or a format that is easy to comprehend for people who live with dyslexia.

Despite the existence of general guidance, it can be difficult to honor the obligation and responsibility of accessible design in healthcare. Many Digital Health solutions aimed at empowering patients often have significant deficits in accessibility. This issue is not just for users with accessibility needs though, as improvements to accessibility usually yield usability benefits for other users too.



Conducting an accessibility audit allows project teams and organizations to identify accessibility issues with their product or service before they can become a problem for end users. This typically involves the following:

● **Target user accessibility needs assessment**

Segmentation of ideal customers and end users with identification of their unique accessibility needs, followed by assessment of whether the product or service in question satisfies those needs.

● **Task analysis**

A detailed flow diagram, explaining the mandatory and optional steps a user goes through to complete a task. It should also include details of knowledge or skill dependencies, as well as how completion of steps and tasks support relevant business goals.

● **WCAG adherence**

Review for how well a digital product follows recommendations from the latest version of the Web Content Accessibility Guidelines (WCAG). This includes color contrast, font sizes, sizes of buttons and more.

● **Readability testing**

An evaluation of how easy written text used by the product or service is to comprehend. Complex, academic writing styles are often inappropriate, and efforts to make text simpler may still be too advanced for many readers.

● **Recommendations**

Final report outlining required changes, with clear justification. This should where possible be in priority order, so clients can focus quickly get a return on investment on the accessibility audit.

*This website is so much better compared to what we had before. I can now easily go to any topic with my screen reader and click on it. Before I had to scroll forever because there was so much content and it was not organized in a logical way.*

Visually impaired participant in an accessibility test for a WHO website



# Clinical UX services

## Specialist UX services for healthcare product development and service design

With the intricate nature of healthcare and its many types of professionals, processes, and politics, it's no surprise that product development and quality improvement projects can feel overwhelming for the uninitiated. There is simply a huge amount of information that needs to be known about the healthcare ecosystem and the laws and rules that govern it. Even with a specific business case or goal to improve health, there is often insufficient clarity of where to start, or how to progress successfully. Clinical UX professionals provide the necessary clarity and tools to turn ideas and ambition into measurable health benefits and improved healthcare outcomes.

Clinical UX is a niche within healthcare UX, with a focus on the experiences clinicians and patients have with healthcare technology and services. Clinical UX professionals ensure these healthcare technologies and services are not only usable, accessible, and satisfying to use, but also adhere to the regulator and legal requirements, and support the multi-layered and complex needs of all those affected. This demands specialist knowledge of healthcare and the application of UX principles in healthcare.



Clinical UX services at Whitespace fall broadly within one of four categories:

● **Clinical UX Research**

The planning, recruitment, and execution of research initiatives involving clinicians, patients, health environments, and population data. This also includes specialist market research, competitive analysis, and the latest information on trends and regulation changes. A deep understanding of healthcare and its many influencing factors is required along with the ability to process vast amounts of data.

● **Clinical UX Strategy**

The constellation of vision setting, planning, and optimization of Clinical UX processes. Effective clinical UX strategy efforts demand detailed knowledge and extensive experience with UX tools, processes, and techniques. It involves the high-level planning of UX work and defining UX practices that align with business practices and resources. Clinical UX strategy also ensures that the vision for UX work in a team, project, or organization adheres to the unique regulatory, legal, and healthcare workflow requirements.

● **Clinical UX Design**

The ideation and optimization of digital and physical healthcare products and services within healthcare. In the case of digital and physical healthcare, this will include the need for user interface (UI) design, physical product design, and prototyping. Designs consider regulatory and legal requirements, including, but not limited to, HIPAA and GDPR compliance, and medical device classification. Designs also consider healthcare behavioral science and the factors that affect the decision-making and habits of all users, especially clinicians and patients.

● **Clinical UX Management**

The recruitment, retainment, and regulation of Clinical UX professionals. This also involves the procurement of appropriate tools, as well as defining the day-to-day UX work practices and the processes that govern them. Competent Clinical UX management ensures that concept and project risk assessments are conducted regularly, dramatically increasing the chances of on-time project delivery and achieving predetermined success criteria. Similar to Clinical UX Strategy, Clinical UX management has a role in regulating adherence and assisting businesses in achieving their goals.

*Whitespace has been a game changer for our organization with the development of our Dermatology and Venereology membership portal. Their team was dedicated and provided expert guidance throughout the entire process. The end result is a seamless and intuitive platform that has greatly enhanced the experience for our members.*

**Daniele Zedda**, Web and UX Manager,  
European Academy of Dermatology and Venereology (EADV)

# Clinical UX training & coaching

## World-leading education on optimizing user experience in healthcare, supporting new and existing UX professionals and teams

Despite UX and customer experience (CX) gaining prominence across industries, healthcare still lacks significant UX and CX professionals. This is primarily a result of a delay in hiring UX professionals within the healthcare industry, a limited understanding of the benefits of hiring UX professionals, and the lack of specialist training for such a workforce. In turn, this has contributed to products and services that have a suboptimal user or customer experience, go over budget in order to be delivered, or lead to failure at the project phase.

Training in this field arms UX professionals and their colleagues with the necessary knowledge and skills to work in this complex and heavily regulated industry.



Clinical UX training falls within five training topics:

● **Psychology**

The study of the human mind and human behavior. This includes a special focus on healthcare behavioral science and effectively researching user needs.

● **Design**

The use of creativity combined with research insights and best practices to determine the optimal solution to a problem or problem situation. Artistic skill is not required but is useful in the creation of digital or physical product design.

● **Healthcare**

The system that provides and manages the services and resources that optimize and maintain the health of a given population. This includes knowledge of healthcare economics, healthcare prioritization, and the regulations and laws that govern them.

● **Technology**

The application of science to create practical solutions to problems. This includes the obvious such as mobile apps, web-based software, and various computing devices. But it also includes emerging technologies such as AI, robotics, augmented and virtual reality, and ubiquitous computing.

● **Clinical UX maturity**

The level of sophistication and success of Clinical UX efforts within a project, team, or organization. This involves understanding the many factors that influence the use and effectiveness of clinical UX resources and establishing a process to maintain a strong and sustainable clinical UX strategy.

*The Clinical UX course helped me land my first UX job in Health Technology. The training material alongside Gyles' expertise added value in every aspect of my learning process. Today, I am a knowledgeable Clinical UX Designer who feels well-equipped and empowered to spread awareness of UX's mission to improve patients' lives.*

**Georgia Petroutsas**, UX Designer, Bupa



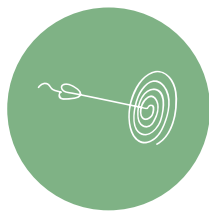
# Value proposition

At Whitespace, we pride ourselves in having the knowledge, skills, and expertise in Digital Health to best serve our clients in the healthcare industry. Our services are varied, involving the fields of strategy, research, design, engineering, and training. These services provide many different benefits for our clients, which fall within the following five categories:



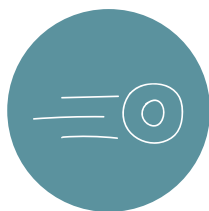
## Risk reduction

The reduction, if not removal, of the risk of harm to patients, clinicians, or the business itself. Achieved by adhering to all relevant laws and regulations and proactively assessing risk.



## Business confidence

The use of valid and reliable evidence to make business decisions. This should directly lead to clear and achievable project plans and roadmaps for products and services made by the business.



## Speed to market

Time required to create a new, or further refine an existing product or service is decreased. Particularly important when there are a number of well-resourced competitors who are rushing to get to market, too.



## Competitive edge

Unique features and functionality of a product or service that keep a business ahead of its competitors. Or a competitive edge can be a result of unique working practices, be it for product development, marketing and more.



## Customer & patient experience

The experiences users have with products and services involves good usability, accessibility, and satisfaction, be they clinicians, patients, or otherwise.

## Disclaimer

Photography credits

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## About Whitespace

With over a decade of experience in the health and life sciences sector – and with a team of senior design and technology professionals collaborating across Europe, North America, and the Asia-Pacific regions – Whitespace is uniquely positioned to service the needs of all Digital Health stakeholders and help shape the future of healthcare.

Whitespace is a strategic consultancy working at the nexus of employee experience, customer experience, and technology. We combine **innovation strategy, human-centered design, software development, and industrial engineering** to revolutionize how global companies create products and services.

Yet designing and building things is only part of what we do.

We are also enablers and agents of change. Our **workshop facilitation, leadership training, and advanced learning programs** help accelerate innovation initiatives, foster alignment, and lead organizations toward successful transformation outcomes.

## Let's Talk

If you are interested in working with Whitespace, simply complete the form [here](#), and we will be in touch with you real soon.

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[www.whitespace.ch](http://www.whitespace.ch)