

# Expand Your View: The UX Ecosystem of Healthcare

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Early in 2017, I became ill and was admitted to the hospital where I was placed in the intensive care unit. Three days later, I was discharged by an on-call physician I had never met during my stay. Later that same day, I arrived at my local pharmacy to discover the medication I had been prescribed at the end of my hospital stay, and desperately needed, was not covered by my insurance and bore a whopping price tag in comparison to another similar medication that was covered by my insurance. There was no way this could have been known when the prescription was written because the hospital, pharmacy, and insurance systems do not have a three-way conversation concerning such matters. This meant that the discharging physician would have to change my medication. It was Sunday, and I knew it wouldn't happen until the next morning when her office was open.

I was sick, tired, and weak. I'd suffer through the night in my condition until I could get a medication I could afford. Later I would navigate further through the labyrinth of healthcare in returning to full health. By this point in my life, I had already spent considerable time designing EHRs (Electronic Health Records) and other healthcare technologies. During this journey I found myself in the midst of the user experience ecosystem of healthcare—an ecosystem I often played a part in designing but had never thought of in such a light.

## Touch Points and Ecosystems

In user experience design, we spend weeks or months conducting user research, conceptualizing, and fine-tuning a feature or system. We establish the problem and seek solutions. We deliberate over the use of controls and components in the design. We discuss color palettes and branding. And this often only addresses one small part of a system or a single feature. Ecosystems are larger than features. They are larger than organizations. And journey maps often do not span the entire ecosystem of the user experience.

Earlier this year at IA Summit 2018, Jared Spool gave a [presentation](#) on UX ecosystems. He used the US government and the Hawaii false missile alert of 2018 as a backdrop, exploring the ecosystem viewed from different perspectives. In his presentation, Spool stated, “ecosystem-wide design issues are our next tough challenges.” He illustrated this as he walked through local and federal government touch points—two complex domains within one ecosystem.

Healthcare is also a complex ecosystem and has perpetually been in the public eye as a controversial aspect of government involvement. Patients journey through myriad systems and agencies to receive their care (see Figure 1). A patient with diabetes, for example, will have a minimum of three physicians on their care team. These physicians may or may not share the same EHR and, as a result, may not coordinate care. If that patient is hospitalized, the hospital may have a different care team and use a different EHR. This patient will undoubtedly need medication from a local pharmacy. The pharmacy has a system for managing the medication therapy of a patient that usually only communicates with other EHRs to receive prescription orders. Additionally, the patient will use different apps and

devices for managing dietary intake as well as monitoring blood glucose levels. The insurance industry may also play a role in the patient's care, as well as local and federal regulations, all employing disparate systems. The average diabetes patient could find themselves navigating a half-dozen different systems to manage their care.

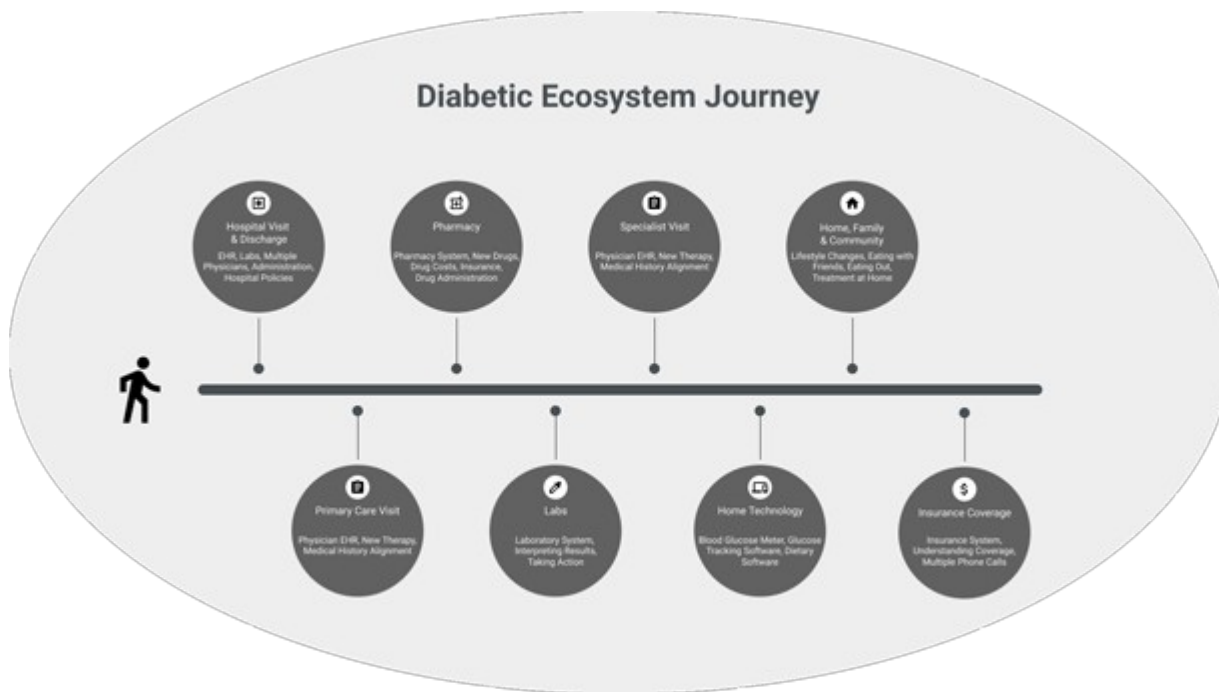


Figure 1: A linear representation (although not necessarily linear) of a diabetic's journey through the healthcare ecosystem.

The above scenario does not factor into account all the touch points a patient could have. Peter Morville outlined a “touchpoint taxonomy” in his IA Summit 2012 presentation, “Designing for Cross-Channel Experiences,” and this was my introduction to this topic. His taxonomy illustrated to me not only how complex a user's journey can become, but also how holistic an experience truly is.

In healthcare, there are touch points beyond a patient's direct contact with the healthcare system. Patients consult the Internet for information leading them through a series of different websites and information repositories. They have friends and families—a community of people who support or influence their care. They have professional lives they must manage when adapting to a new disease or medical disorder. There are government agencies that may affect their care, such as the FDA, as it approves new medications; federal, state and local regulations; and Medicare or Medicaid for those who are eligible. The UX ecosystem for a diabetic is reflected in Figure 2.

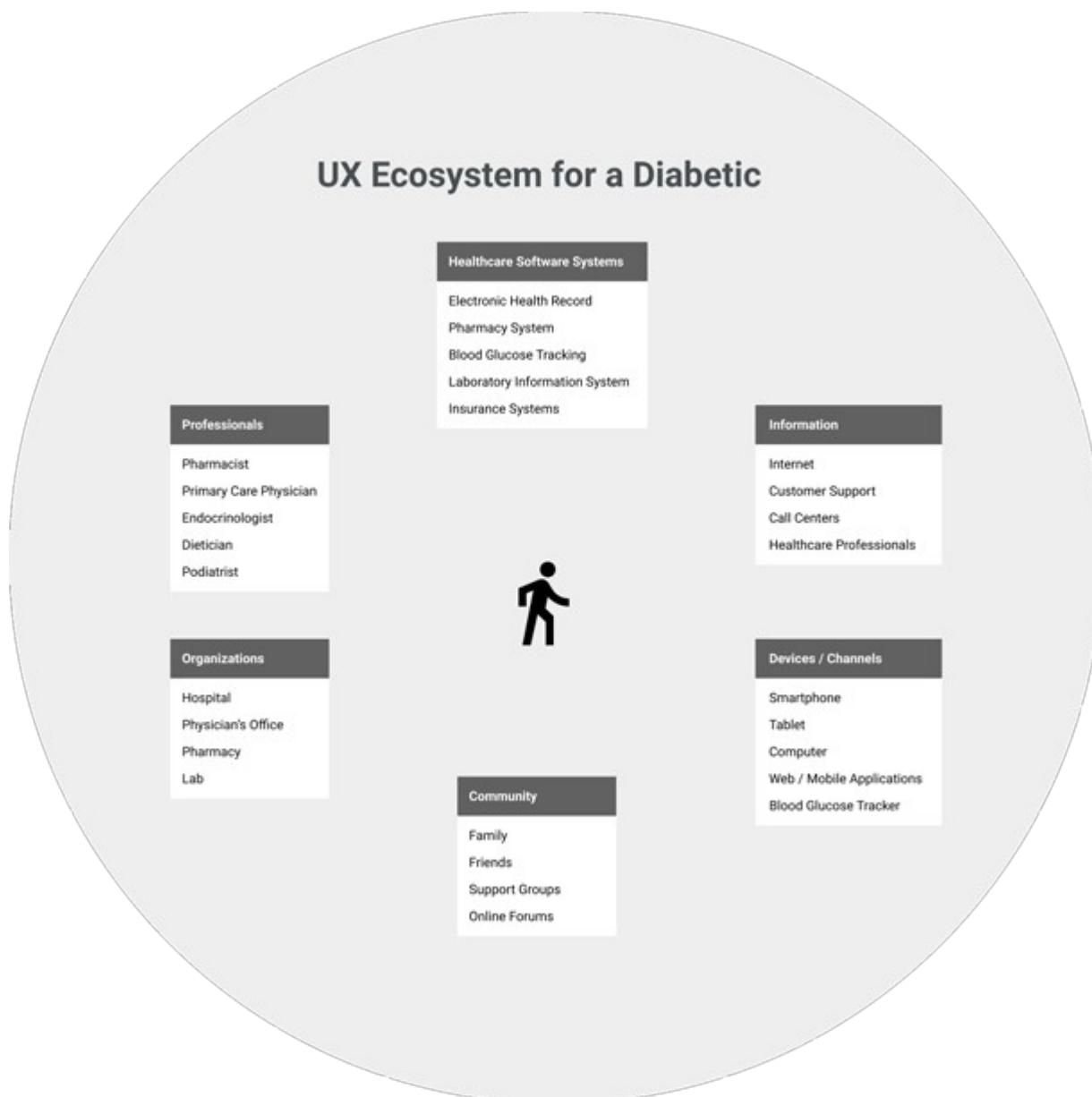


Figure 2: The UX Ecosystem for a diabetic includes a number of touch points that often cross categories.

All of the above comprise a user experience ecosystem. And, in designing for such a system, one must consider touch points beyond the organization. For example, we can journey-map a patient's experience through a pharmacy quite easily, and design teams have become adept at this. However, what happens before and after a patient encounters your product or service? What ancillary services and products are they receiving or using?

In order to adequately design for an ecosystem, we must evaluate touch points across a continuum. When we move across the continuum in this way, we are better able to identify the gaps in care patients receive, their pain points, and where the ecosystem breaks down for them. This allows us to explore solutions and exploit the failures in consistent care.

Consider a patient who receives a new prescription for blood pressure medication who is non-compliant and only takes her medicine 2-3 times per week, instead of daily as prescribed. The pharmacy knows this because she is not refilling the prescription every thirty days. After a few

months, she returns to her doctor and her blood pressure is still high. So, the doctor increases her dosage, not realizing she is non-compliant. She returns to the pharmacy to fill the new prescription. If she becomes compliant and begins taking that medication every day, there is now the chance her blood pressure could become too low, leading to a potentially dangerous situation.

When we look at the above scenario and design at the level of an ecosystem, we begin to understand that the pharmacy has a larger problem than just filling a medication and dispensing it to a patient. There is now a problem concerning patient safety caused by a gap in the ecosystem. A new touch point can be created to implement better coordination of care in communication with the doctor concerning the patient's non-compliance, which also addresses the larger problem of patient safety. Additionally, the pharmacy is now addressing not only the patient's health and well-being, but also the well-being of the healthcare system, because non-compliant patients contribute to poorer outcomes of care and higher insurance costs. These gaps can only be mitigated when we address ecosystem-wide design issues.

The challenge herein is that touch points often represent a different system or domain with a different set of agents and designers. For example, an average hospital will have a staff functioning within different areas of care administration. Some of the staff are responsible for direct care. Some are responsible for quality control. Still others are responsible for administration. Additionally, an EHR largely manages the care a patient receives, everything from lab and medication orders, to ensuring the caregiver complies with state and federal regulations (and regulations ensuring compensation is received). The EHR is most likely a product the hospital purchased and had modified to suit their needs, originally designed by a team external to the organization. It may or may not communicate with other hospital systems, such as the laboratory information system (LIS), the billing system, or the on-call and scheduling system. The hospital is just one organization, almost its own ecosystem.

## Gaps Between Touch Points

What happens when the patient leaves that ecosystem? What happens when they return home and do not understand their complete regimen of therapy? What happens when they return to their primary care physician or travel to their local pharmacy (different systems designed by different teams)? Care coordination breaks down across the boundaries of the ecosystem when design is compartmentalized and only addresses one touch point or a group of interrelated touch points within a single organization.

If you are admitted to a hospital today, you could be harmed due to medical errors. Medical errors are, according to a 2016 article in the *British Medical Journal*, the third leading cause of death in the United States just behind heart disease and cancer. A leading cause of medical errors is technology. But, a less obvious place where medical errors are likely to occur is during patient hand-off.

Patient hand-off occurs any time a patient moves from one care team or unit to another. For example, moving from the emergency room to an intensive care unit is a hand-off. The patient will encounter a whole new care team who must quickly apprise themselves of the patient's status, history, and the therapeutic regimen prescribed. Error rates are higher between hand-off teams due to the communication gap. An analogy would be if you were to hand your designs for a feature to a new design team. They would have to quickly develop all the knowledge you have around the design and research in order to proceed.

Like a hospital, an ecosystem has hand-offs. Each time a user moves to a new section or domain of the ecosystem, there is a gap to fill. These can be gaps in communication, the level of service, technology, or other factors. For example, when a patient is discharged from a hospital and subsequently visits their primary care physician or local pharmacy, they enter (or are handed off to) a new system where the events in the previous system must be communicated (or aligned) within the new system. It is during these hand-offs where the ecosystem is more likely to break, resulting in a poor experience at best, and errors at worst.

## **Designing for the Ecosystem**

But how do we design for a complex ecosystem such as healthcare? It may seem an impossible challenge. After all, hospitals are independent entities, as are pharmacy chains, physicians offices, medical device manufacturers, and the communities in which patients live. As organizational technologies such as computers, systems, and applications become more ubiquitous, the future of designing for ecosystems may be closer than we think. As such, there are steps that designers can take today to get closer to ecosystem design.

### **Map the ecosystem**

Just as you would not take a long trip without a map to guide you, a user's journey will not necessarily begin and end with your product or service. Users live in communities. They have social networks and use products and services ancillary to the one you design for. What happens as they approach your system and when they leave your system to enter a new part of the ecosystem? In healthcare the coordination of care across the continuum is crucial to patient outcomes. Something as simple as a follow-up phone call from the hospital after discharge to answer questions or to check on a patient can markedly improve patient care and aid in coordination between different parts of the ecosystem the patient journeys through. Map the ecosystem of your industry to enable you and your team to design across the continuum, understanding the pain points and gaps between each domain.

### **Evaluate all touch points**

The user journey and touch points along their journey do not start and end with the experience you design. For example, a user's journey does not begin when they walk through the doors of a hospital and end upon discharge. Document each of the touch points along the user's entire journey far before they encounter your product or service, as well as beyond, and refer to them early and often throughout your design process.

### **Influence the influencers**

Those who influence design are not just those working on the UX team. As organizations our business exists in service to the user. Nearly everyone involved in planning a product or service becomes, in some way, a designer. Decisions to increase profits cannot be made at the expense of the user. Take every opportunity to educate decision-makers on the ecosystem and the impact that design decisions on your product or system can have, to help or hinder the user throughout their journey across the entire ecosystem.

## Partner with others

In a complicated ecosystem there will have to be stronger partnerships across disciplines and agencies. For example, hospitals will have to work toward a model where they share information and form partnerships with other domains within the ecosystem in order to provide a better continuum of service to patients. This is no small challenge and is not limited to healthcare. To design at the ecosystem level, develop relationships with other designers in your industry and work together to fill the gaps between your services and products.

## Embrace standards and mandates

Just as there are ISO standards for everything from quality management to information security, new or improved standards enable design best practices at the ecosystem level. In the case of healthcare, the American Recovery and Reinvestment Act of 2009 set the goal of “meaningful use” for incentivizing certification and use of inter-operable EHRs to improve the quality of care for patients. This primarily revolves around the electronic exchange of information. Similar efforts could encourage tighter collaboration between the different agencies in an ecosystem to enable better hand-offs and design at the ecosystem level. Research your own industry; are there incentives that may motivate your organization toward collaboration across the ecosystem?

To be fair, we aren’t there yet. That is, we are moving toward the ability to design for the ecosystem in UX, but we are not yet able to bridge the gaps between different domains within the entire ecosystem. Every indication suggests that the ubiquitous nature of technology and the connectedness of our lives will push industries towards the ecosystem design model.

The UX profession has moved from designing singular interfaces to designing large systems at organizational levels and, recently, moving to cross-channel design where we consider design across different devices. The next level of design for our profession, Spool states, will be to bridge the gap between elements and domains in a larger ecosystem. To do this, we will have to shift our thinking and paradigms to a larger set of experiences our users encounter. We will have to design for the ecosystem.

Topics: [Design](#), [Healthcare](#), [Systems Thinking](#)

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