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# Careers in HCI and UX: The Digital Transformation from Craft to Strategy

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## ABSTRACT

Since its inception in the early 1980's, HCI and UX have sought wider recognition and influence. Now digital transformation, a pervasive shift in the role of information technology, will offer both practitioners and researchers far more influential roles in organizations. This shift, which is taking place in industry, education and government is part of a larger shift to a global, digitally connected society.

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**CSS CONCEPTS**

- **Social and professional topics~Management of computing and information systems**
- Social and professional topics~Computing and business
- Human-centered computing~HCI theory, concepts and models

**KEYWORDS**

ACM proceedings; CHI'19; digital transformation; HCI; UX; careers

This panel builds on the theme of CHI'19 – Weaving the Threads -- through its focus on how HCI/UX, research and practice will be integrated as organizations transform into digitally-driven entities.

The panel brings together thought leaders with backgrounds in both academia and industry. With extensive audience participation, we will explore the implications of digital transformation on the roles of HCI/UX, the challenges, and the new skills needed to support a culture change and collaborate with a wider range of stakeholders.

It is our hope that this panel can become a jumping off point for future work, built on our belief that HCI/UX are vital drivers of new technologies, and of beneficial societal transformations. Through national agencies and, perhaps in time, becoming part of the UN's Sustainable Development Agenda, would position HCI/UX to fulfill its role as a key driver of both business and social transformation.

**THE PROBLEM**

The role of information technology in business is shifting in a profound way and with it the role of HCI and UX. This shift is often called *digital transformation*. The essence of digital transformation is a shift from information technology as a supporter of business process to an innovator and business driver. For HCI and UX professionals this will be a shift from leading design as a craft to leading business strategically and shaping future business models.

A focus on craft that shifts to one that starts with strategy is a shift in perspective. By analogy, compare *architecture*, which focuses on the design of buildings, with *urban design* which focuses on the design of communities. Both share expertise, but urban design is more strategic, interdisciplinary and requires skills in politics, environment, real estate and sociology.

Typically, HCI/UX is brought in to help shape and polish a product initiated elsewhere in the organization. But when digital products are central to the organization's very survival, user-centered design takes a front seat. It drives decisions about what to build and how to create a seamless, consistent and engaging user journey that reflects the organization's strategy, and that can agilely be updated as the environment shifts. In this context, HCI/UX becomes proactive rather than reactive, strategic rather than limited by its craft.

As with urban design, strategic HCI/UX design is interdisciplinary. It is built on strong partnerships and alliances across the entire organization. The digitally transformed organization shifts from "designing from the inside" to "designing from the outside" when everything starts with the user.

Current skills remain essential but HCI/UX designers must acquire additional skills to enable them to influence the larger organizational landscape. HCI/UX must become adept in explaining its processes to colleagues in other disciplines whose worldviews need to shift to understand design thinking.

### What is Digital Transformation

The concept of digital transformation has been around for several years and there is a growing amount activity around it. Transformation has been described as the shift from “making customers want things” to “making things customers want.”

An often-cited early influence was the publication in 2014 of *Leading Digital: Turning Technology into Business Transformation*. It noted that “technology is reaching into every corner of the business world – every industry, company, process, decision, and job – bringing deep changes in how companies are structured and led, and how they perform and compete” [10].

A 2018 report from Forrester Research was called “Digital Innovators Rewrite the Rules of Business.” In this study, based on analysis of 22 firms, Forrester concluded that digital technology dramatically alters the balance of power between customers and companies and that failing to adopt a customer-centric approach would cause businesses to “fade to black” as their customers defect, and their markets are disrupted [4].

One indication of the growing importance of design is the creation of the Chief Design Officer (CDO) who reports directly to the CEO and is responsible for design and innovation across the enterprise. While Apple and the design work of Steve Jobs and Jony Ive is well-known, Accenture, 3M, Kia, Johnson and Johnson and PepsiCo, have also elevated design to the C-suite by appointing Chief Design Officers [3]. In the public sector, Anne Stenros became CDO of Helsinki in 2016 [5] and, in 2018, Christopher Hawthorne became CDO for Los Angeles [6].

Technology companies that deliver digital products are already largely structured to benefit from transformation and may serve as models for HCI/UX. More traditional companies with roots in areas such as manufacturing and retail, have a longer road ahead of them.

The traditional role of IT was to support the business. As a support organization, the stance of traditional IT was reactive rather than proactive. HCI/UX with its customer-centric philosophy was seen as more of a “nice to have” than essential. But now, information has become strategic and, in some cases, become the product itself. This places user-centered design at the center.

### Examples of Digital Transformation

As an example of information technology shifting from a support role to becoming the product itself, consider how we used to manufacture and sell books:

- The first commercial use of information technology for books were word processing (a technology that supported authors and editors), and typesetting programs, (a technology that supported production).
- In 1994, Amazon changed the retail model by creating an on-line site where customers could browse titles and purchase books. In 1995, they added customer reviews. Through these sites, customers became direct users of Amazon’s information technology systems.

- In 2007, Amazon offered the Kindle e-reader, and by 2012 more books were sold in electronic form than in print. Information technology had become the product itself. E-book technology (which had been presaged by researchers such as Alan Kay) disrupted an industry that had been stable since 1450. There were major consequences for manufacturing, distribution and sales [7]. Borders, a mega bookstore chain, with over 1300 stores in 2005, declared bankruptcy in 2011 [1].

Of course, not all digital transformation is so complete, but it is happening everywhere. Music CDs have been replaced by streaming MP3 files. Video is delivered by streaming. Phones use wireless technology. Cars are becoming self-driving. Training and even complete college degrees are offered on-line. Financial institutions and banks conduct all their business using bits and may never touch physical money. And cryptocurrencies are completely virtual.

You need only to look at the magnitude of the investments that organizations are making in information technology, to understand the scope of this transformation. Fifteen years ago, CIOs were fighting to get a “seat at the table.” Today, they are innovators, leaders and strategists.

### **The relationship between digital transformation, design thinking and AI**

Two components of digital transformation are design thinking and artificial intelligence. Design thinking is familiar to people involved with HCI and UX as it is basic to the work we do. Design thinking emphasizes understanding the user, challenging assumptions, and redefining problems to identify strategies and solutions that might not be instantly apparent [3].

Artificial Intelligence (AI) is currently a topic of intense research and development. It is based on the acquisition of massive amounts of data (“Big Data”) which comes from on-line user interactions and via the Internet of Things (IoT). Amazon’s Alexa, Google Assistant and Apple’s Siri could not exist without AI. AI’s ability to detect patterns in massive datasets, supports strategy and innovation. Design thinking, and artificial intelligence are both drivers of digital transformation.

### **WHAT DIGITAL TRANSFORMATION MEANS FOR UX/HCI**

As the role of IT shifts in the transformed organization, the role of HCI and UX will shift as well. There will be great opportunity but also many questions to be answered. HCI/UX professionals who want to take on senior leadership positions in the new environment will need to augment their expertise with the skills that enable them to become full partners in decision-making.

Business people will need new skills as well. Not everyone needs to become a designer or researcher, but people throughout the organization need a level of awareness in HCI/UX so that they understand its value, and how it integrates into the larger business process.

As HCI/UX professionals become more conversant in business thinking, they will be better able to communicate the principles and values of the field in terms that make sense to business people. This is an area in which we have not always been effective.

As a craft, HCI/UX has often focused inward. We began with a clear focus on usability but now draw distinctions that seem meaningful to us but are opaque to those outside the field. One obvious area is the distinction between research (which we often call HCI) and practice (which we call UX).

Practitioners distinguish among sub-specialties like interaction design, user research, usability testing and information architecture as if these were different fields. These sub-specialties even have their own professional organizations. And this reification of the field is accelerated by HR departments who create job titles and descriptions that further divide us.

While it is important to develop and differentiate methodologies, our core focus always places the human at the center of technology development. We strive to create interactive products that are both useful and usable, and we do our work through design informed by research.

In a digitally transformed organization, easy, efficient and contextually-appropriate design matters more than ever since inefficiency in human-computer interactions directly impacts the organization's productivity and its ability to compete.

As we become more strategic, we will have to shift our focus outward. We are a small part of information technology and computer science. Within these areas we often face skepticism and difficulty in integrating our work into the larger technology process.

We will need to engage strategically with a wider group of colleagues outside IT. They are likely to be skeptical as well. Robert Plant, writing in the Harvard Business Review, noted that “CEOs hesitate to create strong, progressive IT positions...Because they distance themselves from IT, CEOs don't grasp its subtleties” [8]. As we shift our focus, we must be able to teach and mentor people whose worldview, style and understanding are profoundly different from ours. Even when we agree that “it's all design” we still need to distinguish our work from graphic designers, marketers and architects, all of whom claim design as their own.

## THE PANEL

The panel we propose includes thought leaders with backgrounds in both academic and business settings. Our goal is to present the ideas driving business transformation and encourage discussion of key issues by the panelists and the audience. The panel will be actively moderated and supported by slides that help the audience quickly grasp the specific issues being discussed and keep the discussion focused.

We will begin with a brief presentation that outlines the basics of digital transformation. The purpose of this will be to establish a basic framework for the discussion to follow. We will then discuss as many of the following issues as time permits. As the panelists have both academic and business backgrounds, we anticipate a variety of perspectives and a lively discussion with the audience as full participants.

We will explore how the trend toward digital transformation affects HCI/UX careers and career development:

- How is digital transformation changing the field? What does this mean for people currently in the field and for those who seek to enter it?
- How do potential employers understand the various roles? How does that impact the hiring process and how can applicants navigate an HR structure that may not reflect the field accurately. Can we help companies improve their hiring practices?
- How can HCI/UX professionals improve their ability to communicate with, and influence, stakeholders outside the field, including senior management, senior technical management, promotion committees (in both business and academia), developers and others whose worldview may be different from ours? What are mistakes that we make in interacting and communicating with stakeholders?
- How do we envision the future of the field? What might keep that future from happening? What implications does this have for how we teach HCI/UX at the undergraduate, masters and graduate levels?

We will end with a summary and call to action.

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