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# Designing for Whole Systems and Services in Healthcare

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**Abstract**

This CHI 2011 SIG provides a workshop for collective problem finding and community identification. The goal is to initiate a working group to coordinate systemic design research issues across practitioner communities. This SIG addresses the insufficiency of user-centered design and informatics research to design for system and service-level innovations in healthcare. The SIG seeks to coordinate communications and participation across design practice, research disciplines, and areas of health practice for service system innovation.

**Keywords**

Healthcare design, Clinical informatics, Patient-centered design, Health service design, Complex systems

**ACM Classification Keywords**

J.3 Life and Medical Sciences: Health; K.4.1 Public Policy Issues K.4.2 Social Issues; K.4.3 Organizational Impacts; H.5.3 Group and Organization Interfaces

**General Terms**

Design, Management

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## **Introduction**

The SIG addresses the problem of coordinating and advancing systems design and design research for service-level and systemic innovations in healthcare.

Healthcare is a domain characterized by multiple stakeholders (from consumers and patients to clinical staff, from administrators to insurers), multiple services (from primary care to academic institutional networks), and multiple sectors of services (from clinical practice to insurance and government). There are no definitive “users” in these complex systems of practice, few common workflows, and with highly dispersed informatics, no integration. The ability to design at the service and systems level is seriously mitigated by these inherent and ongoing issues.

The methodologies and analytical regimes associated with user-centered, experience, and service design practices are valuable in many contexts, but limit design options when employed for complex systems. With a wide variety of stakeholders and differing clinical and economic problem owners, healthcare has no common voice and fewer “whole system” solutions. In practice, design and implementation decisions are fraught with competing interests, often imposing near-term decisionmaking on IT and practice changes. Design/research professionals are often isolated in narrow bands of problem scope, with the inability to design to root cause issues or to scale their successes across institutions or across practices. Policy advocates and key advisors in the field are widely separated by problem scope (disease management, education, insurance reform) and problem-solving modality (policy, practice innovation, patient-centered medicine, information systems).

The organizers call for a network of coordination of communications and participation across design practice and research disciplines, and areas of health practice. Informatics and service designers are natural integrators across fields of knowledge and practice, and are hampered in effective solutions when working in dedicated, narrow sectors of the field. While it may not be necessary to form a new organization or group, the organizers see the opportunity for a working network that can begin to work across discourse communities, coordinate research and service prototypes, and integrate practice concepts, emerging findings and key stakeholders toward these concerns.

## **Background**

With an ever growing community of designers and researchers working in healthcare sectors, participants and investigators in current special interest groups have organized around urgent questions with direct effect on policy, systems and information technology, medical education and care procedures, and the patient experience of healthcare. In 2010 a transdisciplinary scholarly community was organized with ACM CHI, the Workshop on Interactive Systems in Healthcare [1]. Yet there is no group that tracks and discusses emerging and significant issues in healthcare appropriate to design research or service-oriented design practice.

There is not yet a shared scope or research agenda in the CHI community, even as new conferences have formed around healthcare IT startups (Health 2.0) and informatics (Medicine 2.0) and experience design (Healthcare XD). Our intent is, by starting this dialogue, to enable progress on defining and addressing critical problems observed across these fields that remain isolated from each other.

We hope the concepts discussed ultimately inform a diverse set of approaches to improving the way healthcare is conceived, validated and delivered. We propose this SIG for CHI 2011 as a workshop for problem finding, problem framing, and reaching some consensus on a collaborative agenda that CHI members might join. The goal of this SIG is to establish a supported working group that would coordinate design research issues across health interest and practice communities. The problem this SIG addresses is the insufficiency of user-centered design and informatics research to make a systemic difference in healthcare, a field of multiple complex systems. User-centered design - and user experience methods - reach a critical limitation when extended to fit a complex system of practices, agencies, and institutions such as healthcare.

The HCI and user experience (UX) design fields have barely kept pace with the changes in the healthcare field at large due to the pace of change and scale of applications. There are few national level design advisors or advocates from design or even industrial engineering fields. Publications are dominated by physicians and informatics specialists, who often focus work on tightly-scoped, feasible research agendas fitting the mandates of their institutions. Conferences are organized by medical or educational discipline (societies and colleges), technology, technology-oriented research, and disease specialization. Interdisciplinary design and social research is rare among current publications, continuing a perception of diminished credibility in the strong evidence-based paradigm that dominates current research agendas.

Given the complexity of systemic issues, the compelling urgency of narrow-focus concerns, and the dedicated

roles of stakeholders, individual designers and institutional teams are often unable to design solutions to address root causes or to scale applications across institutions or practice areas.

Finally, these issues can all be seen as merely reflecting the current status of healthcare organizations. Policy advocates and key advisors in the field are widely separated by problem scope (disease management, education, insurance reform) and problem-solving modality (policy, practice innovation, patient-centered medicine, information systems). Several current, well known analyses [2,3] propose systemic change models based on problem typology (simple, protocolized, complex) and institutional innovation. However, there are few proposals linking service and informatics design research for institutional innovation. When institutional innovation is pursued, it is driven by cost and risk concerns, and not patient or service system concerns.

### **Approach**

The intention of the SIG is to form a group of working professional designers and researchers to coordinate across healthcare sectors. The SIG will locate members of the CHI community to inform key issues shared in common by medical, research, administrative, and patient advocates to invest in and develop solutions for significant, shared design problems. For example, a special interest group focused on electronic health records might bring together specialized user groups and UI designers to improve usability and interaction of these mission-critical but often poorly-designed systems. However, the capacity to formulate and sustain policy change or system-wide design guidelines derives from multiple stakeholders, not from specialists within a given industry sector.

The SIG meeting will be organized to identify various stakeholder networks already in CHI and available to those that might be connected for significant shared problem areas. Systemic design problems are embedded in current service systems that have not (except in rare cases) been designed for optimal stakeholder value and effectiveness. This SIG could therefore consider being identified as a Healthcare Services Design SIG rather than an informatics or human computer interaction SIG. As the distinction of “service” and service design is endowed with conflicting meanings across practice communities, the need for common definitions will also be addressed.

A brief, initial SIG kickoff at a CHI meeting will not likely generate answers to these issues, nor should “answers” even be attempted during this gathering. Instead, we propose the focus of a general healthcare design SIG to identify the highest impact, highest leverage design issues across the field based on attendance and the networks of participation of attendees. By establishing a working group, we might begin raising public and policy awareness of these concerns to fund and mobilize systemic solutions.

The goal of this SIG and our process is to strengthen all human-centered research in healthcare by establishing and documenting the shared root cause issues across various interest communities and design problems, and to explore opportunities to establish design patterns in order to establish a baseline common understanding of clinical and patient experience needs for typical healthcare situations.

### *Session Agenda*

We propose a 3-part session for the SIG meeting. The session will start with a panel discussion to introduce the session, as an overview of the topics and problems. A participatory problem-finding workshop will follow, to engage participants in identifying key shared problem areas and reaching agreement on possible focus areas and future opportunities to develop. The session will wrap up by structuring an initial collaborative plan for continued engagement, considering a range of alternatives for continuance, from online community to local SIG groups to publication projects.

### **Citations**

- [1] Hayes, G.R., Tan, D.S., and Wilcox, L. (2010). *Proceedings of the First International Workshop on Interactive Systems in Healthcare*. WISH 2010, April 11, Atlanta, GA.
- [2] Bohmer, R.M.J. (2009). *Designing care: Aligning the nature and management of health care*. Boston, MA: HBS Press.
- [3] Christensen, C.M., Grossman, J.H., Hwang, J. (2008). *The innovator's prescription: A disruptive solution for health care*. New York: McGraw-Hill.