

**DANIEL J. EPSTEIN DEPARTMENT OF  
INDUSTRIAL AND SYSTEMS ENGINEERING**

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**EPSTEIN INSTITUTE SEMINAR • ISE 651 SEMINAR  
(VIDEO CONFERENCE)**

***vizHOME: A Context-Based Health  
Information Needs Assessment Strategy***

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**ABSTRACT**

Accelerating the design of technologies to support health in the home requires 1) better understanding of how the household context shapes consumer health behaviors and (2) the opportunity to afford engineers, designers and health professionals the chance to systematically study the home environment. We developed the Living Environments Laboratory (LEL) with a fully immersive, six-sided virtual reality CAVE to enable recreating of a broad range of household environments. We have successfully developed a virtual apartment, including a kitchen, living space and bathroom. Yet these spaces lack the accouterments of actual homes, characterized by clutter, personal decorations, and casual organization of furniture. In order to better understand how household context shapes personal health information management we will undertake an extensive study of 20 households addressing the social, physical, psychological, technical and health services context of PHIM, including creating detailed photographic, video, and 3D reconstructions of these households in a virtual reality CAVE; (2) through recursive immersive exploration in the CAVE, enumerate the features of these households that shape PHIM; (3) enlist 20 people self-identified with diabetes in a requirements validation activity in the CAVE; (4) engage 60 people with diabetes in an experimental evaluation of these indicators and (5) use all of these results to develop and evaluate, in a field assessment of 200 households, an Assessment of the Context of Home Environments inventory. The reference set of 20 virtual homes will be distributed through Creative Commons for repeated studies by designers. We will also make available the Assessment of the Context of Home Environments (ACHE) protocol for rapid assessments of the home context. This interdisciplinary project brings together nurses, engineers, computer scientists, and health services researchers to explicate how the home context shapes health information needs and can be used to guide the design of consumer health information management solutions.

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**TUESDAY, DECEMBER 3, 2013  
OLIN HALL OF ENGINEERING (OHE) ROOM 100D  
3:30 – 4:50 PM**

## **SPEAKER BIO**

**Patricia Flatley Brennan, RN, PhD**, is the Lillian L. Moehlman Bascom Professor, School of Nursing and College of Engineering, University of Wisconsin-Madison, Madison, Wisconsin. Dr. Brennan received a Masters of Science in Nursing from the University of Pennsylvania and a PhD in Industrial Engineering from the University of Wisconsin-Madison. Following seven years of clinical practice in critical care nursing and psychiatric nursing, Dr. Brennan held several academic positions. She developed the ComputerLink, an electronic network designed to reduce isolation and improve self-care among home care patients and directed HeartCare, a WWW-based tailored information and communication service that helped home-dwelling cardiac patients recover faster, and with fewer symptoms. Dr. Brennan is National Program Director of Project HealthDesign, a RWJ- funded initiative designed to stimulate the next generation of personal health records. In collaboration with Kohane's team at Harvard, Dr Brennan conducts external evaluations of novel HIT architectures, such SMARt and UNDS, which enable innovative decision support and research-view "apps" to be deployed atop existing electronic health records (EHRs) and data repositories. Brennan leads the Living Environments Laboratory at the Wisconsin Institutes for Discovery, which includes a 6-sided virtual reality CAVE that her group uses to re-create visually every environment on earth, and develop new ways for effective visualization of high dimensional data. Supported by AHRQ, her group explores the impact of household contexts on personal health information management. She is fellow of both the American Academy of Nursing (1991) and the American College of Medical Informatics (1993). Dr. Brennan was elected to the Institute of Medicine in 2002, and in 2009 became an elected member of the New York Academy of Medicine.