

QUARTERLY OF THE INDUSTRIAL DESIGNERS SOCIETY OF AMERICA **SUMMER 2014**

INNOVATION

Medical Evolution

FATHER OF ID ■ SMART TO WISE ■ NEW DIRECTIVES



QUARTERLY OF THE INDUSTRIAL DESIGNERS SOCIETY OF AMERICA

SUMMER 2014

INNOVATION®



IDSA®

Publisher
IDSA
555 Grove St., Suite 200
Herndon, VA 20170
P: 703.707.6000
F: 703.787.8501
www.innovationjournal.org
www.idsa.org

Executive Editor
Mark Dziarsk, FIDSA
Managing Director
LUNAR | Chicago
mark@lunar.com

Advisory Council
Gregg Davis, IDSA
Alistair Hamilton, IDSA

Sr. Creative Director
Karen Berube
IDSA
703.707.6000 x102
karenb@idsa.org

Contributing Editor
Jennifer Evans Yankopolus
jennifer@wordcollaborative.com
678.612.7463

Advertising
Teresa Algje
703.273.6211
teresa.algje@verizon.net

Subscriptions/Copies
Jill Richardson
703.707.6000 x118
jillr@idsa.org

Annual Subscriptions
Within the US \$70
Canada & Mexico \$85
International \$125

Single Copies
Fall/Yearbook \$40+ S&H
All others \$20+ S&H

The quarterly publication of the Industrial Designers Society of America (IDSA), INNOVATION provides in-depth coverage of design issues and long-term trends while communicating the value of design to business and society at large.

MEDICAL EVOLUTION

20 High-Stakes Design

by Sean Hägen, IDSA,
Guest Editor

22 Medical Devices: The Next Big Frontier in Industrial Design

by Fernd van Engelen, IDSA

25 Coloring Inside the Lines: Design's New Role within a Highly Regulated Market

by R. Reade Harpham

27 Functional Aesthetics

by Philip Remedios, IDSA

30 Hospital to Home: A Blend of the Consumer and Medical Worlds

by Stuart Karten, IDSA

32 Wearable Medical Devices: A Field with Great Promise

by Kyle Jarger

36 Design's Connection with Medical Device Users

by Mary Beth Priviteria, IDSA

40 The Ballerina, the Surgeon and America's Caregiving Conundrum

by Carol Shillinglaw, A/IDSA

44 The Benefits of Applying Human Factors Engineering

by Michael Wiklund and Stephen Wilcox, FIDSA

49 Working Toward Sustainable Medical Device Design

by Seth GaleWyrick

FEATURES

52 Design for Enjoyable Moments

by Cheryl Zhenyu Qian, IDSA

IN EVERY ISSUE

4 IDSA HQ

by Daniel Martinage, CAE

6 From the Editor

by Mark Dziarsk, FIDSA

8 Business Concepts

by Michael Westcott, IDSA

10 Book Review

by Scott Stropkay, IDSA

12 Design Defined

by Dan Brown

14 Beautyity

by Tucker Viemeister, FIDSA

16 A Look Back

by Carroll Gantz, FIDSA

56 Showcase

64 ID+ME:

Clair Samhammer, FIDSA

PATRONS OF INDUSTRIAL DESIGN EXCELLENCE

INVESTOR

IDEO, Palo Alto, CA; Shanghai, China;
Cambridge, MA; London, UK; San Francisco;
Munich, Germany; Chicago; New York
Newell Rubbermaid, Atlanta, GA
Procter & Gamble, Cincinnati, OH
Webb deVlam Chicago, Chicago, IL

CULTIVATOR

Cesaroni Design Associates Inc., Glenview, IL
Crown Equipment, New Bremen, OH
Dell, Round Rock, TX
Eastman Chemical Co., Kingsport, TN
Jerome Caruso Design Inc., Lake Forest, IL
Lunar Design Inc., Palo Alto, CA
Metaphase Design Group Inc., St. Louis, MO
Smart Design, New York; San Francisco;
Barcelona, Spain
Stanley Black & Decker, New Britain, CT
Teague, Seattle, WA
Tupperware, Worldwide

Charter Patrons indicated by color.

For more information about becoming a Patron and supporting IDSA's communication and education outreach, please contact Katrina Kona at 703.707.6000 x100.



Cover photo: iStockphoto

INNOVATION is the quarterly journal of the Industrial Designers Society of America (IDSA), the professional organization serving the needs of US industrial designers. Reproduction in whole or in part—in any form—without the written permission of the publisher is prohibited. The opinions expressed in the bylined articles are those of the writers and not necessarily those of IDSA. IDSA reserves the right to decline any advertisement that is contrary to the mission, goals and guiding principles of the Society. The appearance of an ad does not constitute an endorsement by IDSA. All design and photo credits are listed as provided by the submitter. INNOVATION is printed on recycled paper with soy-based inks. The use of IDSA and FIDSA after a name is a registered collective membership mark. INNOVATION (ISSN No. 0731-2334 and USPS No. 0016-067) is published quarterly by the Industrial Designers Society of America (IDSA)/INNOVATION, 555 Grove St., Suite 200, Herndon, VA 20170. Periodical postage at Sterling, VA 20164 and at additional mailing offices. POSTMASTER: Send address changes to IDSA/INNOVATION, 555 Grove St., Suite 200, Herndon, VA 20170, USA. ©2014 Industrial Designers Society of America. Vol. 33, No. 2, 2014; Library of Congress Catalog No. 82-640971; ISSN No. 0731-2334; USPS 0016-067.

Advertisers' Index

- 19** 2014 IDSA Medical Design Conference
- 11** 2014 IDSA International Conference
- 1** Luxion
- c4** LUNAR
- c2** Metaphase Design
- c3** Philips
- 9** Proto Labs

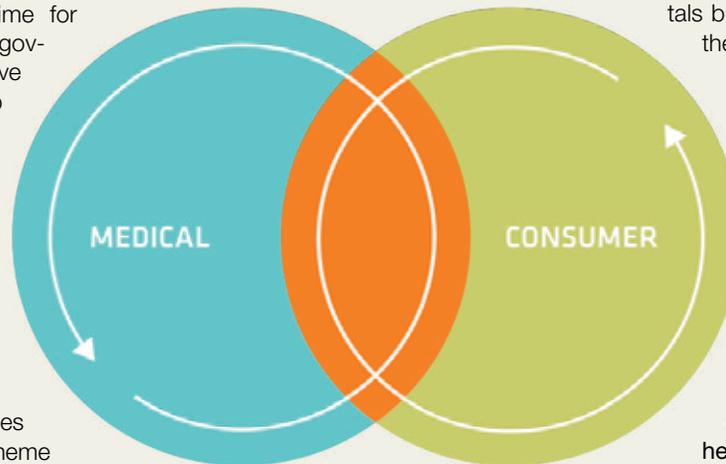
Hospital to Home: A Blend of the Consumer and Medical Worlds

This is an exciting time for healthcare. As the government is working to drive change from the top down, advancements in science, medicine and technology are simultaneously pushing the boundaries of what we thought was possible with groundbreaking knowledge, treatments, products, services and experiences.

Amidst these changes stands one dominant theme that has already and will continue to play a significant role during this revolutionary time: hospital to home—the idea that patients should be released as quickly as possible back to their homes yet still be treated with a high enough standard of care to avoid readmissions. Coupled with the notion that the Affordable Care Act has changed the way doctors and hospitals are reimbursed, there is now an economic incentive to create positive patient outcomes.

Yet another key variable in this situation is that we are living longer, and as we live longer we become more susceptible to chronic conditions like heart disease, stroke, cancer and diabetes. In fact, seven out of 10 deaths among Americans each year are from chronic diseases, and \$3 out of \$4 of healthcare costs can be attributed to chronic conditions.

Fortunately, lifestyle behavior changes like exercise and nutrition can have a positive effect on many chronic conditions. As this concept of preventive medicine is becoming more widely adopted, the management and treatment of disease is no longer in the hands of just physicians in hospi-



tals but patients and caregivers in the home as well.

However, at times lifestyle behavior changes are not enough, and when pure human motivation and willpower subside, the resulting effect is a lack of compliance, decline in health and heightened need for treatments in the hospital. **To break this cycle and increase patient compliance and overall health, it is critical to create hospital-to-home products that**

consistently engage and delight all intended users throughout the entirety of their experience. I believe that this can be most successfully accomplished by blending thought processes, methods and principles from the consumer design world with the medical design world.

Creating Engagement

So what does this really mean? It means understanding that oftentimes a hospital-to-home device is not going to be used by one person, such as a physician, but rather by a diverse group of people, including physicians, nurses, technicians, givers and patients, to name a few. It means exploring the similarities and differences between the cognitive, dexterity and mobile limitations of each user and designing to those. It means understanding the span of the users' education levels, and knowing that not everyone will be able to interact with the device in the same way, nor need to see all of the information, options and features all of the time.

It means understanding that there are new, more varied and more complicated scenarios for administering care that need to be understood as early in the design process as possible. To be successful, the devices need to blend easily with the users' existing habits and ceremonies.

It means understanding the numerous environments this device could live in. Home environments are varied and unpredictable. As designers, we need to account for everything from pets to children—no one wants their new blood pressure monitor to be eaten by the family dog or a device remote to find itself in the hands of a young child who might not understand the dire consequences of pushing a simple button.

It means understanding people as human beings with emotions and developing empathy for them, their frustrations and their unmet needs to increase the chances of a device being embraced, not rejected.

Evolving the Future

We have already begun to see this line between consumer technology and medical products become blurred through the rise of wearable devices. However, even though the digital health sector is still young and evolving, we have yet to see a truly “sticky” wearable device—one that engages users emotionally time after time by providing them with valuable information and education (as opposed to pure entertainment) and that seamlessly blends with their everyday behaviors and ceremonies.

The migration of healthcare and medical devices from hospital to home presents a tremendous opportunity for designers. Knowing how to harness users' emotions to create desire, change behaviors and make interactions sticky through in-depth design research and informed user-centered design and engineering efforts will ultimately provide for better outcomes. To optimize the potential for success, medical devices need to evolve from being products people need to products that they actually want. ■

—Stuart Karten, IDSA, president, Karten Design
stuart@kartendesign.com

controls that look tidy and interesting may not provide the best ergonomics, so the resulting solution is hopefully a graceful compromise by both disciplines. The designer's job, after all, is to harmonize objectives between all R&D disciplines while preserving aesthetics and optimizing the user's emotional experience.

More recently, industrial designers and human factors engineers have become close allies in implementing usability standards. This partnership has been mutually beneficial since early involvement of human factors engineers during conceptual design results in a more thorough approach to the mitigation of use error. Building sound usability constructs into the conceptual model enables the team to achieve more optimized solutions than ever before, a true win for medical device design as a whole. Consider that in order to infer their function, intuitive controls should ideally look like they should be turned, pushed or toggled. However, understanding the cognitive and anthropometric limitations of the user is important to achieving ergonomic excellence. **Human factors engineering brings scientific rigor to the design equation.**

In today's heavily regulated world of medical device design, over-rationalizing the appearance or applying rigid developmental methodologies can risk diluting the emotional stimuli that affect the visceral response to an attractive design. Designers should also be conscious of developing a follow-on experience that maximizes the value of emotional design.

It is important to remember that all users are human after all, whether they are clinicians, technicians or patients. They can be positively (and negatively) influenced by form, colors, materials and finishes, and beauty still provokes primal sensory responses. Wherever emotional response is involved in the purchase decision and safe use of a device, it is just good business to capitalize on human behavior to help drive commercial success. ■



NATIONAL
DESIGN
AWARDS

