

# KARTEN:DESIGN

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## New App Concept Unveiled at the USC Body Computing Conference Could Offer Heart Failure Patients with Implantable Devices New Tools to Manage Their Condition

**The Heart Coach App Imagines Connecting Data from Implantable Device to Patients; Design Uses Coaching, Algorithms, and Progressive Disclosure to help patients with heart failure manage their heart disease and to continuously monitor how their life habits impact how they feel and how their heart is doing.**

LOS ANGELES, CA, OCTOBER 4<sup>th</sup>, 2013—Product designer Stuart Karten demonstrated a first-of-its-kind new app concept designed to connect data from an implantable device to a patient’s smart phone at today’s USC Body Computing Conference. The concept was developed in collaboration with a major medical device manufacturer and the USC Center for Body Computing. Through sophisticated and fun interaction design, the Heart Coach app would keep patients informed and engaged with information that would empower them to self-manage their condition, improve their quality of life, and invite their caregivers and providers into the conversation.

Implantable cardiac defibrillators (ICDs) are complex computers with embedded sensors that can track vital statistics including heart rate, respiration, and activity, among others. These sensors collect information daily and transmit it to physicians through a device that lives in the patient’s home. Additional external sensors like weight and blood pressure sensors can also be connected to this system as well. Presently, patients have had no access to this data.

The USC Center for Body Computing, an innovation institute dedicated to bringing future-forward technology to the mass market, explored an opportunity to put this super computer to better use. They believed that sharing this information with patients would give them insights and tools to manage their heart condition. The future-forward Heart Coach app is designed to keep patients informed, connected, and secure. It will function also as a life coach and advocate for the patient. Features include continuous medication, diet, fluid and activity management, and a social network. This app is not commercially

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available, but being considered as part of the device maker's future remote patient management enhancements.

Stuart Karten—and his product design and innovation consultancy Karten Design—were brought in to help develop a user-centered user interaction. Leveraging its 30-year history designing medical and consumer products that engage people emotionally, Karten Design developed a “sticky” interface that would motivate people to achieve the desired behavior change.

“When we ask people to change their behavior, it's important to keep things simple,” said Karten. “Asking for too many changes at once can be overwhelming. Instead, we're trying to build one keystone habit—we want them to open and interact with the app every day. We want them to do this because they want to, not because they have to. It needed to be delightful.”

Within the Heart Coach's elegant, friendly interface, Karten Design developed tools and features that in the future could allow patients to monitor health and behavior trending through data visualization, receive reminders and education targeted to their health goals, receive push notifications of possible cardiac events, and form a support network by sharing information with selected caregivers.

As they interact with the Heart Coach every day, the app will train users gradually to manage their health. Karten Design employed three strategies to draw users into the app's advanced capabilities:

**PROGRESSIVE DISCLOSURE:** To help maintain simplicity, designers built the app concept around an interaction design technique called Progressive Disclosure. This strategy maintains a user's focus by revealing new information one piece at a time as it becomes meaningful to the person. The Heart Coach imagines first engaging users by giving them access to data about their health and their implantable devices—something many patients have expressed an interest in knowing. Patients can choose to monitor their weight, heart rate, blood pressure, respiration rate, sleep patterns, and the battery life of their implants. For their first period of interaction with the app, the user sees only information that he or she has selected. Over time, the app begins to introduce new dimensions related to the user's behavior.

**COACHING:** Once people make the commitment to improving their exercise, food, medication compliance, or emotional health, the app concept would offer personal coaching to help users achieve their goals. Karten Design studied the principles of successful coaching to offer patients a supportive and effective partner in managing their health. The Heart Coach incorporates these best practices, such as allowing users to take personal responsibility. Prompts ask users, for example, if they'd like to improve their physical health, giving patients a choice to be engaged rather than forcing it on them. Graphic trending charts help users envision their success and badges track their progress. The app will bring in additional

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support from the user's own community, connecting them with loved ones who can provide additional coaching.

**ALGORITHMS:** The app concept is capable of triangulating multiple input points from the ICD's embedded sensors as well as external sensors to produce new insights about a patient's behavior and health. For example, a weight gain of more than two pounds over a 24-hour period, combined with decreased activity during the night, may indicate a patient has missed a dose of medication. These two concurrent incidents would trigger the app to ask a patient, "Would you like some help tracking your medication?" Algorithms will continue to produce unexpected insights developed to surprise and delight patients, engaging them further in new areas that support health.

Dr. Leslie Saxon, Executive Director of the USC Center for Body Computing and Chief of Cardiovascular Medicine at the Keck School of Medicine of USC, believes the Heart Coach has the potential to help patients live longer and stay out of the hospital. "Doctors benefit from having more literate patients," Saxon said. "This solution could decrease the physician's burden by promoting self-management and answering frequently asked questions for patients and their families. It enhances patient engagement in their disease management. Once it becomes a reality, this could improve patients' quality of life and healthcare outcomes."

By providing information and coaching, the Heart Coach helps to ease the emotional burden that heart failure puts on patients, who want to live independent lives, and their caregivers, who want to stay informed about their loved ones' health.

The concept app is currently in market research testing with ICD patients and their caregivers. Karten Design will continue to make refinements to the design based on patient feedback.

## **About the Center for Body Computing**

Headquartered at the Keck School of Medicine of USC, the Center for Body Computing is a digital health research and innovation center. It works with other USC Schools, including the USC School of Cinematic Arts, and leading companies to think about, study, and create the future of health care. The Center for Body Computing hosts the annual Body Computing Conference, and it creates products, performs research, and studies wireless health. The Center for Body Computing also fosters low-cost health solutions that can lead to better health outcomes across the globe, especially in the developing world.

## **About Karten Design**

Karten Design is a product design and innovation firm that creates extraordinary experiences between people and products. Since 1984, Karten Design has partnered with medical device manufacturers and

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consumer product companies to build their business through Design Strategy and Research, Design, and Engineering. Driven by strategic market understanding and deep user empathy, Karten Design helps companies seize new opportunities and create beautiful, easy-to-use products that resonate with end users, increasing adoption and enabling better health outcomes.

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