Case Study

Freescale Enables Sophisticated Personal Health Gateway

Numera Libris™ monitors health and safety information wirelessly

Numera Libris Provides Care Virtually Anywhere. Freescale Helps Make It Work.

As 78 million baby boomers continue to age, falling is a serious issue that is often a precursor to many other serious and chronic health concerns. One-third of adults over 65, or 14.8 million people in North America, fall each year with many more falls unreported. Chronic conditions affect 21% of those between the ages of 45 and 64, and that percentage climbs to 45.3 percent of those over the age of 65.

For those who need chronic disease management or are transitioning from hospitalization, continuity of care is critical for measurably better health. The goal of the mobile emergency response service (mPERS) is to help today's active adults address their individualized healthcare and security needs.

Numera Libris is equipped with built-in sensors from Freescale. Easily integrated with existing monitoring center software, Numera Libris travels virtually anywhere and offers instant hands-free communication, automated fall detection, location tracking, remotely managed two-way voice and, when cleared as a medical device by the FDA, will also have Bluetooth® connectivity to home health devices.*

Through its telehealth+telecare platform, Numera Libris will enable an individual to upload biometric measurements from wireless health devices and quickly send that information securely to their care team, including family, friends and healthcare professionals. AT&T serves as the wireless network and location services provider for Numera Libris.

Challenge:

Create an innovative personal emergency response device for active adults who choose to live a mobile, independent life.

Solution:

Numera Libris gives today's active seniors and their families freedom, security and the ability to manage their health at home or away. Numera Libris is a "personal health gateway," a new category of device that integrates telehealth advantages and safety features in one small, easy-to-wear mobile device.

Benefit:

Numera Libris brings together a Personal Emergency Response System (PERS) and home health monitoring in a simple, mobile solution. Advances in wireless technology, activity tracking and biometric monitoring have made Numera Libris possible—a comprehensive mobile personal security solution designed to better address the independent living needs of active adults, as those needing chronic disease management and recuperating from hospitalization.

The possibilities are practically limitless:

- Those who care for people who are prone to wandering can use the location tracking functionality of Numera Libris. The GPS allows the care team to quickly and easily locate the wearer virtually anywhere, and initiate a two-way voice communication via the device. Soon Numera Libris will also be equipped with geo-fencing, which will alert the care team when the wearer travels beyond a pre-defined perimeter.*

- Those who are prone to falling, can maintain a sense of security knowing that if Numera Libris senses a fall, it is designed to automatically notify the call center and care team. Emergency services can then be sent if help is needed.

- Employers of 'lone workers'—people who work by themselves—have a responsibility for the safety and welfare of their employees. Numera Libris can provide fall detection, hands-free 2-way voice communication, and a connection to the call center from virtually anywhere.

To enable this broad range of applications, Numera Libris uses low-power sensor and MCU technology from Freescale, combined with AT&T broadband-based cellular connectivity.

"Integrating Freescale's sensor and processor technology into Numera Libris made it possible for us to create a small, mobile device with a range of sophisticated capabilities for collecting and transmitting a variety of safety and medical device data," says Tim Smokoff, CEO of Numera. "This furthers our mission to help individuals with chronic conditions live mobile, independent lives."

Freescale: Harnessing Power Consumption

Freescale helped Numera overcome one of the major hurdles in creating a compact device loaded with features and functionality: power consumption. The continuous processing of location, sensors and voice using a phone requires far too much power to make the prospect practical.

Numera Libris solved this problem by using a dedicated ultra-low-power Freescale processor to provide continuous processing. Numera Libris combines two Freescale sensors: an Xtrinsic MMA9550L motion-sensing platform that detects falls by sensing changes in how (and how quickly) the wearer is moving and an Xtrinsic MAG3110 3-axis magnetometer that works in conjunction with the MMA9550L for accurate, compass-based location information. Numera Libris also includes the Kinetis K70 MCU based on the ARM® Cortex®-M4 core with 512 KB–1 MB of flash memory.

Freescale Technology in the Numera Libris Personal Health Gateway

- MMA9550L Xtrinsic intelligent-motion sensing platform

- MAG3110 Xtrinsic 3-axis magnetometer

- Kinetis K70 MCU

Freescale: Medical Expertise for the Long Term

Semiconductor technology plays a critical role in the development of new technologies to assist with in-home monitoring, diagnostics, therapy and imaging. Medical device designers need to balance processing requirements with power consumption, help to ensure a fast time to market and navigate the regulatory environment. Freescale is a trusted provider of MCUs, MPUs, analog and sensor components, RF amplifiers and wireless technology to meet the unique needs of medical designs. These vital technologies, along with Freescale enablement tools, expertise and alliances, help enable customers to develop breakthrough medical systems and life-critical applications. Freescale also offers a formal product longevity program for the medical segment, ensuring that a broad range of program devices will be available for a minimum of 15 years**.

Numera: Healthier Living through Mobile Technology

Numera (**www.numera.com**) works with partners to achieve measurably better health and wellness for those in their care through encouragement, support and accountability. The company combines the power of caregivers, friends and peer groups, subjective and objective health information, and the ability to make this information actionable via extensible, scalable, and custom-branded solutions. These solutions, including Numera Libris, extend beyond traditional emergency response to healthy aging, chronic condition management and post-acute care markets—all based on Numera's telehealth+telecare platform. Numera is headquartered in Seattle, with corporate offices in Mountain View, CA, Orlando, FL, and Camberley, UK.

* Future functionality

For Terms and Conditions and to obtain a list of available products included in our product longevity program, visit **freescale.com/productlongevity.

For more information on Freescale healthcare and medical solutions, visit freescale.com/medical

To learn more about how the Numera Libris mobile health solution is powered by Freescale technology, visit freescale.com/NumeraLibris