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![freescale™]

Case Study

Innovative VGo Robotic Telepresence Is Designed to Reduce Healthcare Costs While Improving Patient Care

The Freescale-powered VGo allows patients and healthcare professionals to be in two places at once

"Being There" Takes on a Whole New Meaning

- A student whose medical condition keeps him physically out of school and confined to his home.
- A daughter who just can't be there for her aging parents 24/7.
- A doctor who wishes daily that she could be in two places at once.

These are the lives and circumstances that VGo was designed to change for the better. VGo is a revolutionary technology solution for healthcare that allows patients and the people who care for and about them to be together even when they can't physically be in the same location. Instead, they're able to send a remote-controlled robot in their place to communicate verbally, move around and otherwise interact just as they would if they were there.

Tiltable/controllable video camera, including 2 MP still camera with flash

Front LED lighting

6" LCD display

Integrated touchpad user controls

Professional speakers for clear audio

Integrated four microphone array for 360° performance

Automatic "self park" docking feature for battery charging

LED lighting

Obstacle and cliff detection sensors

Independent dual motorized drives

Challenge:

Create a cost-effective, remote-controlled avatar that allows people in separate locations to physically interact in real time.

Solution:

Freescale brings multiple i.MX applications processors into one integrated package to support the capabilities of the VGo robot. The combination of sophisticated processing and extensive integration enables VGo to encapsulate a variety of complex features, including real-time video and audio, and remote-controlled mobility, in a lightweight, compact, easy-to-use device.

Benefit:

VGo frees people to go to places instantly—without travel—from patients who are home- or hospital-bound, to healthcare providers who can't afford to leave the office or hospital for extended periods.

![VGO]

VGo Makes It Possible. Freescale Makes it Work.

VGo is the first affordable solution of its kind. A device that brings together advanced robotics, real-time video and audio capabilities, and wireless communications to establish a physical presence that may never be possible otherwise. About four feet tall, with a live video screen and built-in camera and microphones, VGo is a sleek, remote-controlled, motorized platform that works in indoor office or home environments with a Wi-Fi® connection and uncluttered floor space. It allows the person it's representing to move around freely, maneuver in even in the tightest of indoor spaces and interact with other people, whether the others are walking down a hall or sitting in a room.

A doctor or clinician can send a VGo to a far away hospital or clinic to "see" and evaluate a patient, or to a training center to provide or receive continuing medical education. Families can use VGo to keep an eye on home-bound family members when they can't be with them. One chronically ill teen even uses a VGo to go to high school, allowing him to attend classes and interact with his peers every day. He carries on conversations and participates in classes from home, using his VGo at school to represent everything he says and does in real time.

The brain behind VGo is an integrated set of Freescale i.MX applications processors that enable the complex functionality of a robot while allowing for easy operation.

"The underlying processor technology from Freescale is very sophisticated, but to the user, it's very simple," explains Tim Root, CTO and co-founder. "You just select where you want to go, click and you're there."

Freescale: Integrated Processing for VGo's Sophisticated Feature Set

VGo uses a dual-processor topology to build out its networking and communications capabilities. Full integration of Freescale's i.MX27 and i.MX31L applications processors enable VGo to encapsulate a very sophisticated feature set in a very small space, enabling it to operate as a mobile solution.

Providing hardware platform support is important, but that's just part of what Freescale delivers. Software enablement is equally important to the solution's success, and comes in the form of Freescale's internally developed Linux® OS software platform. The Linux Target Image Builder is a comprehensive package that includes everything needed for development (compilers, linkers and debuggers), accelerating the product development process.

Freescale also tailors its Linux package to the features of each processor. For example, VGo relies on the video playback acceleration feature of the i.MX27, which allows the processor to run at the optimal speed without excessive power requirements. The Linux release for i.MX27 specifically includes standard plug-ins to the G Streamer framework to take advantage of this feature.

Freescale: Medical Expertise for the Long Term

Semiconductor technology plays a critical role in the development of new technologies to assist with patient 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 microcontrollers,

Features

- H.264 30 fps video codec
- 8 kHz high-fidelity auto codec
- USB accessory ports
- Integrated Wi-Fi (802.11 a/b/g/n)

Freescale Technology in VGo

i.MX27
Host Linux processor, video management

i.MX31L
Audio compression and decompression

MPR084
User interface

technology to meet the unique needs of medical designs. These vital technologies, along with Freescale's 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*.

VGo: Pioneers in Robotic Telepresence for Healthcare

VGo Communications, Inc. was founded in 2007 by experienced, successful veterans of the visual communications and robotics industries. VC-backed and based in Nashua, New Hampshire, the company created the affordable robotic telepresence market category by leveraging recent trends such as widespread wireless high-speed networks, lower costs for specialized components and the universal acceptance of video as a communications medium. Robotic telepresence allows healthcare providers, patients and others in healthcare to establish their presence in a remote location, even when they can't physically be there. Working with the company's channel partners, VGo Communications is delivering affordable technology to empower patients to transcend physical limitations and to enable providers to offer improved quality of care at a lower cost.

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

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

To learn more about how VGo is powered by Freescale technology, visit freescale.com/vgo