

FOREWORD

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Fundamental medical science has made enormous strides over the past several decades, and the length and quality of life in developed countries has improved remarkably. However, trends in demographics, lifestyles, and treatment practices are making our healthcare systems unsustainable. Improving access to healthcare and controlling healthcare costs are two of the most contentious current issues in United States politics, and are a huge concern in most other countries also. Better use of technology in healthcare is an obvious strategy to help solve these problems by applying innovation to how and where we deliver care.

Science and technology have been applied aggressively to clinical diagnostics and treatment. Diagnostic imaging, advanced surgical techniques, and sophisticated pharmaceuticals have all had strong positive benefits. We have not yet seen the benefits of applying everyday technologies that we take for granted in other aspects of our lives, though. Much attention is now being given to applying information technology to record keeping and communication in clinical settings. The recent American Recovery and Reinvestment Act (part of the 2009 economic stimulus package) focuses strongly on deployment and meaningful use of Electronic Medical Records.

This is not enough. To really impact the availability and cost of healthcare, and improve the quality of our citizen's lives, we need to shift some of the focus of healthcare from the clinical setting to the home. Just as much of banking has moved from marble lobbies filled with tellers to a self-service model enabled by technology, we can use readily-available technologies to move some aspects of healthcare from clinical settings to the home. We can also use technology to allow our aging population to stay in their homes longer, living independently. Both of these approaches have the potential to improve quality of life and reduce the cost of providing the healthcare and living assistance our population needs. We need to really understand how to use technology effectively for these purposes, and we need to adapt common technologies for successful use in home settings. We need to make home health technology simple, unobtrusive, and low cost, while protecting the security, privacy, and safety of our most vulnerable family members.

In this issue of the *Intel Technology Journal*, we hope to provide a broad perspective on the use of technology for delivering healthcare at home. Dr. Mike McGee, a noted physician, speaker and author, describes a vision for lifelong healthcare delivered at home. Intel researchers describe their work and some of the conclusions reached over several years gathering ethnographic data and conducting pilot studies of home-based sensor networks. The leaders of two major health standards organizations describe the approaches being taken to create interoperability of data and devices for healthcare. Lessons learned about integrating healthcare data systems are shared by a team developing health data middleware. Intel's experience entering the medical device product development industry is summarized by the leaders of our product development groups. The design team responsible for building an assistive device for reading disabilities shares their approach and learned lessons.

Intel is both a long-standing member of the aging research community and a new participant in the medical device community. We hope that by sharing our insights, and those of our collaborators, we can encourage the development of powerful, easy-to-use technology for home healthcare and independent living. We hope that we can also stimulate investment in — and innovation for — home-based care industries through broad-based R&D collaboration, standards development, and political advocacy to ignite this important marketplace. Our future, and that of our children, depends on dramatically improving access to healthcare and reducing cost, which we believe is achievable if we can “go home again” by using technology and innovation to reimagine how we deal with the epidemics of chronic disease and injury that we all face from the enormous success of our global age wave.

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