

Foreword

Any sufficiently advanced technology is indistinguishable from magic.

– Arthur C. Clarke

It is my honor to write this foreword for Dr. Hakim’s book. Changes in international health-care provision coupled with rapid technological advances have resulted in increased opportunities for combining these two sectors.

Health-care institutions around the world have leaned toward both wired and wireless technologies as the backbone of their technology-led strategies. With issues surrounding integration, interoperability, and standards very much at the heart of such strategies, it is inevitable that future health-care IT solutions will have to take note of these and other pressures. If one considers the staggering acceptance and adoption of wireless networks in the home, together with such must-have items as personal digital assistants (PDAs) and the latest mobile telephones—both of which may have the capacity and capability to link to networks remotely and without conventional wires—there is little wonder that such terms as *pervasive and ubiquitous computing* have gained so much favor so quickly.

So is further research required? Yes and no. Xerox’s Palo Alto Research Center (PARC) has been working on applications revolving around pervasive computing since the 1980s. New technologies, although of course welcome, can easily coexist alongside established and existing research if a new application can be found for them (such as wireless protocols). Basic (pure) and applied research concepts are therefore of equal importance.

By way of an elementary example, in the United Kingdom, Homerton University Hospital in London recently started a trial of SMS (short-message service) “m-reminders” sent to patients regarding their appointments. A simple-enough concept of course, but where is the benefit? Within the United Kingdom’s National Health Service (NHS), missed appointments cost about £300 million per annum (House of Commons Accounts Committee). According to *Health-News*, approximately 30% of people missed their NHS appointments because they simply forgot. A much larger percentage (60%) quoted apathy as their cause for missing appointments: These figures speak for themselves. Simple use of existing technologies can result in vast financial improvements for health-care institutions.

The efficacy of mobile technologies for health has an obvious close relationship with telemedicine and telehealth initiatives. Originally only thought workable for geographically dispersed environments (patients located far away from doctors and hospitals), as social factors came into play (less leisure time, increased pressure of work, and so forth), the application of telemedicine for all is starting to become a reality.

Cutting-edge, almost experimental, research also has a very important role to play. IBM's Almaden Research Center has stated that, by the year 2010, computing will have become so naturalized and accepted within the environment that people will not even realize that they are using computers. The emergence of smart devices with embedded location-centric information allows such technologies to be aware of their context.

With the prevalence of such transmitted information, concerns have been raised over privacy and security, both of which this book considers. It is imperative that technology-based solutions (such as encryption and advanced firewalls) are balanced with the need for accessibility and usability. There is little point in having the most technologically advanced hardware and software solution if most people cannot configure them effectively. The latter half of the book concentrates on applications of technology from the patients' perspective and also illustrates cases from the clinical environment. Behavioral change, which the book tackles, is an important hurdle that needs to be overcome.

Chapter X describes how patients prefer an interface with which they are already familiar. Mobile phones offer SMS, MMS (multimedia messaging service), WAP (wireless application protocol), and HTTP (hypertext transfer protocol) avenues, which can be readily accessed by the patient in order to transmit (and receive) personalized medical information (and, with enough context, clinical knowledge). Another chapter within the "Industrial Applications" section describes an innovative teleradiology project that illustrates the two central constructs of the book: first, the initial idea, which is to transmit in a secure environment X-ray, CT (computed tomography), and MR (magnetic resonance) images for swift diagnosis, and second, how this is to be achieved—by the use of a third-generation PDA-cum-mobile-phone; timely diagnosis can often be vital in such cases.

The book offers both a contemporary overview of opportunities and challenges as well as some insight from the field where applicable. My congratulations go to Dr. Hakim for assembling the chapters in this manner as there is much knowledge and best practice within the book from which both academics and practitioners can learn.

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