Over the years, quality healthcare delivery has been a tantalising question for care providers, patients, and policymakers alike, but recently, it has grown in importance since the burden imposed on healthcare systems around the globe due to society’s ageing has increased at an analogous rate.

Technological advances in the field of information and communication technologies found fruitful ground in care delivery. Clinical mentality has also changed, allowing for use in hard evidence-based medicine. These two factors have combined to where we finally have a tremendous amount of health-related data, generated from a plethora of special devices or registered through various Web applications, and the rising question now has been slightly transformed: How can we achieve maximum quality of healthcare delivery by efficiently managing the abundance of available data?

The “Cloud,” originally a metaphor for the Internet, acquired even more nebulous characteristics after merging with the term “computing” as it implies something even bigger and maybe hazier. Grid computing in earlier days has also attempted to accommodate Information Technology’s (IT) constant demand for increased capacity and new capabilities. Maybe the “Cloud” serves this purpose better.

Since the IT evangelists have decided that Cloud Computing is the next best thing to perfection, healthcare might also profit from it, but how can we judge which Cloud Computing application fits optimally in certain care provision models? This is a subject that this book intends to shed light on by providing successful paradigms of implementation from various disciplines, fields, and more importantly, cultures.

It is organised in 15 distinct chapters, each one covering a different topic. Special care was taken to include flavours of applications from various parts of the world, ranging from the USA all the way to India, but horizontal issues such as security or interoperability are also covered.

The first chapter provides an analytic review of research initiatives for healthcare clouds. Targeted mostly in the USA where there is even a federal guideline on the optimum utilisation of clouds, the authors represent, as is often the case, a combination of large corporate and academic R&D expertise (IBM and Purdue University).

The importance of coordinated data in comparison to meaningful data is the topic of the book’s second chapter. Moreover, it introduces the concept of evaluation of disease and healthcare in general and discusses how Cloud Computing can further promote it in a more down-to-earth robust way. This insightful chapter is based on work undertaken for the School of Public Health, The Johns Hopkins University in USA.

The third chapter originates from Greece and more specifically from the Technological Educational Institute of Athens and its departments of Informatics. It provides important contributions in the demanding field of Big Data in healthcare, as we are witnessing a tremendous increase in volumes generated by patients and systems alike.
Imperial College London and the University of Central Lancashire, UK take over from Greece in the analysis of Big Data in healthcare. This time it is all about sensor data and efficient management as an important aspect of the Wiki-Health platform. This work is presented in the fourth of this book.

The fifth chapter touches upon a horizontal issue in all healthcare applications regardless of their technology platform, and it analyses in depth interoperability, one of the great inhibitors or facilitators of large-scale implementations. This chapter presents work carried out in Portugal by members of academic institutions in the domain of informatics (Minho University) and clinical practitioners (Centro Hospitalar, Oporto).

The sixth and seventh chapters continue with horizontal issues, this time working on the aspect of security in general but also elaborating on specific security aspects per chapter. Efficient healthcare integrity assurance via incremental cryptography and trusted computing is discussed in the sixth chapter from an academic team of the Arab and American Universities in Beirut, Lebanon. Auditing privacy for Cloud-based EHR systems is presented in the seventh chapter from a mixed team of academicians (Queen’s University Belfast, Northern Ireland) and corporate IT specialists (S.A.P. A.G., Northern Ireland).

Sharing information between practitioners has always been a challenge, but especially now when they seem to be in abundance and their efficient sharing might be proven beneficial for the patient. Intelligent Agents and Cloud Computing are proposed and discussed in the eighth chapter of this book by a distinguished Latin American author coming from the academic community of Venezuela.

The ninth chapter of this book originates from ISG-University in Tunisia, and it analyses the relation between Cloud Computing location-based services and high quality healthcare services delivery.

The two following chapters (the tenth and eleventh) present results of research projects in healthcare-dedicated Cloud Computing. The tenth chapter, of an Italian non-academic origin (Spac S.P.A), discusses message-oriented middleware on the Cloud for exchanging e-health data, while the eleventh chapter discusses a cooperative and secure method for medical device sharing under the name CoSeMed (Technische Universität, Berlin).

Remaining in the European continent and more specifically in Greece and Attikon University Hospital of Athens, the twelfth and thirteenth chapters present the idiosyncratic implementation of Cloud Computing applications in the fields of BioLabs and Cytopathology.

Leaving Europe behind for Asia, India, and IIIM Graduate School of Management, the fourteenth chapter presents a thorough and detailed analysis of a case study based on Health Cloud implementation from a business and managerial perspective.

Finally, the fifteenth chapter tackles another horizontal yet critical aspect of healthcare delivery in the Cloud, quality of service. Effort has been made from the Greek author representing the Hellenic Society for Quality and Safety in Healthcare to clear all ambiguities, hence providing for a demystification of the whole process.

After 15 chapters full of data and analyses, the authors and editors have provided the readers interested in the topics of Cloud Computing applications in healthcare with a powerful tool to help them pursue their ambitions in this challenging scientific field.

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Dimitris-Dionisios Koutsouris was born in Serres, Greece in 1955. He received his Diploma in Electrical Engineering in 1978 (Greece), DEA in Biomechanics in 1979 (France), Doctorat in Genie Biologie Medicale (France), Doctorat d’ Etat in Biomedical Engineering 1984 (France). Since 1986, he has been research associate on the USC (Los Angeles), René Descartes (Paris), and Assoc. Professor at the Dept. of Electrical & Computers Engineering of National Technical University of Athens. He is currently Professor and Head of the Biomedical Engineering Laboratory. He has published over 150 research articles, more than 300 conference communications, and 48 chapters. He was supervisor in more than 40 PhD theses and in more than 150 undergraduate and postgraduate dissertations. In his career, he has more than 2,500 citations. Likewise, he has been reviewer for 20 international journals. Prof. Koutsouris has been the President-Elect of the Hellenic Society of Biomedical Technology, HL7 Hellas and of the IFMBE (International Federation Medical and Biological Engineering). He was the main Organiser of 4 Global Conferences and member of the Organising Committee in over 20 international conferences. In addition, he was recently appointed the position of Chairman of the Organising Committee of the E-Health Forum 2014, which is organised under the hospice of the Greek EU Presidency in cooperation with the European Commission.