Preface

Our lives are dramatically affected by Information Society (IS) technologies today. It is hard to find an area where technology has not yet infiltrated. Software and hardware infrastructures are employed for multiple purposes including both interpersonal and work-based interaction, collaboration and communication. In the hardware forefront, mobile communication devices such as laptops, mobile phones and tablets are replaced at a high pace, a process driven by the need for faster and fuller information access. New devices are multimedia enabled and their increased processing and sensing capabilities allow users to access and contribute content to media-rich environments. As a result, from the software perspective, both the volume and complexity of applications increase at a high rate.

Interestingly, the most evolutionary aspect of IS today is how developers choose to innovate through this technological reality. A typical smartphone is considered a fully featured computer, as it combines multi-core processing power, fast-access memory, high-resolution monitor, multiple modes of networking, microphone, speakers, GPS, compass, multi-touch screen, orientation sensors, high-resolution camera, led light and runs on open-access software. In addition it is easier today than ever before to design and build new applications and services as the open access movement is supported globally by a large number of users, new technological hardware/software solutions and open access software that includes programming and development environments. Therefore it can clearly be employed as a hardware platform for the development of new experimental multimedia applications.

In fact, users have today moved beyond technological experimentation with new forms of communication, participation, collaboration and creativity. Their new phase is clearly more dynamic as they take up an active role in the software and hardware development processes. It is interesting to observe the diversity of ways in which existing technologies are being recycled or re-used by different user groups that extend their functionality and transform them in order to cover their particular requirements. Experimental Multimedia Systems are characterised by this particular developmental approach, where older systems are being re-engineered in order to cover the demands of new application domains and content. In that sense Interactivity and Strategic Innovations are both valued characteristics introduced at various levels: within the experimental multimedia system itself, and throughout the content. For instance, the book as physical and intellectual object is constantly being transformed due to a number of reasons among which the use of new information and communication technologies prevails. Within that context, the publishing industry faces significant challenges redefining thus values, redeveloping strategies, re-inventing methods and re-creating taste. In a globalized world, innovation and risk go hand in hand. The exploitation of new information and communication technologies was and is one of the peak points for the publishing industry altering book production and distribution, promotion methods, marketing, advertisement, bookselling as well as reading and communicating. The role of multimedia is inevitably
significant in the publishing value chain from the author to the publishers and to the reader; publications can be printed or electronic, and we read on printed books, e-books, tablets, mobile phones and other devices. Meanwhile, social media create communities of readers while direct communication between publisher and reader is among the key points for the publishing activity of our era. Furthermore, the transformations of the book through the experimentation with multimedia (for example, gamification) bring about new forms of texts as well as new reading and aesthetic experiences.

This book is a collection of carefully selected state-of-the art theoretical and applied research chapters in the field of “Experimental Multimedia Systems”, with special focus on Interactivity and Strategic Innovation. The presentation of interdisciplinary case studies is of particular importance for experimental multimedia systems, as it proves their wide applicability in various domains of interest. Ultimately, readers should be able to identify innovation at different levels within systems and fields of application. In order to view this through an example, one may wish to consider the field of New Media Art. From the developer’s perspective it is clearly an interdisciplinary creative & research area directly affected by technological developments where each and every creation is unique. Here, artists and technologists cooperate in order to create artwork featuring extended interaction and presentation requirements via the extension of the limitations of technology. Depending on the task in hand, artists have to develop technologies that often exploit the human sensing limitations in order to create new experiences. Clearly, this particular area of application is aided by technological developments and increased user-proficiency in new technologies, while the developments implemented during this process, can then be applied within other areas of interest.

On the other hand, this book can be used as roadmap for augmented reality technological investments. It is in fact true that the availability of a technology does not necessary imply its immediate utilisation in organizations and enterprises. The concept of supplementing reality in various settings through computer-generated information needs to further mature within the management decision-making mechanisms. This book also attempts to contribute to this discussion of reassessing already existing services. Then novel services are developed by embedding into the existing services artificial information related to the environment and its physical objects. Obviously museums, libraries, publishers and other information organizations could more straightforwardly be involved and a new window of opportunity is opening for them in developing innovative services. However, in other settings beyond the creative industry, the top management requires comprehension for the value created by such technological applications. In healthcare, for example, augmented reality applications are gradually developed for assisting the diagnoses and the therapeutic interventions. In education, applications for enhancing the learning process are progressively become available and such brilliant applications are put in use into the classrooms. We also trust that market driven forces may come to liberate a wide array of opportunities for augmented reality applications adoption, for instance in retail, branding, and in many (if not all) industries.

Then again, the management operations themselves can employ the augmented reality prospect for leadership and for other organizational processes related to human resource management. Moreover, sharing organizational aims, communication and information exchange within business networks will certainly be benefited by augmented reality experiences. Other augmented reality organization-based applications could be developed in order to increase the quality and the effectiveness of staff education programs and at the same time reducing the cost when compared to the conventional methods. Furthermore, new job descriptions are developing or existing ones are redefined in order to include staff with
skills in augmented reality technologies. The technological innovation does not only affect life, as we know it, but also have an impact on the way businesses are run, management operations are taking place and management decisions are made. This is certainly a fruitful area for research for augmented reality technological applications.

Institutions and universities targeting new-media art research need to frequently adapt their curriculum in order to cover the dynamically changing research demands that evolve. As a result, interactive multimedia-based art utilises multimedia technologies clearly capable to trigger all senses, in an attempt to transfer to the audience emotions and create new user experiences.

The content structure is designed to offer the reader a scalable introduction that focuses on experimental multimedia from different perspectives. It combines state of the art research on innovative trans-media storytelling and narrative social-media-based marketing, while the role of the consumer in the process is highlighted; presentation of a number of high-profile artworks, which are analyzed in terms of their interactive aspects; real-life museum-based and open-space case studies; music information retrieval; audio emotion recognition; dynamic music teaching; evaluation of the multimedia experience; the evolution of books; and applications in museums featuring edutainment, health and medical research.

The Editors