

Preface

In the present globalization scenario enterprises have started realizing that the only place where they could grow is outside the Country. For this to happen, they have to become internationally not just competitive but internationally acceptable as suppliers or service providers. Managing business knowledge as well as innovative process of conducting business is required in the present globalization scenario. The important factor for the success on the business landscape is innovation. Innovation is no longer confined to research and development of an enterprise. Whatever way the innovation is generally defined, business leaders and management thinkers are convinced of its value to business. It would be apt to recall Peter Drucker's observation on "Innovation": he says that innovation is not science or technology but value. There are two types of innovation. They are incremental and radical innovation. Incremental innovation talks about improving, expanding or extending the existing business models, processes, products and services. In the case of radical innovation it refers to creation of something new. Critical business needs decide the type of innovation to be adopted. Growth of a business depends on the ability of business to innovate. Integration of the knowledge management concepts, business process reengineering, human centered assets and sophisticated concepts of information and communication technologies can be considered as foundation for innovation. Virtual reality concept makes innovation a reality.

Virtual reality essentially refers to the presentation of system generated data made available in such a way that those who use it perceive the information at their disposal as having similar or enhanced characteristics in business models. The line dividing simulated tasks and their real world counter parts is very thin. The ability to get real world perceptions interactively through systems explains the interest associated with three dimensional graphics in virtual reality. The synergy between real and simulated facts yields a real effectiveness. It will be more effective if the system and its artifacts are to be active rather than a passive display. The essential element of virtual reality is that interactive simulation with navigation among widely scattered heterogeneous data bases. This results in logical, numerical processing and wide range of visualization functions. Virtual reality concept helps to unlock the innovative thinking in enterprises for carrying out incremental and radical innovation in their organization. Virtual reality concepts help enterprises to accomplish their ambitious goals with new innovation improvement incentives. The new initiatives help generating alternative ideas by taking inputs from different sources and structuring through virtual reality applications. Virtual reality concepts will increase the chances of successfully diffusing knowledge, technology and process. It will definitely provide scope for innovation to emerge. The contributors of this book are from academics who are doing research related to the concept of virtual reality and developing business models using this concept.

In the introductory chapter Rao states that rapid changes are taking place in global economy. Therefore it has become a necessity for enterprises to respond to these changes. Innovation in the business is the

solution to face these changes. The importance of Collaborative technology and Knowledge Management Systems is explained for developing a business innovation models. Hanqiu Sun and Hui Chen explain in their chapter that Virtual Reality applications strive to simulate real or imaginary scenes with which users can interact and perceive the effects of their actions in real time. Adding haptic information such as vibration, tactile array and force feedback enhances the sense of presence in virtual environments. The chapter written by Bilalis Nicolaos and Petousis Markos talks about their virtual reality environment model. This model stimulates the operation of a three axis milling machine and it is integrated with a graphical model for the calculation of quantitative data affecting the machined surface roughness. Gabriel Zachmann describes that collision detection is one of the enabling technologies in many areas such as virtual assembly simulation, physically-based simulation, serious games, and virtual reality based medical training. Rui (Irene) Chen, Xiangyu Wang, and Lei Hou talk about augmented reality systems that could provide cognitive support and augmentation. Further they discuss the possible innovative ways for efficient and robust solutions in design assembly processes. Ross Brown and Rune Rasmussen observe that business process modeling is a fast growing field in business and information technology. Harrison R. Burris and Shahid A. Sheikh suggest that neuromarketing techniques help marketers to ascertain how consumers evaluate products, objects or marketing messages. Further they explain neuromarketing is relatively a new field of marketing that utilizes computer simulated environments. Two cases studies pertaining to film production and health care sector are discussed in support of virtual environment visualizations. Rui Wang and Xiangyu Wang talk about the use of immersive virtual reality concept to design a distributed marketing system for commercial sector based on Benford's mixed reality boundaries theory and motivated learning agents model. Sofia Bayona, Jose Miguel, Jose Manuel, Luis Pastor and Angel Rodriguez indicate the advantages of virtual reality in the health care sector. They explain about the development of a VR surgery simulator. Rafael Capilla analyzes the impacts of virtual reality technology in the creation and use of virtual communities and outlines the benefits and drawbacks in a globalized context. Mercedes Farjas Abadia, Manuel Sillero Quintana and Pedro Angel Merino Calvo present the research work of a group who are working on the techniques of Capturing and representing the image of human body. The results obtained by the research group are presented in their chapter. The chapter written by Mercedes Farjas, Francisco J. Garcia Lazaro, Julio Zancajo, Teresa Mostaza and Nieves Quesada discuss about laser scanned systems as a new method of automatic data acquisition for use in archaeological research.

This book provides comprehensive view of virtual reality concepts being used with collaborative technologies across multiple sectors such as manufacturing, healthcare, marketing and business organizations. This book would be useful in libraries for reference of research scholars, in research and development departments, as a course supplement to the students pursuing computer science related subjects and as a resource for software professionals.

N. Raghavendra Rao
VIT University, India