

Preface

The first book¹ in this subject area covered the key aspects of collaboration and communication in Research and Development (R&D), and how technology may be used to support creativity in the R&D process. This included how research and development in art and design may be formulated, and framed, and then evaluated and measured, and the valuable contribution that art and design makes to the scientific and technological enterprise and vice-versa.

This book brings together an analysis of the current methodologies for research and development in the academy and industry with a number of illustrative Case Studies. The latter are used to review how the processes of research, development, and implementation work out in practice.

Creative industries are increasingly being seen as important local and national components of revenue generation and job creation, as well as potential catalysts on the wider front of social inclusion, cultural diversity, and human development. This book also recognizes the challenges that interdisciplinary working on content creation can bring and provides suggestions in Chap. 3 on how to address these.

The academy and industry are each currently facing a number of significant challenges. The academy faces funding cuts, an increasing proportion of part-time and adjunct faculty, and increasing competition from commercial providers. Industry faces the challenge of a global market, the rise of Asia, and periodic economic downturn.

The tensions and different ways of working between the academy and industry are well summarized in Chap. 2. Whilst these technical and cultural issues can still present ongoing difficulties, they are resolvable by mutual understanding and support between the partners, and a common and united desire to achieve agreed objectives and outcomes.

In Chaps. 2 and 4, the book details the various ways in which the academy and industry can collaborate. Therefore irrespective of the current position of the

¹Earnshaw, R.A.: Research and Development in Art, Design and Creativity. Springer (2016) <http://dx.doi.org/10.1007/978-3-319-33005-1>.

academy in the spectrum of options, there is normally scope for a collaboration to be established. The current trend in agency-funded research and development is towards larger collaborations in order to be able to effectively address significant societal and industrial problems and challenges. This represents a major opportunity for the academy to demonstrate the innovation and creativity that has characterized its activity in the past, and which continues into the present.

New ideas and new discoveries are key to the future. Entrepreneurial expertise is needed to migrate these ideas into practical applications and value-added products and services. Chapter 4 discusses the parameters of the academy–industry collaboration and how success can be achieved.

This book examines how creativity can characterize and support research and development from an idea to an industrial product or service in typical creative application areas and technology deliverables. Collaboration between the academy and the industry is examined and the factors leading to successful products and services are identified. The process of initial idea through to design and successful implementation is a pipeline. Creative applications are increasingly becoming dependent on information technology and there is a need to understand how this may be optimized in terms of utilization resources and also ease of interfacing to the user. A number of factors tend to be generic and permeate many application areas (such as device handling, bandwidth requirements, use of color, interaction methods) while others are more customized with specialist hardware and software (e.g., shared virtual environments, augmented reality), though the latter are increasingly being run on the Internet with low-cost devices and are aimed at a mass market (e.g., Pokémon Go). This trend is likely to continue since the objective is to be able to utilize commodity products and thereby increase market penetration.

This book has selected three Case Studies and examines how they are implemented and what lessons can be learned from the successes or failures in aspects of the implementation. Two of these Case Studies are in creative applications; the third is on a wider industrial project. Thus Chaps. 1–4 detail the aspects associated with research and development and the collaboration between the academy and industry. Three chapters detail the Case Studies and have been authored and contributed by those involved directly in the work in these areas. Each Case Study contains a section on the lessons learned from the project. Many of these lessons are generic in nature and should be useful to readers developing their own applications. The first two Case Studies are primarily in the creative industry areas. The third Case Study is in the physical sciences area and is therefore more classical in its approach and involves a university and an industrial company with cognate interests in a scientific area of the academy. However, the lessons learned are also primarily generic in nature and should be useful to those involved in the creative industries areas.

Each Case Study is authored by a specialist author (or authors) and they are detailed in the Acknowledgements section at the end of this Preface.

Creative industries are estimated to be making an increasing contribution to a nation's economy through wealth and job creation. The basic resources are ideas and information which are transformed into cultural goods and services through

a group of linked activities. Application areas currently include advertising, publishing, design, digital media, computer games, museums, galleries, music, and visual arts. Digital platforms enable the user to access content and services. Digital convergence is bringing together information technology, telecommunications, and media. The market for creative industries is global and competitive. Thus content and services need to meet a user need, be attractive, and be easy to access and use. This requires creativity, skill, talent, and innovation often across a number of sectors during the research and development processes.

The creative industries face a unique mixture of both challenges and opportunities because of their mixture of disciplines and varied backgrounds of the practitioners and researchers. Working within their own particular disciplines, researchers will typically find it comfortable and familiar to develop and evaluate ideas and processes utilizing the methodologies that are traditionally associated with, or are intrinsic to, their discipline. The challenges and opportunities occur where cross- and interdisciplinary works take place. This leads to two issues relating to research: first, how to effectively support and nurture cross- and interdisciplinary research in the creative industries and second, how to ensure that where crossdisciplinary work takes place, then it adds value to the product or service being developed.

The University of Bradford, UK, pioneered the area of digital media in the mid-1990s by tripartite collaborations between technology, art and design, and media and broadcasting. It was done by setting up a new academic department because it did not sit easily within existing academic disciplines and structures. It was very successful in attracting students and also meeting the needs and requirements of industry. It also highlighted the benefits and advantages of interdisciplinary collaborations. Involvement in a number of large interdisciplinary European Projects over the years at the Universities of Leeds and Bradford required research and development in a number of application areas, such as multimedia assets for design, collaborative visualization over networks, and virtual entertainment, and led to a number of important results. These are detailed in the first book referred to above.

Involvement as a professor in the School Creative Arts at Glyndwr University, Wales, over recent years has provided opportunity to think about these aspects, and publish a number of papers in collaboration with the faculty.

It is hoped that this book makes a useful contribution to an important area of discussion and debate.

Acknowledgements

Chapters 5, 6, and 7 are Case Studies and thanks are expressed to all the authors who contributed these chapters. Chapter 5 “*Shared Virtual and Augmented Environments for Creative Applications*” was supplied by Prof. Alexei Sourin, Nanyang Technological University, Singapore. Chapter 6 “*Digital Holography as a*

Creative Medium to Display and Re-interpret Museum Artefacts, Applied to Chinese Porcelain Masterpieces” was supplied by Dr. Shuo Wang, Dr. Ardeshir Osanlou and Prof. Peter S. Excell, Wrexham Glyndwr University, UK. Chapter 7 “*Improving the Physical Properties of Materials by Collaboration between Industry and the Academy*” was supplied by Dr. Elvin Nix, UK.

Thanks and appreciation are due to all those who read draft versions of the chapters and provided comments to improve technical content and readability. However, responsibility for the final text rests with the author.

Thanks are expressed to colleagues and students at the School of Creative Arts at Wrexham Glyndwr University, Wales, for many useful discussions.

Thanks are expressed to John Dill for providing the Foreword to the book.

Thanks and appreciation are also due to Springer for assistance and support with the production of the book and e-book.

Bradford, UK
January 2017

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Research and Development in the Academy, Creative
Industries and Applications

Earnshaw, R.

2017, XIV, 104 p. 24 illus., 23 illus. in color., Softcover

ISBN: 978-3-319-54080-1