



Foundations of Research Practices Designing and Producing a Research Publication

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Preface

Research is the collective and collaborative building of reliable and robust new knowledge and understanding. Good research is driven by what we know and discover we don't yet know and understand.

1 Introduction

The collective and collaborative nature of research, and the need to know what is known, means that good communication of research and its outcomes is essential. Without good communication, good research cannot happen.

The principal forms of communication in research are articles published in refereed journals and conference and workshop proceedings. Preparing and producing good research publications is a kind of design task, as are many other research activities, such as preparing a talk, an experiment, a research study, a funding proposal, a research programme, a project workshop, a conference.

This teaching workshop aims to introduce the nature of designing as a disciplined and efficient way of working towards a desired or needed outcome, teach some basic design skills and discipline, and help researchers learn how to design and build good quality research publications.

2 Learning Objectives

On completion of the workshop participants will have learned and practiced

- 1 the basic discipline and skills of designing, how designing works to produce known to be good outcomes, how designing is different from problem solving, and
- 2 an effective and efficient approach to designing and producing a good research publication ready for submission.

3 Who is the Workshop For?

The workshop is designed for PhD students and forms a needed part of their training in doing research. It can also work well to strengthen the research practices of Post-doctoral and junior researchers.

4 Workshop Programme

The workshop is organised as ten sessions over two days. The first day is concerned with the nature of designing, and with learning and practicing some basic design discipline and skills. The second day is concerned with learning and practicing how to design and prepare a a known to be good research publication ready for submission.

Some sessions will be teaching seminars, in which everybody will be encouraged to contribute, and others will be practical sessions in which participants will work in groups of two or three on the practical exercises.

Day 1	An Introduction to Designing as Puzzle-Making and Puzzle-Solving	
S1	Introduction & Sharing Publication Experiences	1.0hr
S2	A brief introduction to designing <i>Coffee Break</i>	1.0hr
S3	Practical Exercise 1: Soma Cube Explorations <i>Lunch Break</i>	2.0hr
S4	Practical Exercise 2: Designing New Soma Forms <i>Tea Break</i>	2.0hr
S5	Presentations of Soma Designs and Evaluations <i>End of Day 1</i>	1.5hr

Day 2	Designing and Preparing a Research Publication	
S6	Part 1: Identifying What Needs to be Designed <i>Coffee Break</i>	1.5hr
S7	Part 2: Designing, Specifying, and Building a Publication <i>Lunch Break</i>	1.5hr
S8	Practical Exercise 3: Designing a Publication Specification	1.0hr
S9	Presentation of Specifications and their Evaluation <i>Tea Break</i>	1.5hr
S10	Closing Discussion: Identifying what has been learned and what to take away <i>End of Day 2</i>	1.5hr

Session duration times may need to be adjusted a bit, depending upon the number of participants.

See Appendix for a more detailed version of this workshop programme.

5 What Students Will Need to Bring and Do

Students attending this workshop will be expected to take notes during the teaching sessions, and to prepare material during the practical sessions to be presented to the full group in a subsequent group session. (A laptop computer would be convenient for this work.)

Students should also bring to the workshop any research publications they have, or research and its outcomes that might form the content of a research publication.

Some presentation slides will be used and made available after the workshop, but these are not designed to work as notes. Additional documentation will be provided to cover some of the material of Day 1 and Day 2 of the workshop.

The teaching and learning in this workshop is designed to work with contributions from everybody, and the engagement by all.

6 Biographical Notes

Tim Smithers works as an independent research practitioner. His main areas of research are in Artificial Intelligence, Intelligent Robotics, and Design. He has more than thirty-five years of research experience, including postgraduate teaching, PhD supervision, and directing and managing research groups and international collaborations. He has worked at Cambridge University (England), Edinburgh University (Scotland), VUB (Brussels), Sydney University (Australia), and UPV/EHU, Universidad de Navarra, and Mondragon Unibertsitatea, in the Basque Country. And he has held senior research positions in several Technology and Science Research Centres in and around Donostia / San Sebastián.

As an independent research practitioner he has had important collaborations with the Department of Design, Manufacture, and Engineering Management, Strathclyde University, Glasgow, the Fraunhofer Institute for Computer Graphics in Darmstadt, Swinburne University of Technology, Melbourne, Colorado State University, Fort Collins, and has on-going interactions with other research groups and companies in different parts of the world.

For more details, see his LinkedIn profile at
<<http://www.linkedin.com/in/timsmithers>>.

Appendix: Detailed Workshop Programme

Day 1	An Introduction to Designing as Puzzle-Making and Puzzle-Solving	
S1	Introduction & Sharing Publication Experiences - Introduction of aims and objectives of workshop - Outline of workshop programme - Sharing of publications experiences	1.0hr
S2	A brief introduction to designing - Designing as disciplined exploration and discovery to satisfy needs and desires - Design as Puzzle-Making and Puzzle-Solving — <i>Coffee Break</i> —	1.0hr
S3	Practical Exercise 1: Soma Cube Explorations - Discover how to solve the Soma Cube puzzle, including different solutions - Discover how to build other specified shapes, and documenting the explorations and discoveries — <i>Lunch Break</i> —	2.0hr
S4	Practical Exercise 2: Designing New Soma Forms - Design 2 or more original Soma Shapes using all 7 pieces - Documenting discoveries and evaluations — <i>Tea Break</i> —	2.0hr
S5	Presentations of Soma Designs and Evaluations - Presentations of original Soma designs, how they were discovered, and how good they are — <i>End of Day 1</i>	1.5hr

Day 2	Designing and Preparing a Research Publication	
S6	<p>Part 1: Identifying What Needs to be Designed</p> <ul style="list-style-type: none"> - Identify the research and outcome to be communicated - Identify and know all the design conditions - Prepare for the designing <p>— <i>Coffee Break</i> —</p>	1.5hr
S7	<p>Part 2: Designing, Specifying, and Building a Publication</p> <ul style="list-style-type: none"> - Building a publication specification - Building and preparing a full draft - Writing in English and where to find some help <p>— <i>Lunch Break</i> —</p>	1.5hr
S8	<p>Practical Exercise 3: Designing a Publication Specification</p> <ul style="list-style-type: none"> - Working in small groups to build a complete publication specification 	1.0hr
S9	<p>Presentation of Specifications and their Evaluation</p> <ul style="list-style-type: none"> - Presentation and discussion of the publication specification - Identification of good designs and difficulties to avoid <p>— <i>Tea Break</i> —</p>	1.5hr
S10	<p>Closing Discussion</p> <ul style="list-style-type: none"> - Identifying what has been learned and what to take away - Identification of some good practices to continue <p>— <i>End of Day 2</i> —</p>	1.5hr