

Simula Research Laboratory

Aslak Tveito • Are Magnus Bruaset • Olav Lysne
Editors

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— by thinking constantly about it

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The front cover: The employees are the foundation of Simula Research Laboratory. To symbolize this we created the front cover image from photos of employees. At Simula, a sculpture depicting the head of a thinking human is awarded to the “Researcher of the year.” An image of this sculpture forms the basis of the montage.

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Preface

When researchers gather around lunch tables, at conferences, or in bars, there are some topics that are more or less compulsory. The discussions are about the hopeless management of the university or the lab where they are working, the lack of funding for important research, politicians' inability to grasp the potential of a particularly promising field, and the endless series of committees that seem to produce very little progress. It is common to meet excellent researchers claiming that they have almost no time to do research because writing applications, lecturing, and attending to committee work seem to take most of their time. Very few ever come into a position to do something about it.

With Simula we have this chance. We were handed a considerable annual grant and more or less left to ourselves to do whatever we thought would produce the best possible results. We wanted to create a place where researchers could have the time and conditions necessary to reflect over difficult problems, uninterrupted by mundane difficulties; where doctoral students could be properly supervised and learn the craft of research in a well-organized and professional manner; and where entrepreneurs could find professional support in developing their research-based applications and innovations.

This book is about what we did. It describes the philosophy behind Simula Research Laboratory, how we have tried to implement it, and the results that have come out of it. We have tried to describe this through a mix of articles and interviews. Most of the book is intended for anyone interested in research, whereas some of the articles are written for experts interested in Simula's research subjects.

At the time of this writing, Simula has existed for slightly more than eight years and it is fair to say that we still have a long way to go. The vision is still a vision, but by reading this book we hope you will sense a strong will to work towards this goal. We do not claim that we have found the solution but we are looking for it and will keep working towards that goal because our conviction is stronger than ever. We need researchers who are able to fully concentrate on their problems, we need to improve the way we educate new researchers, and we must become much better at developing applications based on our research.

Writing a book such as this is a big project involving many contributors. We would like to thank all of them for a fruitful collaboration. In particular, we would like to thank Arvid Hallén, Ingolf Søreide, Arild Underdal, Paul Chaffey, Odd Reinsfelt, Ine Marie Eriksen Søreide, Bjørn Rasmussen, Hans Christian Haugli, Morten Dæhlen, Hans Gallis, and Viktor S. Wold Eide for taking the time to be interviewed

for the book. We would like to thank Christian Hambro for his introduction to Norwegian research politics and Bjarne Røsjø for his introduction to the difficult birth of IT Fornebu. Furthermore, we would like to thank Bjarne Røsjø and Dana Mackenzie for conducting all the interviews, Sverre Christian Jarild and Morten Brakestad for taking the photographs, and Anna Godson for translating from Norwegian. AcademicWord has been very efficient at editing the language of most of the chapters of the book and Marianne M. Sundet, Tomas Syrstad Ruud, and Åsmund Ødegård have done a superb job handling all the practicalities of the project. The front cover was designed by Åsmund Ødegård, Marianne M. Sundet, Are Magnus Bruaset, and Manfred Bender (WMXDesign GmbH) at Springer-Verlag. Finally, we wish to thank all members of Simula's staff who have contributed to this book in so many ways.

At Simula's opening, Dr. Martin Peters of Springer-Verlag attended as a guest alongside half the Norwegian government. Since then, Dr. Peters has been a frequent guest at Simula and all those visits have paid off handsomely for both parties. A total of ten Springer books have been produced by Simula employees. As always, our collaboration with Dr. Peters and with Springer-Verlag has been outstanding.

Special acknowledgements are due to the Norwegian Government represented by the Ministry of Education and Research, the Ministry of Trade and Industry, and the Ministry of Transport and Communications. It was a bold decision of them to create Simula, and we are grateful for the continuous financial and political support they have provided. We would also like to thank the Research Council of Norway for skillfully administering our relations to the Government.

Furthermore, we would like to thank StatoilHydro for their long-term commitment in research undertaken at Simula. Together with them we have built a strong activity on computational geosciences, and the yield of this collaboration forms the basis of several chapters of this book. We are also grateful for collaboration with and financial contributions from the Municipality of Bærum, Telenor, Det Norske Veritas, and Sun Microsystems.

If you have views, questions, or comments about the contents of this book, please do not hesitate to contact the authors of the chapters or Aslak Tveito at aslak@simula.no.

We hope you will find something to think about.

Fornebu, Norway, June 2009

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Some common abbreviations

CBC	Center for Biomedical Computing
CoE	Centre of Excellence
DNV	Det Norske Veritas
FFI	Norwegian Defence Research Establishment
ICT	Information and Communication Technology
Ifi	The Department of Informatics, University of Oslo
ND	The Network and Distributed Systems Department
NR	Norwegian Computing Center
NTNU	The Norwegian University of Science and Technology
RCN	The Research Council of Norway
SC	The Scientific Computing Department
SE	The Software Engineering Department
SI	Simula Innovation AS
SSRI	Simula School of Research and Innovation AS
SRL	Simula Research Laboratory AS
UiO	University of Oslo