

# Table of Contents

## Keynote Address

A World Full of Computers: How Did That Happen? ..... 1  
*James W. Cortada*

## Computerizing Public Sector Industries

Computerization of the Norwegian Land Register: An Early Example  
of Outsourcing and Still a Model for Good Practice ..... 13  
*Bjørn Nagell*

Controlling the Battlefield: Computing and Operational Command in  
the Swedish Armed Forces, 1966–1989 ..... 22  
*Johan Gribbe*

The Use of Computers for Controlling Electricity Flows in Sweden,  
1950–1980 ..... 28  
*Arne Kaijser*

Operations Analysis Computing at FFI, 1970–1995 ..... 35  
*Norodd Hagenson*

Re-engineering Norwegian Research Libraries, 1970–1980 ..... 43  
*Ingeborg Torvik Sølvberg*

Instruments of Surveillance Welfare: Computerizing Unemployment  
and Health in 1960s and 1970s Sweden ..... 56  
*Isabelle Dussauge and Julia Peralta*

History of Electronic Prescriptions in Sweden: From Time-Sharing  
Systems via Smartcards to EDI ..... 65  
*Gunnar O. Klein*

Electronic Health Records in Sweden: From Administrative  
Management to Clinical Decision Support ..... 74  
*Karin Kajbjer, Ragnar Nordberg, and Gunnar O. Klein*

## Computerizing Management and Financial Industries

The Totally Integrated Management Information System in 1960s  
Sweden ..... 83  
*Gustav Sjöblom*

The History of the Swedish ATM: Sparfrämjandet and Metior ..... 92  
*Björn Thodenius, Bernardo Bátiz-Lazo, and Tobias Karlsson*

Electronic Securities: The Introduction of an Electronic Registration and Settlement System for the Norwegian Securities Market ..... 101  
*Jan Hellstrøm*

How New Computing Technology Reformed the Audit Profession ..... 108  
*Bjørn Barth Jacobsen*

## Computerizing Art, Media, and Schools

History of Digital Dating: “Computer-Balls” and Digital Pairing in Finland from the 1960s to the Present ..... 117  
*Jaakko Suominen*

Collaborations between Engineers and Artists in the Making of Computer Art in Sweden, 1967–1986 ..... 127  
*Anna Orrghen*

IBM’s Norwegian Grammar Project, 1988–1991 ..... 137  
*Jan Engh*

Computer Courses in Finnish Schools, 1980–1995 ..... 150  
*Petri Saarikoski*

Teacher Pioneers in the Introduction of Computing Technology in the Swedish Upper Secondary School ..... 159  
*Lennart Rolandsson*

## Users and Systems Development

Computing on the Desktop: From Batch to Online in Two Large Danish Service Bureaus ..... 168  
*Anker Helms Jørgensen*

UTOPIA: Participatory Design from Scandinavia to the World ..... 176  
*Yngve Sundblad*

Designing Democracy: The UTOPIA-Project and the Role of the Nordic Labor Movement in Technological Change during the 1970s and 1980s ..... 187  
*Per Lundin*

## The Making of a Nordic Computing Industry

Early History of Computing in Denmark ..... 196  
*Søren Duus Østergaard*

|   |     |
|---|-----|
| Making Business of a Revolutionary New Technology:<br>The Eckert-Mauchly Company, 1945–1951.....  | 207 |
| <i>Lars Heide</i>   |     |
| IBM Manufacturing in the Nordic Countries.....  | 215 |
| <i>Petri Paju</i>   |     |
| The Presence of the IBM Branch Office in Iceland, 1967–1992 .....                                 | 228 |
| <i>Sverrir Ólafsson</i>   |     |
| Personal Computers: A Gateway to Personal Computing .....   | 234 |
| <i>Kari Kotiranta</i>   |     |
| Norwegian Computer Technology: Founding a New Industry .....                                      | 240 |
| <i>Yngvar Lundh</i>   |     |
| The Founding, Fantastic Growth, and Fast Decline of Norsk Data AS...                              | 249 |
| <i>Tor Olav Steine</i>  |     |
| The Norwegian National IT Plan, 1987–1990: Whence It Came, What<br>It Was, and How It Ended ..... | 258 |
| <i>Arne Sølvberg</i>  |     |

## Nordic Networking

|  |     |
|--|-----|
| Before the Internet: Early Experiences of Computer Mediated<br>Communication ..... | 271 |
| <i>Jacob Palme</i>   |     |
| The Baby Networks: Nordic Positions Before the Internet .....                      | 278 |
| <i>Tomas Ohlin</i>   |     |
| Development of Internet Technology and Norwegian Participation .....               | 287 |
| <i>Yngvar Lundh</i>  |     |
| The Internet Development Process: Observations and Reflections.....                | 297 |
| <i>Pål Spilling</i>  |     |

## Nordic Software Development

|  |     |
|--|-----|
| The Use of Interpretation for Data Acquisition and Control: Its Impact<br>on Software Development and Project Management ..... | 305 |
| <i>Otto Vinter</i>   |     |
| Computer Systems Performance Engineering in Trondheim: Origins<br>and Development, 1970–1995 .....                             | 315 |
| <i>Peter H. Hughes</i>   |     |

|  |     |
|--|-----|
| Provisioning of Highly Reliable Real-Time Systems . . . . .  | 323 |
| <i>Harold (Bud) Lawson and Kurt-Lennart Lundbäck</i>   |     |
| Information Modeling: Forty Years of Friendship . . . . .  | 331 |
| <i>Stig Berild and Eva Lindencrona</i>   |     |
| Scandinavian Contributions to Object-Oriented Modeling Languages . . . . .   | 339 |
| <i>Birger Møller-Pedersen</i>  |     |
| <br><b>Nordic Research in Software and Systems Development</b>   |     |
| Dansk Datamatik Center . . . . .   | 350 |
| <i>Dines Bjørner, Christian Gram, Ole N. Oest, and Leif Rystrøm</i>  |     |
| SISU: The Swedish Institute for Systems Development . . . . .  | 360 |
| <i>Janis A. Bubenko, Jr.</i>   |     |
| Cloud Computing in the 1970s: The Discovery of Hash Based Relational Algebra . . . . .   | 368 |
| <i>Kjell Bratbergsgen</i>  |     |
| The TEMPORA Approach: Information Systems Development Based on Explicit Business Rules with Time . . . . .                               | 375 |
| <i>Benkt Wangler</i>   |     |
| RAMATIC: A Case Shell Platform . . . . .   | 383 |
| <i>Lars-Åke Johansson and Mats Gustafsson</i>  |     |
| <br><b>Teaching at Nordic Universities</b>   |     |
| Computer Science Education at Helsinki University of Technology: The First Ten Years (1968–1978) . . . . .                               | 390 |
| <i>Hans Andersin, Reijo Sulonen, and Markku Syrjänen</i>   |     |
| Provincial Designer Design: A Creative Mix of Hard Restrictions and Soft Visions of an Information Systems Educational Program . . . . . | 399 |
| <i>Darek Haftor, Stig C. Holmberg, Ulrica Löfstedt, Christina Amcoff Nyström, and Lena-Maria Öberg</i>                                   |     |
| Teaching Image Analysis at DIKU . . . . .  | 409 |
| <i>Peter Johansen</i>  |     |
| Simula: Mother Tongue for a Generation of Nordic Programmers . . . . .   | 416 |
| <i>Yngve Sundblad</i>  |     |

## New Historiographical Approaches and Methodological Reflections

|   |     |
|---|-----|
| Precursors of the IT Nation: Computer Use and Control in Swedish Society, 1955–1985 .....   | 425 |
| <i>Isabelle Dussauge, Johan Gribbe, Arne Kaijser, Per Lundin, Julia Peralta, Gustav Sjöblom, and Björn Thodenius</i>                      |     |
| Text Mining and Qualitative Analysis of an IT History Interview Collection .....  | 433 |
| <i>Petri Paju, Eric Malmi, and Timo Honkela</i>   |     |
| A Classification of Methods and Contributions in the Historiography of Nordic Computing .....   | 444 |
| <i>Henry Oinas-Kukkonen, Harri Oinas-Kukkonen, and Veronika Sušová</i>  |     |
| Research Directions Profile in the Computing Museum of the Institute of Mathematics and Computer Science, University of Latvia (IMCS) ... | 453 |
| <i>Rihards Balodis, Juris Borzovs, Inara Opmane, Andrejs Skuja, and Evija Ziemele</i>   |     |

## Panel Discussion

|   |     |
|---|-----|
| What Can We Learn from the History of Nordic Computing? .....   | 462 |
| <i>Tomas Ohlin, Harold (Bud) Lawson, Søren Duus Østergaard, Ingeborg Torvik Sølvberg, and Nina Wormbs</i> |     |

|                    |     |
|--------------------|-----|
| Author Index ..... | 465 |
|--------------------|-----|