Joyce Fortune
and Geoff Peters

INFORMATION *systems*

ACHIEVING SUCCESS BY AVOIDING FAILURE

Information Systems

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by

JOYCE FORTUNE

GEOFF PETERS

John Wiley & Sons, Ltd

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John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester,
West Sussex PO19 8SQ, England

Telephone (+44) 1243 779777

Email (for orders and customer service enquiries): cs-books@wiley.co.uk
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Dedication

To Benedict and Lucy
and Gemma, Alexis and Anna

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ABOUT THE AUTHORS

Dr Joyce Fortune

Joyce Fortune is a Senior Lecturer and Head of the Department of Technology Management at the Open University. Her teaching and research interests include systems failures, quality management and technology strategy. Her most recent papers have covered a wide range of topics including risk in project management, human rights and ethical policing, emergence and systems approaches to failure. This is her third book on systems failures.

Professor Geoff Peters

Geoff Peters is Professor of Systems Strategy at the Open University and Chairman of UKERNA Ltd, the company that manages JANET, the UK's academic and research network. His main research interests are failure in complex human systems and change in higher education systems. He has edited and authored books on system failures, systems behaviour, corporate universities and the works of Sir Geoffrey Vickers.

PREFACE

Organizations need to process a rapidly growing amount of information and as individuals we rely on information systems for almost everything from health care and banking to our weekly shop at the supermarket. Yet at the same time as reliance on them grows, information systems continue to be particularly prone to failure. Some systems never materialize, others appear late and/or over budget and those that are implemented often fail to deliver the promised levels of performance. Worse still, developers and users experience the same types of problems again and again, despite the publicity given to those systems that have failed spectacularly at enormous cost.

There could be a variety of reasons for this absence of learning, but we are convinced that one is a culture of blame and another is the absence of robust methods for discovering anything other than the most superficial lessons. With this book we want to change both. We want to raise the status of the study of failures to a point where executive sponsors, politicians, administrators, analysts, developers, users and the like are proud to talk of the lessons they have learnt from the analysis of their own failures and those of others. We hope to encourage that by providing a highly developed and well-tested approach to the analysis of failures. By bringing complexity and interconnectivity to the surface we think we can provide a common language in which others can share experiences and benefit by learning from failure.

There are very many definitions of information systems. Some, such as the following example, emphasize the use of information and communication technology (ICT):

> Any telecommunications and/or computer related equipment or interconnected system or subsystems of equipment that is used in the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of voice and/or data, and includes software, firmware, and hardware.
>
> *National Information Systems Security (INFOSEC) Glossary*,
> *NSTISSI No. 4009, January 1999 (Revision 1)*

Others narrow it down to systems that support management decision-making. This book adopts a broader view that goes well beyond the integration of hardware and

software. It considers an information system to be any system that has collection, processing, dissemination and use of information as a major component in terms of its purpose and the activities it carries out. Most modern information systems with any degree of complexity will, in practice, almost always incorporate ICT, but the technology is not the defining aspect. The significant issues are the generation, processing and use of information.

We have enjoyed writing this book and hope that it will inspire you to join the growing band who are using these ideas in earnest. We look forward to hearing of your findings and experiences and incorporating them into subsequent editions.

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We owe most thanks to our colleagues, especially Open University academics whether they be research students, professors or the associate lecturers who are the mainstay of the OU courses on which we have worked. Special mention must also go to the thousands of OU students we have had the pleasure of teaching.

We should also like to thank the many people who have given us specific help with this book. In particular, thanks are due to Diana White, Visiting Research Fellow at the OU, who has collaborated with us on research and undertaken some of the analysis presented here. We should also like to acknowledge Bill Dodd with whom we enjoyed working on the EPR project and thank the Information Management Group of the National Health Service Executive for permission to publish our study. Thanks go too to the National Audit Office both for their continued commitment to publishing their investigations of the public sector and their agreement to our use of material.

Thanks are also due to Diane Taylor at Wiley who encouraged us to write an earlier book, *Learning from Failure: The Systems Approach*, and to Sarah Booth and Rachel Goodyear who have been so helpful with this one.

Chapter 1

OPPORTUNITIES FOR LEARNING

Introduction

Millions of pounds are wasted on information system projects that fail and millions more are lost due to malfunctions of systems that have progressed beyond the implementation stage. The horror stories are easy to find, at least where large projects in the public sector are concerned. For example:

- In 1996 the Integrated Justice Project was set up in Ontario, Canada, with the aim of building an information system for Ontario's entire justice sector. In March 1998 the investment required was estimated to be $180 million and the benefits as $326 million. By March 2001 the figures had become an investment of $312 (of which $159 million had already been spent) and benefits of $238. Thus the benefit–investment ratio had changed from 1.81 : 1 to 0.76 : 1.
- Also in 1996 the Benefits Agency of the UK government's Department of Social Security and Post Office Counters Ltd awarded a contract to Pathway, a subsidiary of the ICL computer services group, to provide recipients of social security benefits with magnetic stripe payment cards. The project was abandoned exactly three years later. The National Audit Office estimated that the cancellation cost over £1 billion.
- In 1998 The Lord Chancellor's Department commissioned 'Libra', a system to support the work of magistrates' courts in England and Wales. By 2002 the cost of the project had doubled to almost £400 million but the scope had reduced drastically.
- In 1999 delays in processing British passport applications, following the introduction of the Passport Agency's new system, cost £12 million including, it is alleged, £16 000 spent on umbrellas to shelter those queuing in the rain to collect their passports.
- In 2002 a project to replace the British Army, Royal Navy and Royal Air Force inventory systems with a single system (the Defence Stores Management Solution) was brought to a halt after £130 million had been spent. Hardware worth a little over £12 million was able to be used elsewhere but the remaining £118 million was written off as a loss.

- In 2003 it was revealed that the British government had to pay over £2 million extra to its contractor, Capita, following a big increase in the number of applications for criminal records checks being made in writing instead of by telephone or electronically. This was just one of a series of adverse reports involving the Criminal Records Bureau. Some schools had to delay the start of the autumn term due to backlogs in the processing of teachers' applications, and at the start of November inquiries into the background of care workers in charge of children and the elderly were suspended for a period of up to 21 months in order to ease the pressure on the system.

Not all failures can be expressed in financial terms. On 19 January 1982, following the Byford Report on an inquiry into what had gone wrong with West Yorkshire Police's hunt for the serial killer dubbed 'The Yorkshire Ripper', the then Secretary of State for the Home Department, William Whitelaw, said to the House of Commons:

> Another serious handicap to the investigation was the ineffectiveness of the major incident room which became overloaded with unprocessed information. With hindsight, it is now clear that if these errors and inefficiencies had not occurred, Sutcliffe would have been identified as a prime suspect sooner than he was.

There seems to be widespread agreement that this identification could have occurred at least a full 18 months sooner. In those 18 months, another three women were murdered.

By 2004 police forces were still experiencing information system failures. A Public Inquiry report on child protection procedures in Humberside Police and Cambridgeshire Constabulary (Bichard, 2004) found:

> The process of creating records on their [Humberside Police's] main local intelligence system – called CIS Nominals – was fundamentally flawed … Police Officers at various levels were alarmingly ignorant of how records were created and how the system worked. The guidance and training available were inadequate and this fed the confusion which surrounded the review and deletion of records once they had been created.
>
> The failures in the use of CIS Nominals were compounded by the fact that other systems were also not being operated properly. Information was not recorded correctly onto the separate CIS Crime system. It took four years

> (from 1999 to 2003) for those carrying out vetting checks to be told that the CIS 2 system, introduced in late 1999, also allowed them to check a name through the CIS Crime system.
>
> (Bichard, 2004, p. 2)

The private sector also has its share of failures, although they tend to be smaller in scale and are often hidden behind closed doors. Nevertheless, examples do emerge into the public gaze:

- On 25 February 2000 at the High Court, Queens Bench Division, Technology and Construction Court, Wang (UK) Limited was ordered to pay damages of a little over £9 million to Pegler Ltd, a Doncaster-based engineering firm. Wang had entered into a contract to supply Pegler with a bespoke computer system to process sales, despatch, accounts and manufacturing systems and associated project management and consultancy services. Six years after the contract was signed it was formally terminated by Pegler but, in effect, it had been abandoned by Wang before that. Wang claimed that exclusion causes in the contract meant that it was not liable for damages, but the court found against it and it had to pay compensation for lost opportunities, wasted management time and reduced business efficiency and recompense Pegler for money it had spent elsewhere on outsourcing and software acquisition.
- In 2002 in the USA, the pharmaceutical company Eli Lilly settled out of court with the Federal Trade Commission after being accused of violating its own online privacy policy by revealing the e-mail addresses of 669 patients who were taking the antidepressant drug, Prozac.
- Also in 2002 the Dutch Quest division of ICI, which makes fragrances for perfume manufacturers, lost an estimated £14 million as a result of problems with its new SAP enterprise resource management system.
- At the start of 2003, the first stage of a legal battle to recover £11 million was fought by the Co-operative Group against Fujitsu Services (formerly ICL). The case concerned alleged shortcomings in a programme to install a common IT infrastructure across the whole of the Co-operative Group following the merger between the Co-operative Wholesale Society (CWS) and the Co-operative Retail Services (CRS). A significant aspect of the problem was the system needed to spread CWS's dividend loyalty card across all the Group's stores.
- In May 2003, Energywatch, the independent gas and electricity consumer watchdog set up by the Utilities Act (2000), published information claiming that billing