

Fifty years IT experience – Why do so many projects still fail?

RHOMBOS-VERLAG • BERLIN

Bibliografische Information Der Deutschen Bibliothek

Die Deutsche Bibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.ddb.de> abrufbar

Die Wiedergabe von Gebrauchsnamen, Handelsnamen, Warenbezeichnungen usw. in diesem Werk berechtigt auch ohne besondere Kennzeichnung nicht zu der Annahme, daß solche Namen im Sinne der Warenzeichen- und Markenschutzgesetzgebung als frei zu betrachten wären und daher von jedermann benutzt werden dürfen.



© 2004 **RHOMBOS-VERLAG, Berlin**
Printed in Germany

Das Werk ist in allen seinen Teilen urheberrechtlich geschützt. Jede Verwertung außerhalb der engen Grenzen des Urheberrechtsgesetzes ist ohne Zustimmung des Verlages unzulässig und strafbar. Das gilt insbesondere für Vervielfältigungen, Übersetzungen, Mikroverfilmungen und die Einspeisung und Verarbeitung in elektronischen Systemen.

Umschlag: RHOMBOS-VERLAG

VK-Nr. 65 859
www.rhombos.de

Druck: dbusiness GmbH, Berlin, Eberswalde

ISBN 3-937231-21-8

Rainer VOLK

**Fifty years IT experience –
Why do so many projects still fail?**

RHOMBOS-VERLAG

Abstract

“What we learn from lessons learned is that we don't learn from lessons learned”

- Block T. (1998) -

This report tries to argue that this statement will no longer be true for software related projects. Admittedly, the software industry has become one of the most troublesome technologies in the world, although it has already had about fifty years to mature. Unfortunately this shortcoming is nowadays effecting more and more people, because software is part of nearly every technical device such as video recorders, mobile handsets, dishwashers and so on. Our technological society is more and more dependent on that intangible asset – could you possibly imagine booking flights or executing stock exchange transactions without computerised systems?

To fulfil the above mentioned, admittedly ambitious goal, this report investigates the most frequent reasons of failure and success, using related surveys, academic research by key people in this field as well as information sources, which are focused on practical daily business issues - such as the Internet and press articles. These different view points are discussed, compared, structured and coupled with my own experience. One of the most interesting findings at this point is, that failed and successful projects seem to follow a similar pattern.

Based on that observed phenomenon, an important outcome of this research will be a compilation of the most important factors that contribute to either project failure or success. The report concludes with the inclusion of some established models to maximise the probability of successful projects from a long term and strategic point of view.

Acknowledgements

Special thanks to my wife, Margit Volk, for her patience and for encouraging me to finish this report within the given time. Also special thanks to the key persons, who provided me with detailed background information and who kindly supported me via mail and email, although they did not know me personally. I was made to feel a part of the community, which tries to make the project related world a little better. Appropriate appreciation is due to Capers Jones, Chairman of Software Productivity Research, Robert Mahaney from the University of Kentucky, Mark Keil from the Georgia State University, Barry Boehm & Mohammed Al-Said from the University of Southern California, Robert Britcher, teaching at Johns Hopkins University, John E. Moore, principal engineer of Litton PRC, Andy Cole from KPMG and Robert Glass. Last but not least also special thanks to Matthew Parker, who had the challenge of proof reading within a short time to correct my language related mistakes (my mother tongue is Austrian) and transform this text to proper English.

Target Audience
The main purpose of this report is to fulfil the requirements of my studies at the University of Derby. However, the emphasis was to create a workable collection of recommendations, which could be used as a “survival guide” for project managers and other persons, who have to deal with software related projects. No special problem domain knowledge is required to read this report.

How to read this report

This report is divided into 5 chapters including three main chapters and two surrounding chapters. Each chapter starts with the issues, which will be addressed and ends with a list of key points and further recommended reading. Special acronyms are highlighted using angular brackets, blue colour text and small caps (e.g. [GLOSSARY ITEM]) and are explained in the glossary section at the end of this report. Citation and referencing is performed in full compliance with the *Harvard Citation Guide (1998)*. Directly used and referenced material is listed in the bibliography section at the end of the report; additional supporting background material is listed in the section “further reading” at the end of each chapter.

Table of Content

Chapter 1 Introduction	11
1.1 Problem Statement.....	12
1.2 Scope of this Report.....	13
1.3 Additional Aspects	14
1.4 Definition of a Project	15
1.5 What makes IT Projects Unique	16
1.6 Key Points	19
1.7 Further Reading.....	19
Chapter 2 Project Failure Investigation	21
2.1 Project Failure Definition	22
2.1.1. Overview	22
2.1.2. Failure Impacts	23
2.1.3. Cancellation does not equal failure.....	24
2.1.4. Failure Severity Levels.....	24
2.2 Project Failure Surveys and Statistics	25
2.2.1. KPMG Report.....	27
2.2.2. The CHAOS Report from The Standish Group.....	30
2.2.3. Research performed by Capers Jones	35
2.2.4. Additional Reports.....	42
2.2.5. Summary of the Investigated Failure Statistics.....	46
2.3 Failure Reason Categorisation	48
2.4 Theoretical Aspects	51
2.5 Key Points	53
2.6 Further Reading.....	54
Chapter 3 Project Success Investigation	55
3.1 Project Success Definition	56
3.2 Main Success Reasons	59
3.2.1. Success Statistics	59
3.2.2. Empirical Data.....	61
3.3 Success Reason Categorisation	67
3.4 Key points.....	70
3.5 Further Reading.....	71

Chapter 4 From Failure to Success	73
4.1 Recovery options	74
4.1.1. Early Indicators	74
4.1.2. Continue or cancel challenged projects.....	75
4.1.3. Remedy options for challenged projects	76
4.1.4. Escalation Management	80
4.1.5. Gain from Failures	80
4.2 Failure Minimisation Recommendations	82
4.2.1. Formal Project Approval	84
4.2.2. Cost Estimation.....	85
4.2.3. Project Management.....	87
4.2.4. Risk Management.....	91
4.2.5. Requirements Management and Change Management.....	93
4.2.6. Feasibility Studies and Prototypes.....	97
4.2.7. Escalation Management	98
4.2.8. Contracting Management	98
4.2.9. Quality Management.....	99
4.2.10. Surrounding Factors	100
4.3 System Integration Issues	100
4.4 Models to maximise Project Success Rates.....	102
4.4.1. The Three Stage Model from KPMG	102
4.4.2. The Six Stage Model from Capers Jones.....	103
4.4.3. The Mbase Model, researched by Barry Boehm.....	105
4.4.4. The Capability Maturity Model from the SEI	106
4.5 Key Points.....	107
4.6 Further Reading	108
Chapter 5 Critical Evaluation and Conclusion	111
5.1 Critical Evaluation	112
5.2 Conclusion	112
5.3 Recommendations.....	114
5.4 Personal Lessons Learned	115
Bibliography	117
Glossary	125

List of tables, figures and diagrams

List of tables

Table 1.1	Surrounding aspects	14
Table 1.2	Surrounding aspects	14
Table 1.3	Software-specific problem areas	18
Table 2.1	Terms related to failure severity levels.....	25
Table 2.2	Method and relevance of the discussed failure statistics.....	26
Table 2.3	Six major classes of software projects	35
Table 2.4	Ranked order of top twelve success- and failure factors	41
Table 2.5	Overview of the most important failure statistics.....	46
Table 2.6	Project failure categorisation - detailed view.....	50
Table 3.1	Absolute and relative success.....	57
Table 3.2	Project success categorisation - detailed view.....	67
Table 3.3	Project success categorisation - detailed view.....	69
Table 4.1	Top ten remedy options derived from KPMG	78
Table 4.2	Remedy strategy derived from Jerry Perone	79
Table 4.3	Cost estimation - Problems and related hints	86
Table 4.4	Most important project management activities.....	87
Table 4.5	Most important Risk Management approaches.....	93
Table 4.6	The requirements engineering process.....	94
Table 4.7	Types of prototypes.....	98
Table 4.8	Three stage model from KPMG.....	103
Table 4.9	Six stage model from Capers Jones	104
Table 4.10	Capability Maturity Model	106

List of figures

Figure 2.1	Project Failure types.....	23
Figure 2.2	Project failure categorisation -overview.....	48
Figure 3.1	Project Success definition	57
Figure 3.2	Total system life cycle cost.....	58
Figure 3.3	Project success categorisation -overview	67
Figure 4.1	Project activity framework	83
Figure 4.2	Screen shot of a Project Monitoring tool	90
Figure 4.3	Screen shot of a complexity visualisation tool.....	90
Figure 4.4	Requirements classification.....	94

List of diagrams

Diagram 2.1 When runaway problems started to appear..... 28

Diagram 2.2 Top eight runaway problems 28

Diagram 2.3 Top eight factors that caused the runaway problem..... 29

Diagram 2.4 Project success versus failure rates 30

Diagram 2.5 Project success versus failure rates 30

Diagram 2.6 Cost- and time overruns in percent..... 31

Diagram 2.7 Percentage of delivered functionality..... 32

Diagram 2.8 Top 10 Project Challenged Factors 33

Diagram 2.9 Top 10 Project Cancellation Factors..... 34

Diagram 2.10 Probability of schedule performance depending on the project size 36

Diagram 2.11 Probability of On-time delivery in six subindustries 36

Diagram 2.12 Probability of schedule slip in six subindustries..... 37

Diagram 2.13 Probability of project termination in six subindustries..... 37

Diagram 2.14 Schedule performance associated with Management problems 38

Diagram 2.15 Schedule performance associated with technical problems..... 39

Diagram 2.16 Schedule performance associated with four social problems..... 40

Diagram 2.17 Top ten Risk Indicators 43

Diagram 3.1 Top ten success factors derived from the CHAOS report 59

Diagram 3.2 “Lessons learnt” success factors derived from KPMG 60

Diagram 3.3 Top Ten success factors derived from Schelle..... 61

Diagram 4.1 Top Ten Remedies for Runaway Projects 77