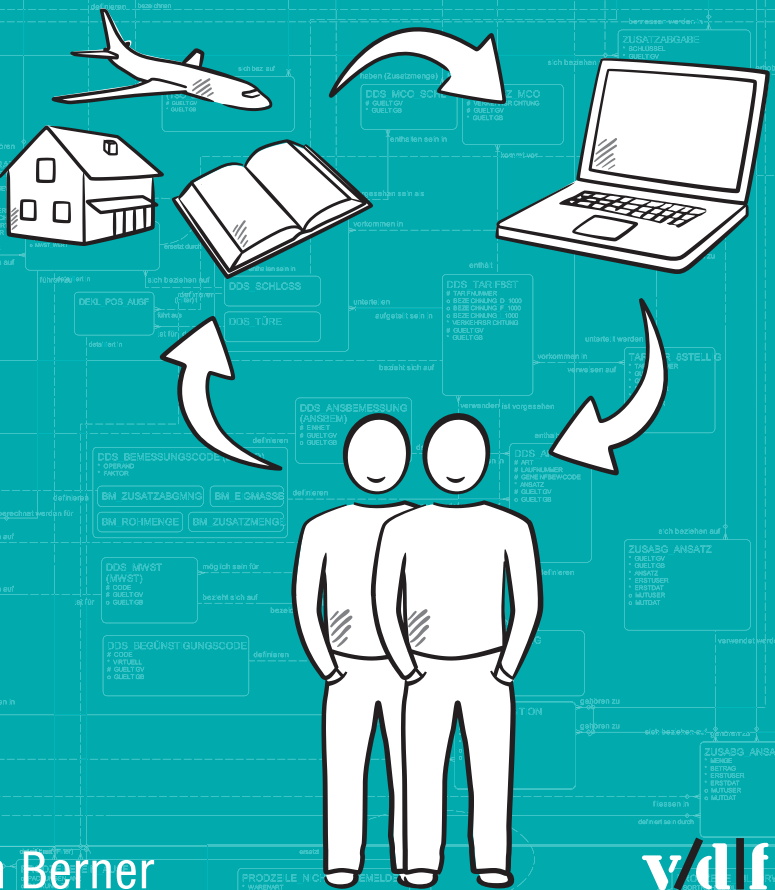
Information modelling

A method for improving understanding and accuracy in your collaboration



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Preface

The CEO had a fairly pithy response to the presentation of an information model: "That took you four weeks? It's so clear and obvious, I'd have been able to do it in an afternoon". This statement was probably the highest praise that I have ever received in my work as an information modeller. The effort we invested in collecting the information, the painstaking search for (and sometimes coining of) succinct names as well as the discussions we held to resolve uncertainties and contradictions: None of these things was apparent in the outcome. We had described the company's information universe – as confirmed by the boss – clearly, succinctly and accurately. The boss understood the statements on the diagram.

That's what this book is about: How to create shared understanding across all levels? And how to document something that we have all understood? What is the best form of documentation to ensure that other people have the same understanding of the matter as quickly as possible? This book is not about the technical ins and outs of knowledge (storage, data, presentation). Rather, it focusses on content, the essence and the semantics of information.

This book is intended for everyone involved in the management of data and information, be they IT specialists, business analysts, IT organisers, managers or users from the business departments:

- **IT specialists** will learn the difference between data and information modelling and the benefits they bring to communication with IT novices.
- **People involved in IT organisation** will acquire a methodology and language for communicating concisely and reliably with IT specialists, as well as with prospective users from the business departments.
- **Business analysts** will receive methods and a fitting vocabulary to present the findings of their analysis and modelling

as simply and accessibly as possible, ensuring that everyone involved in the process is in the know.

- **Managers** will quickly acquire a tool-kit providing insight into the requirements and illuminating the solutions. They can then identify the right solution, without getting bogged down in the technical details. Doing so allows them to ask the right questions and to detect and remedy troublesome developments at an early stage.
- **Users** can identify and verify their own contributions to the selected solutions. The simple presentation of knowledge from a user perspective ensures that they feel involved in the project. They can communicate with IT specialists on a level playing field and recognise how their personal perspectives of the informational world are incorporated in future software products.

Stefan Berner, July 2016

Preface to the English edition

Since the German original was published, information modelling has been applied in dozens of projects. I'd like to share some feedback I got from customers:

- "Since we began applying the technique of information modelling, we can discuss in meetings without quarrelling about each term."
- "This model represents the DNA of our enterprise."
- "We were able to solve an issue, that had been bothering us for years, in just one afternoon."

I would like to thank my employer foryouandyourcustomers for the generous support, that made this English version possible.

A special *thank you* goes to Jonathan Möller, Stephan Müller, Christoph Gerber for their input, and to my wife Marie-Theres for her endurance and understanding for my frequent real and mental absences.

Stefan Berner, October 2018

Introduction

Good software

Software crises have been around since the first keystroke of code was written. A variety of studies indicate that between 40 and 80 percent of all IT projects never see the light of day. Although hard to verify, these figures suggest that billions of euros are being tossed out the window on poorly conceived software ventures. Developing proprietary software is risky and generally too expensive. Often, the use of standard software turns out to be more costly than expected, and the additional expenditures associated with rolling it out will ultimately exceed any savings from the lower cost of purchase. Software systems don't fit together; interfaces are complex and buggy. There is no shortage of compelling examples that the quantum leaps in computer sciences refer more to the technology (storage, clock rate, conductivity) than they do to the content or quality.

There are, however, documented, established methods for the development of good software. So why is so much of it poor, although it was developed by specialists using proven techniques? Assisted by business analysts, users describe the requirements and concepts that – from their perspective – reflect their wishes correctly and completely. Highly qualified computer scientists use modern methods and tools to write software that meets these requirements. Yet still the customers are still dissatisfied. Even leaving aside the usual suspects and sources of errors like carelessness, ineptitude, sloppiness, poor work ethic, a haphazardly assembled team and suchlike, it is far from unusual that good people do good work and still produce an unacceptable result.

Software quality rests on the entirety of properties and property values of a software product which influence its ability to satisfy defined or expected requirements[1]. It follows, therefore, that clients perceive software to be *good* software if it fulfils their expectations.

IT specialists generally have a firm grasp of their methods and tools and are good at their jobs. People within the departments and management know what they need. They are familiar with the technical workflows and have wishes or perceptions of how they would like to work. The peripheral systems are also usually well known. So it is less the question of which knowledge exists and more of how it can be translated into future software products. Ignorance does not lead to bad software but the inefficient application of existing knowledge and substandard communication on the interface between the real and abstract worlds. And the problem is merely compounded by the unshakeable belief among all stakeholders that they've understood what everyone else wants.

This book is based on the following proposition:

> Poor software is mainly caused by a lack of shared understanding.

How do misunderstandings occur? Why are people so often at cross purposes, although they speak the same (natural) language? Each environment (companies, departments, countries, cultures, etc.) has terms that are used and understood by everyone. It's the common parlance of everyday life. But frequently the vocabulary is imprecise, and the person using it is prone to assuming that the recipient of the message will interpret the terms exactly as they were intended. How can computer scientists and IT specialists – who frequently come from a different environment than their clients – become familiar with the internal jargon used in a company? Are they even able to understand the specifications and wishes expressed by their clients? What can be done to help them acquire the specific language of an unfamiliar environment?

People often believe they understand things straight away. They assume that other people have the same expectations as their own. So even when everyone at a meeting shares the confident belief that they've understood what was said, it is by no means certain that they in fact did. *Understanding* is always dependent on the perspective, the area of action, the prior knowledge, the environment or – in a nutshell – the context.[1]

1 This for our purposes should be taken to mean a mixture of language, culture, education, experience, attitude, interests, etc.

But software projects frequently involve collaboration between people who do not possess the same contextual knowledge: external consultants, freelance programmers, suppliers, managers, departmental factotums and IT wizards, all of whom brim with different levels and areas of education.

A shared context needs to be created as a matter of urgency to ensure unambiguous communication in heterogeneously assembled groups. This context must be documented in a manner that all stakeholders understand. Clear and unequivocally defined terms, and their clear and unequivocal use, are one of the essential factors, if not *the* essential factor, for fruitful communication and therefore good software. Put succinctly, everyone needs to speak a common language.

> The language will become muddled if the names and terms are out of sync.
> And muddled language leads to chaos and failure. Where there is chaos and failure, decency and moral standards will decline.
>
> Confucius (551–479 BC)

Understanding

Allow me to introduce myself using three attribute values from our personnel database:

Stefan	Berner	1955

This information takes me right to the heart of this section. Why do you understand it? Put differently, would you have understood

Martin	Peter	8472

as well? Why not?

In the first example, your grasp of our shared culture and linguistic understanding probably allowed you to recognise the two initial words as a first name and a surname. Your assumption is based on the fact that you're reading this book in English and that you