

B usiness

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Program

Working Paper

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THE BORO APPROACH:
STRATEGY-1

AN OVERVIEW OF THE
STRATEGY

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THE BORO APPROACH: STRATEGY - 1

AN OVERVIEW OF THE STRATEGY

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THE BORO APPROACH: STRATEGY - 1

AN OVERVIEW OF THE STRATEGY

1 Introduction

The aim of the *The BORO Working Papers* is to show you how to use business objects to re-engineer your existing information systems into models—and so systems—that are not only functionally richer but also structurally much simpler. They are intended to be a practical guide to re-engineering your systems; preparing you for the task. (Business objects can also help you to re-engineer the underlying business that is processed by these systems; we discuss the implications of this in the *MA2—Using Business Objects to Re-engineer the Business*.)

This paper is intended to be an introduction to the BORO approach. It gives an overview of the BORO strategy and a description of how the approach developed.

2 Background

The approach to business objects described in these papers was sparked off by a need and desire to build systems more effectively. In many ways, it was a lucky accident. In 1985–86, there was a project to develop a management information system - as part of a larger programme to overhaul a range of IT systems and re-



An Overview of the Strategy

3 The approach

engineer the business processes. The project adopted the latest version of a traditional development methodology. It soon became clear that the methodology was cumbersome and bureaucratic, adding layers of complexity rather than understanding. And a little research established that this was a general trend; other established methodologies were also unwieldy, and becoming more so. It seemed to the team that there must be a better way. So a group began looking for it. It soon discovered a number of developments (particularly in object-orientation - O-O) - which seemed to have a lot to offer at the analysis and, more interestingly, the business modelling stages.

Then, in 1987, the team became involved in a project to re-develop a large investment management system. After much discussion, the controlling committee decided that the team would re-develop the system using these new and relatively untried techniques. The team believed—rightly so, as it turned out—that they would enable them to get high levels of re-use, reducing the effort (and therefore the cost) needed to re-develop the system.

There was one decision that shaped the whole approach. We decided to start by re-engineering the existing system into a business model. This was a markedly different approach from almost every other project at the time (particularly O-O projects which mostly used O-O to design and code systems). Two requirements motivated our approach:

- First, we needed to document the existing system.
- Second, we felt that we could salvage a substantial amount of the time and money invested in the existing system. We believed that we could capture the understanding of the business embedded in the system and re-use it in the new system.

3 The approach

The approach, as with any new approach, evolved and changed. However, it was clear to the team from early on that they had stumbled on something very different from traditional information modelling and that it had enormous potential.



3.1 The two stages

They soon found that modelling the existing system was not a straightforward case of building a business model, but that it fell into two stages:

- Reverse engineering, and
- Forward engineering.

In the first stage, the existing system's business entities were translated into business objects. In most cases, this involved translating the system's computer code straight into a business model. This reversal of the normal system building process is often called reverse engineering. (Strictly speaking, what we were doing was not 'reverse engineering' as we were not re-building the—implicit—entity model from which the system was built.) The 'reverse-engineering' approach met our two original requirements. It not only documented the existing system but salvaged some of the investment made in it for re-use in the new system.

In the second stage, the process of modelling with business objects naturally led into re-engineering people's more sophisticated conceptual patterns for the business. To contrast this with reverse engineering, this stage is called forward engineering. The two stages together are called 're-engineering'.

When forward engineering, they found that they naturally identified inaccuracies and artificial constraints in the way the existing system reflected the business. Typically, these were because of the simplified view of the business that entities force on modellers rather than any errors in modelling. Business objects' superior powers encouraged them to translate the unsimplified conceptual patterns—without the inaccuracies and constraints—into the model. The result was more general and so more re-usable business objects.

3.2 The benefits

This had two big benefits. First, they found that many of the business objects they constructed when re-engineering one part of the system were sufficiently



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3 The approach

general to be (re-)used many times in other parts. This meant that each business object was re-used to do jobs originally done by a number of entities (or attributes). This had a remarkable effect; as the scope of the re-engineering grew, the model became much simpler without losing any power. This process is called compacting. They monitored the compacting, using rough and ready measures, and found the business model used substantially fewer objects than the computer system had entities and attributes.

Second, it was plain that the business objects were general enough to be (re-)used, with no extra effort, to do things that the current system could not. They had become not only simpler, but functionally richer.

It is often said that business objects should be able to reflect the business more directly. The team discovered early on that not only is this true for BORO business objects, but, when they modelled the business more accurately, the objects they constructed tended to be more general and so more re-usable. This made the model even simpler and more compact.

The re-engineering also had a profound effect on the way people saw the business. As they became familiar with the object-view of the business, the old entity-view began to seem hopelessly inaccurate. In many cases, they wondered how they had managed to use the old entities for so long. This was just one indication among many that the business paradigms were changing radically and that they were developing a more accurate vision of the business.

3.3 The BORO approach

Over a number of projects, people have systematised the approach, streamlining the process of re-engineering. Over time, they have added further refinements and enhancements to make it even more effective.

Under the BORO approach, a number of the old system building rules no longer seemed to apply. For instance, with a small team it would seem sensible to restrict the scope and, in particular, avoid difficult requirements. However, small teams using the BORO approach found that seeking out and modelling difficult



cases often made things easier. Modelling these produced business objects that both made the model simpler and had much more potential for re-use.

The budget-holders and users benefited from the approach as well. The budget holders were happy because systems were cheaper to build. This was mainly because the models were much simpler than their entity counterparts. But it also helped that the systems people using the models were less likely to misunderstand the business.

The users were happy because they got functionally much richer systems—ones that even included some of their most difficult requirements. This would not have been cost-effective with an entity oriented approach. They were particularly happy because the systems were not only functionally richer than their existing systems, but also all the others they had looked at.

Furthermore, as the users became more familiar with their systems, something remarkable begins to happen. The systems seem to have captured the essence of the business. Teams using the approach realised this when they found their systems being used to handle areas that had not been envisaged when they built the business model. For instance, on one project the users found that their re-engineered securities back-office system could already handle new financial instruments and situations that no-one had thought of when the system was built.

4 What are business objects?

But what are business objects and how are they used to build models? Business objects are different, very different. Most of people will need to work their way through the a number of the [The BORO Working Papers](#) to get a genuine understanding. However, it helps to start off with some idea (even a vague one) of what they are, so that is what is attempted here.

Business objects are a new way of seeing things. Most people (although they often don't realise it) currently see things as entities and attributes. They see



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individual things, such as an individual warehouse or customer, as entities. They group these individual entities into types—for example, warehouses and customers in general—called entity types. Both entities and entity types have attributes—also sometimes called properties or qualities. For instance, warehouses in general have the attribute of size, and an individual warehouse may have the size attribute, small. In addition, things change—typically by changing attributes. For example, someone may build an extension on an individual small warehouse, making its size attribute change from small to large.

Currently, when we business model, we construct what we assume is a description of the business. What we are actually doing is describing the business entities we see. This is often called our business paradigm. We then embed these entities deep in our computer systems.

When we shift to an object way of seeing, everything becomes an object. All the ‘things’ we used to see as entities or entity types, along with their attributes, are now seen as objects. Even changes of attribute are objects. As you read through *The BORO Working Papers*, you will begin to appreciate the implications of this. But for the moment, just think of business objects as a very general type of thing.

Business objects’ new way of seeing leads to a very different approach to modeling the business. Instead of just describing our business paradigm, we actively revise it. We transform its entities into business objects. This is a *revisionary* rather than a *descriptive* approach—what is sometimes called *business re-engineering*. The re-engineering transforms the way we see things so that we end up with a fundamentally new, radically different and better vision of the business. This gives us a new, structurally simpler and more powerful business paradigm, and so computer systems.



5 Explaining business objects

As the brief outline in this paper should have made clear, business objects need some explaining.

Unfortunately the general topics relevant to the BORO approach are not well covered in the literature, and what there is is not consolidated into a single book. Furthermore, there is much territory to cover - the approach has developed through many man-decades of application.

The BORO Working Papers try to cover the relevant territory in a reasonably coherent framework. It turns out that some analysis of the nature and history of information, particularly computer information, is needed to develop a reasonable understanding of what was going on.

One of the premises of the papers is that the best way for people to understand business objects is to focus on how they can be re-engineered from business entities. From this perspective, people could see the business object paradigm (the conceptual framework surrounding business objects) as a natural response to the problems inherent in business entities.

The BORO approach is new and different, so mastering it involves acquiring new knowledge and new skills. IT managers have found that when their programmers move from traditional to O-O programming, they need a large amount of training and hand-holding. The move from traditional to business object modelling is much more fundamental. So it will be no surprise to hear that many people need to go through some substantial re-learning to get to grips with the new ideas. That is the bad news, the good news is that once they understand them, the ideas, like all good ideas, are simple. This does not mean everyone will find them easy to pick up—after all the whole point is that they are new and radically different. But it does mean that, once people are familiar with them, they will find them easy to apply.



5.1 Understanding these fundamentally new ideas

Developing these new ideas to the stage that they are at now has taken many man-decades of hard work. A significant part of the task has been demolishing the old ideas to clear the decks for the new ones. These enable us to take a radically different view of the business—to see it in terms of business entities rather than business objects. Now that this has been documented, people have the benefit of learning from this work, making the learning curve less steep.



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Book AS

AS—The BORO Approach: Strategy

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AS2—*Using Objects to Reflect the Business Accurately*

AS3—*What and how we re-engineer*

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OP1—*Entity Ontology Paradigm*

OP2—*Substance Ontology Paradigm*

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B—Business Ontology

Book - BO

BO—Business Ontology: Overview

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Book - MW

MW—The BORO Methodology: Worked Examples

Worked Example 1

MW1— *Re-Engineering Country*

Worked Example 2

MW2— *Re-Engineering Region*

Worked Example 3

MW3— *Re-Engineering Bank Address*

Worked Example 4

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MA1— *Starting a Re-Engineering Project*

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MC1— *What is Pump Facility PF101?*



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