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# Business process re-engineering New applications for the techniques of production engineering

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## Abstract

This paper assesses the rise of business process re-engineering (BPR) as a new approach to managing and organising work. Organisations wishing to implement BPR may either choose a set of generic business processes or devise a set of processes specific to their own situation. An approach to developing enterprise specific business processes is then proposed, based on an analogy with the introduction of group technology to manufacturing organisations. The techniques used by production engineers to implement group technology are reviewed and amended for use in a BPR context. A new methodology for information flow analysis is described and a short case study presented where the methodology has been applied. The paper concludes that re-discovering the techniques used by production engineers is a useful starting point for those considering a BPR project.

*Keywords:* Business process re-engineering; Production flow analysis

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## 1. Introduction

From Adam Smith's pin factory to Frederick Taylor's steel works, the accepted wisdom has been that industrial work should be broken down into its simplest and most basic tasks. Even today, many established enterprises are still organised around the functional departments which first came to prominence as a result of this approach to managing and organising work. In recent years however, a new terminology has become popular and many

organisations have begun to focus on the performance of cross-functional, business processes. Since the introduction of this terminology in 1990, there has been an explosion of interest in the subject area, not least because of the radical improvements in performance which it promises.

In order to become more process oriented, organisations must first define the cross-cutting business processes which they perform. Researchers have begun to address this problem and broadly speaking two schools of thought have begun to emerge. The first offers a set of generic processes, claimed to suit most enterprises; while the second defines a set of processes specific to a particular enterprise. These two approaches may be in conflict but there has been little investigation or comparison

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of them. The majority of the research conducted to date has focused on the generic processes approach.

This paper will present a methodology for defining enterprise-specific business processes. This new methodology draws on existing techniques developed by production engineers to tackle plant layout problems. The initial idea for the new methodology came from a belief that there was an analogy between the problem of moving from a functionally oriented to a process oriented approach for business processes and the older production engineering problem of moving from a layout which arranges machinery by type to one which focuses on the products produced.

## 2. The business processes phenomenon

The term business process re-engineering first appeared in 1990 in North America and has since spread rapidly to Europe and the UK. A number of surveys have shown high levels of interest with significant numbers of companies attempting re-engineering. Taking the UK as an example, in 1993 Woudhuysen claimed that BPR was in full sway in 21 of Britain's Times 100 companies [1]. A year later, research conducted in the UK for the Business Intelligence Report [2] found that 77% of their respondents were engaged in a re-engineering programme, with a further 13% planning to launch a project.

There are other similar surveys and while the individual results exhibit variations, there seems little doubt that a significant number of companies, from a broad cross-section of industries, are taking BPR seriously. One plausible explanation of BPR's growing popularity is that it is viewed by established enterprises as offering a mechanism to make the changes necessary better to fit the new competitive environment in which they now find themselves. In the UK, this view has been supported by the recently published report of the government supported Technology Foresight panel, which asserts that all firms must learn that changes which optimise processes rather than functions can take them to world class performance [3].

Business process re-engineering first came to prominence in 1990 with the publication of what

are now viewed as two of the seminal papers on the subject by Michael Hammer [4] and Thomas Davenport [5]. Since then, a number of alternative names have been introduced all sharing a common focus on business processes, but varying in terms of their approach, the tools and techniques used and the scale of change envisioned. The proliferation of different names may be cynically viewed as the result of attempts to differentiate individual contributions to an increasingly popular subject area. In America there have even been attempts, by some consultancies, to patent the use of particular terms [6].

The term business process re-engineering seems to have become the most popular of the available options. In addition, Hammer's definition of re-engineering [4] has become largely synonymous with the term BPR.

*Re-engineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed.*

This, it has been noted, does not shed much light on how it should be done [7], but in his later book Hammer does at least identify some common themes; avoiding the constraints of the existing organisational boundaries by being process oriented, being ambitious enough to go for order of magnitude improvements, breaking the traditional rules and assumptions and using IT creatively to enable new ways of working [8].

There are widely differing views on BPR, which may be taken as evidence that the subject area is yet to mature. It is recognised that BPR is by no means a stable entity. It has been described as an aspect of a complex set of relations between rhetoric, re-packaged techniques, new techniques, managerial fashions and the newly perceived capabilities of IT [9]. In particular, a debate has emerged in the literature on the approach used to define business processes.

This debate focuses on the extent to which a generic set of business processes can be developed which will fit any enterprise. Davenport describes a business process as a structured, measured set of activities designed to produce a specified output for

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