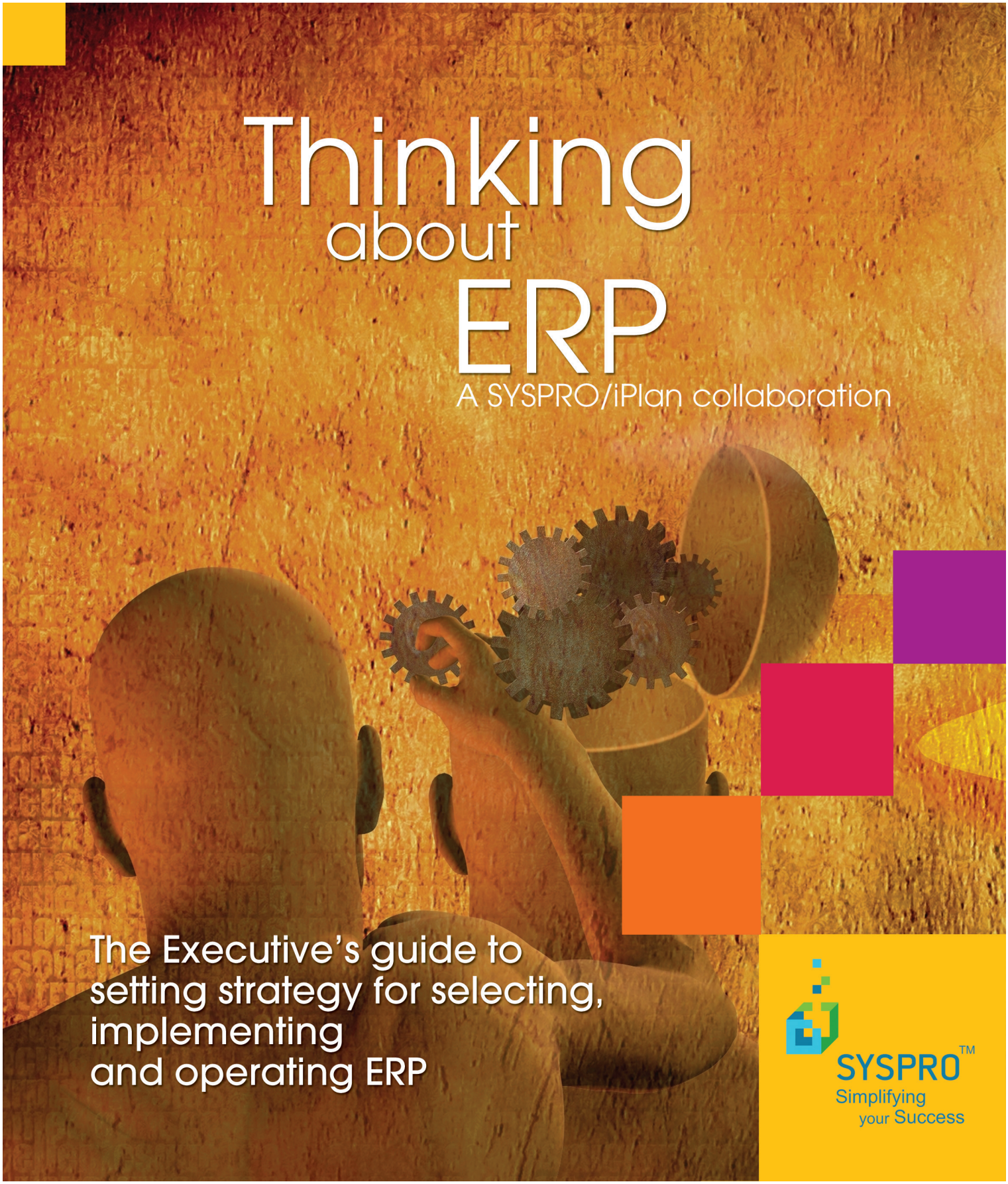
Thinking about ERP

A SYSPRO/iPlan collaboration



The Executive's guide to setting strategy for selecting, implementing and operating ERP

SYSPRO™
Simplifying your Success

Thinking about ERP

The Executive's guide to setting strategy
for selecting, implementing and operating ERP

Third Edition

A SYSPRO/iPlan Collaboration

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Wessel Wessels
(iPlan Industrial Engineers on behalf of SYSPRO Ltd.)

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Thinking about ERP:
The Executive's guide to setting strategy for selecting, implementing and operating ERP

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SYSPRO develops business software that provides complete control over the planning and management of all facets of business including accounting, manufacturing and distribution operations in an extensive range of industries. We've been doing it for more than 30 years in over 60 countries.

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Foreword

Throughout my career in the ERP industry, I have been fortunate enough to develop some insights into the challenges that organizations face in implementing large-scale business solutions.

For many years I have found it hugely beneficial to call in iPlan to help organizations optimize the potential of their ERP software. These highly-skilled professionals have extensive, in-depth experience of ERP implementation projects and understand the full impact of ERP as well as its strategic importance to the organization.

As a result, iPlan is able to communicate the crucial decision points of an ERP project to the executive decision-maker, helping him or her tackle problems and align the ERP project strategy with the business strategy.

This book is the powerful culmination of the experience iPlan has gained through intensive involvement in many ERP implementation projects. iPlan understands typical recurring problems such as failure to get senior management buy-in, resistance to change across the business, and a lack of clarity around project objectives.

By talking directly to the decision-maker, this book shows organizations how to drive the implementation from the top and focus on key performance measures. Through clearly defining what the ERP project is meant to achieve, organizations can pursue their strategic objectives.

If you do nothing else before starting your ERP project, read this book – it will make all the difference.

Meryl Malcomess
Marketing Director
SYSPRO Ltd.

About this book

The premise of this book is straightforward:

The business objective you are trying to achieve determines the strategy you should follow when selecting, implementing and operating ERP.

This book was written due to the above premise not being standard practice. Most often, business objectives do not play much of a practical role in the ERP selection process. Executives merely instruct their people to pick the "best" system that will work for their business and "does not cost too much". ERP implementation projects are more often managed on the basis of what the ERP implementation partner company knows, than by what the client requires. Once the system is up and running, executives just want ERP to "keep working".

On the other hand, once one accepts that the business objective sets the framework for ERP, the focus shifts to thinking about how to ensure that this objective will actually be achieved and how the business benefits will be realized; considering the investment in time, effort and money that ERP requires.

We aim this book directly at the executive level of the organization. The intended reader is the chief executive, or a trusted executive who is tasked by the chief executive to make the strategic decisions about ERP in their organization before it commits to a course of action. This is a "use it or lose it" opportunity: Once ERP systems are selected and implementation partners appointed, the execution of ERP projects is (and should be) run by professionals with knowledge and expertise of ERP computer systems, business process design and the like. How they do it should be controlled by a clear strategy established upfront and firmly anchored in the business objective.

This is not a particularly difficult or arduous task for the executive decision-maker - our target audience. In this book, we present an objective-driven way for executives to think about ERP and set a strategy that eliminates much of the confusion often associated with the selection process when acquiring an ERP system. It also drastically reduces the risk and wrenching dislocations that accompany some implementations and significantly increases the probability of operating ERP in a way that will achieve the business objective and bring business benefits.

The layout of this book follows the same mode of thinking. In the first chapter, we focus on the business objective and the business benefits that we propose the executive decision-maker should use as the anchor when thinking about ERP. In chapter two we present a useful classification mechanism, the "Degrees of Freedom Framework", to quickly position any particular organization's ERP ambitions in one of four classes depending on their business objective. Different strategies for selecting, implementing and operating ERP follow directly from this classification and we devote chapters three, four and five respectively to each. We recommend that all the chapters of the book are read in sequence by any executive decision-maker who is thinking about ERP.

Doing the work of executing the strategy – the tactics – is not covered in this book. We believe that once the strategy has been set, exploitation of the vast amount of literature available at the tactical level becomes more manageable. We present some specific collateral material at the website address: www.iplan.co.za/thinkingabouterp which serves as a companion to this book. More guides, as well as acknowledgement of sources, are referenced at the end of the book.

This book was commissioned by SYSPRO, an ERP solution provider, and was written by a number of individuals from iPlan, a consulting firm. The concepts described draw on the Intellectual Property (IP) of iPlan; which retains ownership of such IP and the copyright thereto. The opinions expressed by the authors in the book do not necessarily reflect the position of SYSPRO.

Abré Pienaar, Johan du Toit, Altrina Viljoen, Wessel Wessel, © April 2008

Chapter One: Why think about ERP at all?

Enterprise Resource Planning, commonly called 'ERP', refers to the computer system that an organization uses for business processes such as taking customer orders, scheduling operations, and keeping inventory records and financial data.

On the one hand, then, ERP is just a computer system; albeit nowadays a very complex and sophisticated one. On the other hand, ERP has demonstrated that it can drive huge improvements in the effectiveness of any organization. In the last three or four decades the world has moved from nobody using ERP – the concept did not exist before the large-scale deployment of computer systems to manage business data – to virtually every organization larger than a few people using some or other form of ERP. Now, at the end of the first decade of the twenty-first century, ERP is no longer a competitive advantage; it is a competitive disadvantage if your organization's ERP system does not operate efficiently and effectively.

So our assumption at the start of this book is that you, the executive decision-maker, have a compelling reason to think about ERP. You may be thinking about buying a new ERP system because the one you have is not working; or is not working well enough for what you want to achieve; or will eventually no longer support the way your organization is evolving. There may be a technical reason: for example, your current ERP system may be obsolete; going to become obsolete; or you need to pre-empt a failing system. There may be an organizational reason: such as a new business venture or an existing business unit splitting off from a larger corporation and you need to think about whether to continue using the ERP system of the larger corporation or to select a different ERP system for the new entity to use. Buying a new ERP system may not be relevant in your situation but you may be faced with the implementation of a previously acquired system or re-implementation of a new version of the same system.

Yet, despite all these very compelling reasons why organizations select, implement and operate ERP; the track record is not good. Yu [1], one of many researchers reaching similar conclusions, found that 40% of all ERP implementations or extensions perform below expectations and that 20% are scrapped as complete failures. Depending on the definition of 'failures', the latter figure could be as high as 50%.

Given that ERP systems are expensive 'big ticket' items to buy and/or implement and that their implementation and running touch every aspect of the business – that is their purpose, after all – the probability of failure suggested by the research is distressingly high.

[1] CS Yu, 'Causes influencing the effectiveness of the post-implementation ERP system', Industrial Management & Data Systems, vol. 105, no. 1, 2000, pp. 115-132.

Our own experience has been that sometimes the problem lies in the expectations and even in the definition of 'failure' (as noted by Yu). In a large number of cases we have found business executives unable to answer what we believe is a fundamental question: What are you trying to achieve with ERP and why do you want to do it?

So we propose that before spending money on ERP, the executive decision-maker think through and answer the following questions:

1. What strategic business objective will be served with ERP?
2. What, how much and when will ERP contribute to this particular objective?
3. How do the answers to these two questions influence what ERP system to select, how to go about ERP implementation and how to operate the ERP system once it is live?

This first chapter in the book is aimed at helping you, the executive decision-maker, think through the first two questions. The third question is what the rest of the book is about.

Before discussing how ERP can support your business objective, we briefly discuss some relevant aspects of ERP itself.

ERP

Professional organizations such as CSCMP [2], APICS [3] and Gartner [4] all have formal ERP definitions; most of which emphasize the information technology (IT) platform. In this book, however, we offer the following strategic definition of ERP:

'ERP systems automate and integrate most of the core business processes requiring people in organizations to manipulate large amounts of data.'

The words 'automate' and 'integrate' are the key strategic perspectives. By *automating* aspects of business processes, ERP makes them more efficient, less prone to error, and faster. It also frees up people from mundane tasks such as manipulating data. Therefore, it is usually better to run a particular business process with ERP than without it; and more so as the amount of data manipulation increases.

By *integrating* disparate business processes, ERP ensures coherence and avoids duplication, discontinuity and people working at cross purposes in different parts of the organization. This requires ERP in any one business process to function in a way that contributes to, not detracts from, the functioning of all the other business processes. The cumulative positive effect when business processes integrate well is overall superior performance by the organization.

Business processes

In our strategic definition of ERP, we stress that ERP automates and integrates business processes. The reason why an executive decision-maker is thinking about ERP should therefore be because

[2] The Council for Supply Chain Management Professionals (CSCMP), Supply Chain and Logistics Terms and Conditions, http://cscmp.org, 2006.
[3] The American Production and Inventory Control Society (APICS), APICS Dictionary - Twelfth Edition, 2008.
[4] Gartner Research, The Gartner Glossary of Information Acronyms and Terms, http://www.gartner.com/6_help/glossary/, 2004

he or she believes that better automation and/or better integration of business processes will contribute to the achievement of the organization's business objectives.

A business process is defined as *'a set of logically related tasks or activities performed to achieve a defined business outcome'*[5]. Examples include the receiving of customer orders, invoicing of shipped products, updating employee information, and setting a marketing budget. Business processes occur at all levels of an organization's activities and include events that are visible to customers as well as activities that take place in the back office. Business processes can be described as 'how we do what we do'.

Note the 'we'. Business processes always include people who oversee the logically related tasks in a business process or actually perform them; for example, an accounts clerk who calculates the amount on an invoice. ERP systems automate many of these tasks; for example, where the computer performs the actual calculation of the invoice amount. This frees up a person from having to do the work and that means that one can get the same amount of work done with fewer people, or one can redeploy people to do more meaningful work. In the invoice example, the accounts clerk could, for instance, be more profitably employed following up late invoice payments with customers than doing calculations that a computer is able to do faster and more accurately.

By automating business processes, ERP takes care of mundane and routine work where it is important that things happen fast, consistently and correctly every time. This automation allows people to focus on exceptions and out-of-the-ordinary circumstances, and to manage larger chunks of work.

All business processes work with data. For example, in a customer order, the data is the identification of the product, the quantity ordered, the price to be paid, and the delivery date. Data can exist in a variety of forms: as memories stored in a person's mind; as written or typed text on pieces of paper; as electronic data stored in a computer's database.

ERP systems integrate business processes by providing data to each business process as and when necessary and storing the data in the computer database at other times. The ERP system also ensures that the data being manipulated in one business process is available to all other business processes. This is a more efficient and reliable way for an organization to manage business process data than to rely on a person verbally communicating what is in his or her mind – and to hope that the data in the person's mind is correct – or to rely on pieces of paper that are copied and recopied and sent around and may get lost or drift out of date and relevance.

By integrating business processes and maintaining data, ERP keeps things synchronized.

Better and bigger

ERP does not just automate by doing the same thing in the same way a person would have done it. Once you have a computer system as part of the business process, it becomes possible to achieve the same business outcome by following a completely different route than you would have without the computer.

[5] The American Production and Inventory Control Society (APICS), APICS Dictionary.

Planning and scheduling, for example, is an extremely complex and data-intensive business process. It is virtually impossible to manually do this well except in some very simple and low-activity level situations. ERP systems provide computer-based algorithms which automate much of the planning processes. Using a modern ERP system, a single planner nowadays can plan and schedule fairly extensive operations. Furthermore, the planner does the planning better than a group of people on their own would have been able to do, since the computer-assisted planner is using a different, superior business process.

Over the past three or four decades, ERP's integration reach has steadily increased. In the seventies, 'Material Requirements Planning' (MRP) integrated production schedules, inventory records and purchasing processes. By the eighties, 'Manufacturing Resource Planning' (MRPII) systems integrated virtually all the manufacturing resources of a company, including work orders and sales orders. In the nineties, the integration reach encompassed so many business processes in so many different types of organizations (not just manufacturing) that the term 'Enterprise Resource Planning' (ERP) came into general usage. Nowadays the ERP system is typically seen as the backbone which integrates the core business processes of the organization. Additionally, it provides the hooks for other systems, including systems from other organizations upstream and downstream in the supply chain, to integrate business processes.

This may all be very interesting, but what is the relevance for you and your organization?

1. What strategic business objective will be served with ERP?

If you don't know the 'what' and the 'why' of your proposed ERP initiative, you are likely to wander down an inappropriate road of selecting, implementing and operating ERP. You may blunder upon success, but you are more likely to be dissatisfied with the results.

This is the task of strategy: to unambiguously and up-front define the objective, to decide on the approach that will be used, to assemble the resources, and to establish the measures for determining success or failure.

'Success', of course, depends on what one is trying to achieve.

In modern organizations, especially those with many people or with geographically dispersed areas of activity, it is becoming increasingly difficult to have a clear and all-encompassing view of the current status of the organization and how things are tracking against its goals and objectives. The increase in reach and the ability to provide information immediately on request have made ERP systems a source of information which is truly strategic. ERP systems have the ability to accumulate, structure and present different views of organizational activities that bestow the ability to gain specific insights and provide relevant and comprehensive information in a timely manner. This can be used to promote innovation, improve customer service, streamline operations, reduce operating costs, enable better decisions and quickly expose opportunities and threats. In short, ERP systems improve the ability of organizations to know what's going on and to better control what must happen next.

Sometimes an organization will embark on an ERP selection and implementation project because it wants to keep what it already has: an ERP system which supports the organization's goals and objectives. We often find that buyers of new ERP systems are companies which have

come to completely rely on ERP to keep control of organizational activities, but need to change systems because their current system is becoming a liability instead of an enabler. This may be because the current system is lagging behind in technology, may be failing, is too expensive, may no longer support the evolving organization, or needs to be completely re-implemented to reflect a new way of working.

The precise business objective that will be served by ERP may differ from situation to situation, but in all cases this objective should be well understood and clearly communicated. We believe this is one of your tasks as the executive decision-maker.

2. What, how much and when will ERP contribute to the business objective?

The widespread implementation of ERP across the world attests to the benefits that organizations derive from these systems. But ERP costs money – usually a lot. These costs are for the initial acquisition of an ERP system, the implementation project and the continuous operation of the system. Is it worth it?

Making a specific, quantifiable case for selecting, implementing and operating ERP in a particular situation has proven to be quite challenging; no doubt due to the strategic nature of ERP and the difficulty in quantifying the benefits. To illustrate: some typical non-quantifiable benefits include:

- Improved alignment of business operations with the business strategy
- Reduced business risk
- Improved financial management and corporate governance
- Increased information visibility

The traditional approach used by organizations which are considering spending a large amount of money requires business benefits to be quantified in monetary value and compared to the costs. Trying to quantify the non-quantifiable benefits of ERP, however, requires calculations and extrapolations that often result in endless circles of debates about questionable assumptions and hypotheses. Sometimes a benefits case is compiled during the initial stages of an ERP project, but once completed it is almost impossible to isolate the benefits – and occasionally even the costs – related to ERP for before-and-after type comparisons.

None of these difficulties lets one off the hook: firstly to justify the capital and operating expenses of ERP and, secondly, to relate the ERP strategy to the business objective and business benefits. In fact, it makes it even more imperative that the determination of the value to be derived from ERP comes from an authoritive individual who, on behalf of his or her organization, determines the 'why' of ERP. SYSPRO refers to this individual as the 'Seeker of Value'; we include this role in the tasks of the executive decision-maker.

Our experience has been that it is less critical that the benefits be quantifiable than that they be clear. We thus recommend that the executive decision-maker focuses on clarifying the business benefits of ERP for the organization in a formal, unambiguous manner by listing them in a signed-off document called a 'Case for Change' or similar. This document should describe what the proposed change in the ERP landscape entails; why the organization is going to make this change; what the expected benefits are; and what the change is expected to cost.

We also firmly believe that this is the task of the executive decision-maker; it should not be delegated, subcontracted or outsourced. This is where you answer the question raised earlier: What are you trying to achieve with ERP and why do you want to do it? We recommend that you think through and document in the Case for Change the value ERP will deliver by considering questions such as the following:

- Which specific business objective or objectives are you pursuing with ERP?
- Can you quantify – even if just approximately – the contribution that ERP will make in achieving the above business objective?
- Will it be impossible or significantly more difficult to achieve this objective without ERP?
- Does ERP have to work perfectly to achieve the business objective or is there a 'good enough' level? What would such a level be?
- Can you calibrate the contribution of ERP; that is, quantify how many more business benefits will be achieved for every increase in how well ERP works for you?
- Is there a time-critical aspect; in other words, is the business benefit of ERP more significant if available prior to a certain date or event?

Some of the answers will be less quantifiable than others. We have found a practical approach is to go ahead and compile different sets of benefits in the Case for Change: quantifiable and non-quantifiable. Furthermore, we suggest that for both of these categories, approximations are in order as long as they are verifiable. Any ERP business case that stands or falls on small differences in the benefits to be gained – and therefore requires very precise analysis – is too risky to approve anyway.

The collateral material available for download on the companion website to this book contains a guideline for the classification of ERP benefits [6].

When considering the verifiability of business benefits from ERP, we recommend the thinking of Eli Goldratt, first published in his 1984 book 'The Goal' [7] and subsequently developed in his Theory of Constraints. His argument is that a business benefit is only 'real' if it does at least one of three things:

- Increases throughput (the rate at which the business generates money)
- Reduces inventory (the money tied up in business operations)
- Reduces operating expenses

Thinking along these lines, even a quantifiable benefit such as reducing the time it takes to capture a sales order is only a real benefit if, for example, the actual salary bill of the sales staff is reduced because fewer people are needed (a reduction in operating expense), or if more sales orders are captured and delivered by the same number of people (an increase in throughput). If the reduction in time to capture sales orders only results in reducing the sales staff requirement by half a person, who is then idle for the other half of the time because there aren't any additional orders to capture, this benefit is not real.

The Goldratt approach is useful because it forces you to think about the link between the ERP initiative and the business bottom line, even if the bottom-line benefit will only be realized in the future.

[6] AJ du Toit & WH Wessels 'Enabling your ERP decision', iPlan Industrial Engineers, www.iplan.co.za/thinkingabouterp, 2007.
[7] EM Goldratt & J Cox, The Goal: A Process of Ongoing Improvement, North River Press, New York, 1984.

Consider the case of an international organization with a worldwide distribution and retail network: A few years ago this organization was suffering from excess inventory and was only marginally profitable. A project was launched to investigate whether improved systems would be of help in turning the situation around. After running a four-month limited pilot, the organization used Goldratt's thinking to distinguish between those business benefits that would address its problem directly and those which were considered intangible benefits.

It became clear that a new system would enable the organization to be more sophisticated in its forecasting and replenishment planning, and that this would indeed have a direct and quantifiable impact in the form of reduced inventory holdings. Improved planning would also increase customer services and thereby reduce lost sales, a quantifiable impact on throughput.

Although the business realized that the new system would be more efficient and technically superior to the existing systems, and thus would make information more readily available around the world to facilitate decision-making, none of these benefits could be quantified within the Theory of Constraints model and were therefore not used in the justification of the project.

Summary

We strongly recommend that before spending any significant time, effort or money on ERP, the executive decision-maker should think through the key challenge of this chapter: *What are you trying to achieve with ERP and why do you want to do it?*

Specifically, we propose that you break this question down into the business objective and business benefits parts respectively:

1. What strategic business objective will be served with ERP?
2. What, how much and when will ERP contribute to this particular objective?

The answers to these two questions should drive the strategy for selecting, implementing and operating ERP successfully. In the next chapter we present a practical framework to help you think through the relevant aspects.

Chapter Two: The Degrees of Freedom Framework

People with long and deep experience of ERP are usually able to predict with a fair amount of accuracy whether a planned ERP project will succeed or fail after only a short conversation with the executive decision-maker. The obvious conclusion is that these experts, perhaps somewhat intuitively, determine whether the proposed approach is likely to work or not without getting into the details. Simply put, their ERP strategy sets an organization up for success or failure even before tactical plans are made.

This chapter describes a framework that links the business objective you are pursuing with your ERP initiative to the type of ERP project that will be required.

The need to think differently

Consider the following two cases:

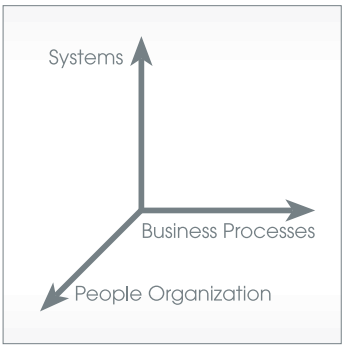
- In its Africa operations, a global company with a reputation for best practices and operational efficiency had 24 different business improvement projects under way. Mostly, these were specific attempts to elevate the operational practices within the African operations to the same level as their first world counterparts. Each individual project tried to bring about a particular change in a particular business process without considering the technology required, the implications on the people and the cumulative effect of all the other projects to bring about changes in all of the African operations. At the time we saw this situation, almost all of the projects were overdue on their promised delivery dates, had exceeded their budgets, and had very little practical effect on the actual operations.
- A multi-national corporation used a top-end ERP solution in all of its in-country operations, making it a leader in its industry from an ERP perspective. However, the South African operation's individual shop floor personnel had abandoned day-to-day use of the ERP system in favor of stand-alone individual spreadsheets and planning tables. The spreadsheets enabled the shop floor personnel to manipulate schedules more easily to achieve output targets and maximize workshop productivity in a static business environment where cost reduction was the main driver. In 2007, however, the demand side of the business changed rapidly and faster than the informally developed spreadsheets could handle. Because it had lost the ability to use the ERP system effectively to align the supply side to customer requirements, the company had no working system to cope with this change.

We believe a common theme in the previous two cases is that of a narrow-minded focus. Business Process Re-engineering (BPR) projects sometimes focus on changing business processes with scant regard for the capabilities of the systems that will automate and integrate the processes or the abilities of the people who must work the changed processes. Often the long-term implications are neglected: ERP project teams, for example, can become so enamored with the functional capabilities of the computer system that they lose sight of the fact that when the experts leave after implementation, ordinary people will have to use the system. Sometimes functionality is implemented for its own sake; only afterwards do people start wondering what use the impressive technology will be in achieving their business objectives.

What is required is to think through the changes that BPR and ERP projects precipitate, both the desired changes and the consequential ones.

The Dimensions of Change Model

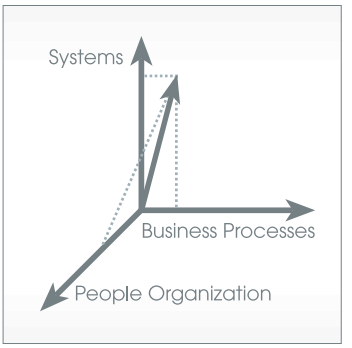
In our work with business process change projects and ERP implementations, we have developed a way of thinking about these and other changes that an organization must make as it evolves and improves.



Specifically, we found it usefully simple to describe what happens when a business change is implemented in terms of three aspects:

- The business processes that determine how the organization does its work
- The people who do the work and the way they are functionally organized in departments and business units
- The systems that automate and integrate individual steps and data in the process

Practically, we use the analogy of a three-dimensional Cartesian space – which we call the *'Dimensions of Change Model'* [8]– to map the changes to systems, changes to the way people are organized into functions, and changes to the business processes, as displacement from the origin along the three axes. In this model, the status prior to the change is at the intersection point of the axes (point 0,0,0) and the change will end up at some point characterized by the coordinates (x,y,z).



As an example, consider a change to a system in use in a particular company that is designed to make the system run better without necessarily trying to optimize related business processes or rationalize the people and organizational functions involved. Nevertheless, there will usually be some effect on the business processes and the people organization. For example, there may be changes in the procedures followed (business process change) and therefore at least some training will be required (people organization change) as the system changes are implemented.

[8] AJ du Toit, 'Managing Discontinuous Change', iPlan Industrial Engineers, www.iplan.co.za/thinkingabouterp, 2007.

The net effect of this change is represented in the Dimensions of Change Model with a significant displacement along the 'systems' axis but also with smaller displacements along the 'business processes' and 'people organization' axes.

Classifying change

One way to classify change is to distinguish between continuous improvement and discontinuous change.

Continuous improvement refers to the never-ending efforts to improve the way the organization works. This is an integral part of the job description of any manager. These types of changes are most effective when implemented incrementally over time, stabilizing the gains achieved after each small step. Funding for improvements comes from the organization's operational budget and the people making the changes do so as part of their normal work.

Occasionally a business change requires a one-step, 'before-and-after' type change because it may be impossible, impractical or simply inadvisable to do it gradually. Typically, such a *discontinuous change*, as it is known in organizational theory [9], is managed as a project with a defined objective (the step change), a beginning (the 'before') and an end (the 'after').

Discontinuous change projects may be small or large. A large-scale discontinuous change project frequently cuts across many functional parts of the organization, requires expertise and resources not normally present among permanent staff, and is funded via a specific project budget.

ERP as discontinuous change

A key insight for the executive decision-maker is that you should think about selecting and/or implementing ERP as a *large-scale discontinuous change* project. The implications are important:

- All three dimensions of change – systems, business processes and people organized into functions – are always present in any ERP project – although the relative importance of each of the three may vary, as we shall discuss shortly
- An ERP project demands the rigor of large-scale project management methods and techniques: a project plan, a project budget, a project leader, a steering committee, focused resources and so on
- What's it worth? The amount of time, energy and money that the business is willing to invest in the ERP project should be determined by the value ERP will contribute to the business objective. The executive decision-maker who reads this book will already have thought about this aspect in chapter one

(Operating an ERP system requires a mixture of continuous improvement and discontinuous change strategies. For now we will focus on how the executive decision-maker should think about selecting and implementing ERP, but return to the strategic thinking required for operating ERP in chapter five.)

[9] For example chapter one of the book 'Leading Organizational Transformation' by D Nadler, RB Shaw & E Walton et al, 1994.

Not all changes are equal

There is a difference between the change that is the purpose of the whole exercise – for example: We want to change the ERP system in our company – and the consequential changes – for example: We have to change this particular business process because the new system does not allow us to work in the way we used to work with the old system.

Every change of any kind, however, costs something and carries risk of some kind. An executive decision-maker thinking carefully about the many changes involved in ERP would naturally arrive at a strategy that limits the consequential changes to only those which are really necessary. By definition, you are only making those changes because you have to. Therefore you should not justify them in terms of business benefits and you should definitely limit their scope.

On the other hand, the desired change is the one that you are making in pursuit of the business objective and it is this change that is going to deliver the business benefits. The executive decision-maker's thinking should thus lead to a strategy which allows – in fact encourages – the freedom to make the scope of the desired change as large as is justifiable by the benefits.

To summarize: ERP projects are large-scale discontinuous change projects which always have changes along all three of the axes of the Dimensions of Change Model. However, depending on the business objective you are trying to achieve with ERP and from which the business benefits will flow, your strategy should be to encourage freedom of change along some of these axes and limit the amount of change along the others.

The Degrees of Freedom Framework

Again we use an analogy to simplify the above reasoning to a model that the executive decision-maker can use to set strategy; the concept of *degrees of freedom* from the world of physics.

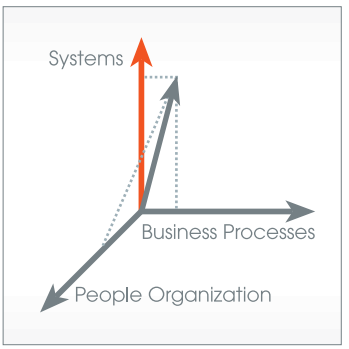
The simplest explanation of degrees of freedom in physics is that an item is said to have a degree of freedom for each independent movement that is allowed. For example: A train is allowed freedom to move in only one physical dimension and is constrained in the other two. Its controls are intended to manage movement in the one dimension, forward or backwards, and no other. A train cannot turn left or right nor can it go up or down. A car has the freedom to move in two dimensions and has controls to manage that freedom of movement. An aircraft has the freedom to move in all three physical dimensions and has the complex controls required to manage that movement.

In our *'Degrees of Freedom Framework'* [10] we consider discontinuous change projects where the business objective demands a change in only one of the dimensions of change – but with consequential changes in the other two – a 'One Degree of Freedom' project.

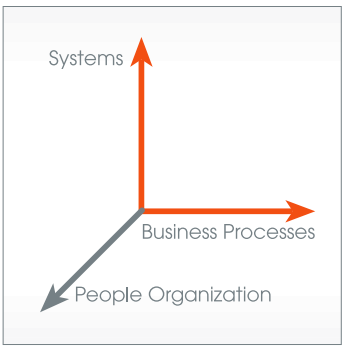
The earlier example in the section on the dimensions of change is a good illustration of a One Degree of Freedom change. In that example, we described a company which is making a change to its system in order to make it run better. It is not trying to optimize business processes or to rationalize the organization. It is, however, forced to make changes in the procedures followed (business process change) and therefore at least some training is required (people organization change) as the system change is implemented. Using the Dimensions of Change

[10] AJ du Toit, 'Managing Discontinuous Change', iPlan Industrial Engineers, www.iplan.co.za/thinkingabouterp, 2007.

Model and the Degrees of Freedom Framework in combination, we illustrate that there is displacement along all three axes of the dimensions of change but only one of these, the systems axis, is shown in orange as a freedom to change axis.



There are other classes of projects where the objective of the change requires a strategy to allow as much freedom to change in two of the dimensions of change simultaneously as is necessary to achieve the objective (a Two Degrees of Freedom project) or even all three axes (a Three Degrees of Freedom project).

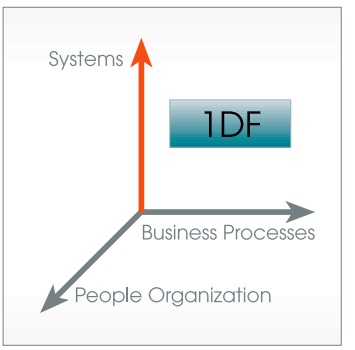


For example, an executive decision-maker who is looking for a new, superior ERP system that will allow him to implement completely new business processes because he wants to target a new market sector, is thinking about a Two Degree of Freedom project. He should allow freedom of change along the business processes axis as well as the systems axis to achieve his goals. However, the changes required from his people and his organization – and there will be changes along this third axis – should be limited to what is strictly necessary.

We illustrate this case with a graphic that captures the essence of what this executive decision-maker has already decided – the 'Degrees of Freedom Framework' classification shown as two orange axes – before even considering the magnitude of the changes in any of the dimensions – no 'change arrow' yet.

Classes of ERP Project

This book is about ERP and so we limit our discussion to large-scale discontinuous change projects where the systems axis with ERP always represents one of the Degrees of Freedom. The question for the executive decision-maker is whether you think that this is the sole extent of the desired change (ERP) and whether one or both of the other dimensions of change should also be free to change in pursuit of the business objective. Depending on the answer, we classify ERP projects into one of four classes:



1. *In a One Degree of Freedom ERP project,* the focus is solely on changing the ERP system. Other considerations are secondary: business process changes will only be done

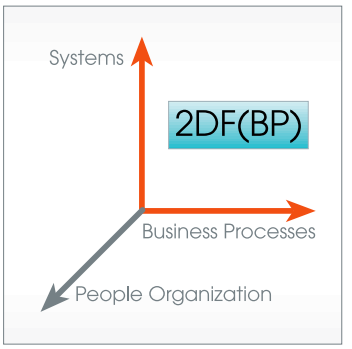
because the system change demands it; not the other way round. Similarly, people will be trained or changed to operate the system; the system will not be tailored to achieve people and/or organizational objectives.

The reason for the change project is that there are benefits to be gained from changing the system (or negatives avoided, for example averting a failure of the current system). The magnitude of those system benefits determines what system to buy and how to implement it.

In this book we use the shorthand notation *1DF* to describe a One Degree of Freedom ERP project.

2. *A Two Degree of Freedom ERP project* allows the freedom to change simultaneously. in two of the three dimensions of change. For the executive decision-maker thinking about ERP, one of those changes will always be to change the ERP system. The other will be to either change the business processes simultaneously or to change the people organization simultaneously with the ERP system. This leads to two distinct classes:

2a. In a Two Degrees of Freedom ERP and Business Processes project, the objective of the discontinuous change – and the benefits to be derived – is to change the business processes as well as the ERP system. Again, changes to people and organization are secondary and will be made to fit the new process requirements and system demands.

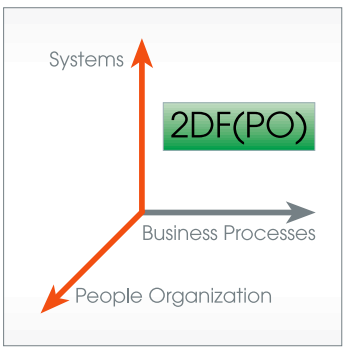


However, sometimes the system will be changed to suit the new business processes and sometimes the new business processes will be adapted to fit the system – this will be determined by the benefits to be gained in terms of the business objective.

A typical example is where a company wants to change the way it operates (business processes change) but is unable to do so with the current system. Consequently, it embarks on a route to change the system in order to change the business processes and launch a project to do both simultaneously.

In this book we use the shorthand notation *2DF(BP)* to describe a Two Degrees of Freedom ERP and Business Processes project.

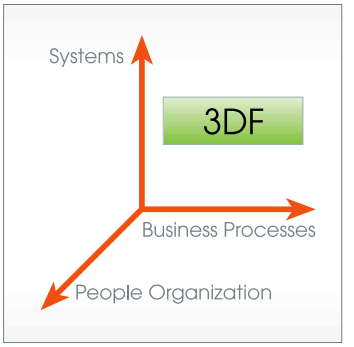
2b. In a *Two Degrees of Freedom ERP and People Organization project,* the objective of the discontinuous change – and the benefits to be derived – is to change the people organization as well as the ERP system. Changes to business processes are secondary and will only be made to fit the new organizational and system demands.



A typical example is where a company centralizes or decentralizes a function such as purchasing or finance and requires a new system or drastic changes to the current ERP

system to do so. In this book we use the shorthand notation 2DF(PO) to describe a Two Degrees of Freedom ERP and People Organization project.

3. *A Three Degrees of Freedom ERP project* is where the stated intent is to change everything simultaneously: the people organization; the way business is conducted; and the system for doing so.



Examples are a start-up venture or where a business unit, formerly part of a large corporation, is set up as an independent business with its own system, new organizational functions that differ from what came before and new business processes coming into force simultaneously.

In this book we use the shorthand notation 3DF to describe a Three Degrees of Freedom ERP project.

Success or failure

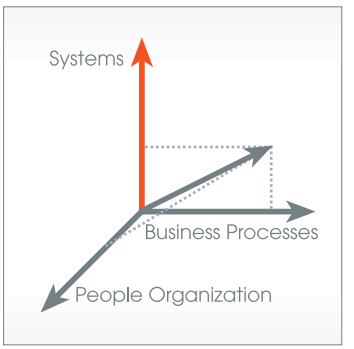
Earlier, in chapter one, we suggested that one of the tasks when setting strategy is to establish the measures for determining success or failure unambiguously and up-front.

The Degrees of Freedom Framework points the executive decision-maker looking for success or failure firmly along the axis or axes that determine the degrees of freedom and implies that the other axes don't matter when passing judgment on success or failure.

For example, the company that launches an ERP project as a One Degree of Freedom project – 'replace the ERP system' – and ends up being worse off in terms of ERP but achieves other benefits – 'at least we benefited from a streamlined organization' – has failed as far as its change project is concerned.

The magnitude of change

If change along one of the axes of the Dimensions of Change Model does *not* represent a degree of freedom, this does not imply that the consequential changes will be insignificant. In fact, it is quite common that such consequential changes are large and significant, as the graphic on the right illustrates.



In this One Degree of Freedom project, the ERP system change requires large-scale changes in the business processes even though that is not the strategic intent. The executive decision-maker should also not look for business benefits in the new business processes (in this example) nor should you measure success for the project in terms of business process changes. It is not what you set out to do.

Complexity

Naturally, every case will have nuances that make it unique. Furthermore, a One Degree of Freedom ERP project in a small company and a One Degree of Freedom ERP project in a large business are very different projects. Every ERP project aims at its own unique set of changes; both desired and consequential, for each of the three dimensions. These are, however, mostly considerations of the *magnitude* of the change.

From the viewpoint of setting strategy, on the other hand, *complexity* is what matters. A simple classification such as the Degrees of Freedom Framework enables the executive decision-maker to quickly link the business objective and the benefits to be gained to the complexity level of the proposed change. Thus we propose that you, as the executive decision-maker, first think through the classification of your ERP project in terms of the Degrees of Freedom Framework and then think through the magnitude implications, including the magnitude of the consequential changes that will not be the primary driver of business benefits.

A Two Degrees of Freedom project is more complex than a One Degree of Freedom project and a three Degrees of Freedom project is the most complex of all. However, our experience is that this increase in complexity is commonly underestimated. We talk about an increase in complexity of an order of magnitude for every increase in the Degrees of Freedom.

Since complexity in large-scale discontinuous change projects equates to risk, the executive decision-maker is well advised to carefully consider the objective of the change and the benefits to be gained; and from this optimize the number of degrees of freedom. We cringe when we encounter an executive with a 'cowboy attitude' expressed something like: 'While we're changing the ERP system, we might as well change everything else at the same time'.

Multiple steps

A discontinuous business change is not about continuously tweaking and improving things; it is a radical step-change typically structured as a project with dedicated resources and definite start and end dates. Most importantly, a discontinuous change has a specified end-state: what things will look like once the objective has been reached. However, it is entirely feasible to reach the aimed-for end-state with consecutive projects.

Say the business objective calls for freedom to change in two dimensions to reach the specified end-state. The organization may follow a strategy of launching a single Two Degree of Freedom project to achieve the specified end state in a single step. Alternatively, it may follow a strategy to reach the specified end-state in two steps with two separate, consecutive One Degree of Freedom projects, first to make the desired changes in one dimension while limiting the others and then to make the desired changes in the second dimension while again limiting the others.

The above are very different change strategies (a single Two Degrees of Freedom project or two One Degree of Freedom projects) and the implications should be carefully considered. Even after the organization decides to follow a two-step strategy, there are strategic choices with important consequences to be made. For example, a business that wants to change business processes and the ERP system may elect to either first change the business processes and then afterwards implement ERP or, alternatively, they may first implement ERP and then afterwards change the business processes.

A fast-moving consumer goods company we worked with shortly after the turn of the century was questioning the appropriateness of its ERP solution. The company had implemented its ERP system – more accurately described as an MRPII system – in 1989 and was unsure whether it would be able to support its anticipated growth and expansion in the new decade.

The initial evaluation showed that the old system had, in fact, not supported the whole business for some time, causing a multitude of stand-alone, custom-developed systems being used throughout the company in addition to the MRPII system. This assessment came at a time when there were a number of business initiatives coming to fruition: International markets, new business acquisitions and the expansion of product lines all contributed to an environment that was changing drastically and would continue to change for the foreseeable future.

The executive team rapidly agreed that to sustain its growth and exploit its expansion opportunities, the business needed a far superior ERP system. The question was whether to implement a new ERP system while simultaneously launching the new initiatives, before launching those initiatives or afterwards.

The company eventually decided to focus on the implementation of a new ERP solution for a nine-month period, with the primary objective of replacing the platform for current operations. The project became a focused ERP-only project, with One Degree of Freedom along the systems axis. All planned organizational and process change initiatives were postponed until after the successful completion of the ERP solution.

As it turned out, the ERP implementation was completed on time, to specification and within the original budget. This was the company's measure of success.

From the start, the executive team acknowledged that extensive business benefits would come from initiatives that would follow the ERP implementation, but that a new ERP system was a prerequisite for those initiatives.

The latter also came to pass and the company subsequently increased its product range and international markets with very meaningful rewards.

From business objective to degrees of freedom

The usefulness of the Degrees of Freedom Framework is that the strategic thinking in a One Degree of Freedom large-scale discontinuous change project differs radically from a Two Degree of Freedom large-scale discontinuous change project, even if the ERP aspect is the same in both projects. First classifying your ERP project is thus a practical and fast way to lay the foundation of the ERP strategy.

A very large proportion of ERP implementations start out with organizations saying that all they want to do is to replace their current system. As long as they stick with that objective, this translates easily into a One Degree of Freedom ERP project (1DF).

A more complex objective would be to reduce inventory. The global distribution and retail organization discussed in chapter one started evaluating technology solutions to address its

problem of excess and obsolete inventory. In this case, merely implementing the technology would not have delivered the desired results. The technology was required to redesign the company's inventory planning and control processes, introduce a centralized planning department and change the supply chain from a 'pull' to a 'push' environment. Up-front it was realized that to achieve all of these objectives, new processes and organizational structures would be required along with the new technology; in other words a Three Degrees of Freedom initiative (3DF).

Another frequently occurring situation is when an organization wants to adopt a more sophisticated technique or method of operation, for example by introducing advanced planning capability. A company may decide that it requires a more sophisticated method of planning and scheduling but then realize that this would only be possible with the introduction of new technology. This business objective translates into a Two Degrees of Freedom ERP and Business Processes project – 2DF(BP): to implement the new technology and simultaneously adopt new methods and techniques.

A key insight for you, the executive decision-maker, is that if the answer to our chapter one question: 'What are you trying to achieve with ERP and why do you want to do it?' changes, the degrees of freedom classification may change accordingly and, if that happens, your whole strategy should change with it. Failure to consider a shift in strategic objectives in terms of the implications for the Degrees of Freedom Framework can have a devastating effect.

An international corporation recently bought out a local company and decided that all operations should run on the same ERP platform that the parent company (overseas) uses. An ERP replacement project – a One Degree of Freedom ERP project – was launched.

As the project progressed, it became clear that the ERP project could also be the vehicle for the organization to consolidate some of its operations, ensure that the newly-acquired division worked to international standards and could, in fact, also reduce the headcount within the organization. As the opportunities became visible, they were made part of the ERP project in a classic example of 'scope creep'. However, project management still maintained that the project was an ERP replacement project and tried to stick to that objective. In the end the project exceeded its time-line by 50% and the project budget by 100%.

'Scope creep' happens in all ERP projects and is always an issue. There is a world of difference, though, between scope creep that changes the degrees of freedom of the project, as in the case described above, and scope creep that extends along a current Degree of Freedom axis, as in the following case.

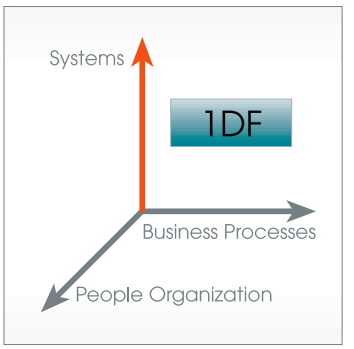
A One Degree of Freedom ERP project that we worked on required a complete change in the ERP system to incorporate many of the stand-alone systems that had evolved over time. Many systems were evaluated and one was selected to replace all of the separate stand-alone systems that were targeted for replacement. After selection, it was discovered that this particular ERP system could in fact also replace the bar code reading system – which had not been included in the original planning. But a case was made that it would be profitable to include bar code reading into the ERP project. The change in scope was approved, the budget and time line for the project were adjusted appropriately, and from there things proceeded well.

Risk and reward

Thinking through the business objective will lead the executive decision-maker to a degree of freedom classification for your proposed ERP project. Before locking in on a specific project approach, though, you may well consider the risks and rewards; different for each type of project:

1DF: A One-Degree-of-Freedom ERP project

Changing the ERP system is the focus of a One Degree of Freedom ERP project and all other changes, in business processes, in people and in organizational functions, are consequential.



The business benefits for this class of project come from the new ERP system.

Avoiding the cost of a failing system is a fairly common business benefit for a One Degree of Freedom ERP project. We know a company whose current ERP system is no longer supported by the original vendor, and there is now only one local person who can provide effective support. Should anything happen to her, the system will eventually fail and the damage would be considerable. Avoiding this eventuality is the primary reason for the company's planned ERP project.

Similar cost avoidance benefits come from the case where the hardware platform of a company is changed and the old ERP system will not run on the new platform without significant and costly adaptations that probably will not work very well. Better to replace the ERP system. We saw many such examples in the move to Windows-based systems in the previous decade.

A similar argument is often presented in cases where the change is not from one ERP system to another but from a conglomerate of disparate systems to a single ERP system. The benefits case lies in avoiding the instability and ongoing efforts and costs of integrating systems such as Project Management, Quality Assurance (QA), Customer Relationship Management (CRM), and so forth. Much of the drive in the nineties to move from MRPII, the precursor to ERP, was based on the argument that a single backbone system was much more efficient.

There are usually direct cost benefits that accompany the implementation of new ERP systems as well. These derive from newer technology delivering better efficiencies: doing the same things better, faster and with fewer resources.

The key advantage of a One Degree of Freedom ERP project is that it is, relatively speaking, a low-risk project that can be done fast. You're replacing the ERP system and trying to minimize the impact on the business processes, the people and the organization. If something goes wrong, you can often keep the old system going for a little longer. We even know of cases where the organization went back onto the old ERP system when they were unhappy with the new system after go-live.

But 'there is no such thing as a free lunch'. You, as the executive decision-maker, should be aware of the many disadvantages to setting up the ERP project as a One Degree of Freedom

ERP project before firmly committing to this strategy. The key disadvantage is best expressed in the homily: 'If you keep on doing more or less the same things in more or less the same way, you will keep on getting more or less the same results.' Neither significant business process improvements nor major people and organizational improvements are going to happen in a One Degree of Freedom ERP project, even though you will pay for and install the technology to make these possible.

For example, a company implemented a new ERP system that included an automated 'Configurator' module, yet the relevant business process continued to employ manpower to manually rewrite sales orders onto manufacturing bill of material configurations because that was the way it used to be done.

We frequently see companies issue a directive that the ERP system will be implemented with 'minimum deviation from the standard settings'. This is an extreme case of a One Degree of Freedom ERP project that offers an efficient solution which can be quickly implemented. However, the full benefits of ERP may never be realized with this approach and it could happen that, after implementing ERP, you have to re-engineer the business processes anyway to make them actually achieve their intended business outcomes.

Two or more consecutive One Degree of Freedom projects

Because of the order of magnitude increase in complexity from a One Degree of Freedom ERP project to a Two Degrees of Freedom project, a common strategy is to rather have two consecutive One Degree of Freedom projects, as noted previously under 'Multiple steps'. In the case of the fast-moving consumer goods company example related in that earlier discussion, the executive decision-maker judged the risk and the organization's low ability to absorb change to be such that he elected to play it safe and follow a strategy of consecutive projects.

There are, however, many cases where the strategy followed by this company would not be the best one, or even the low-risk one. The advantage of attempting only a single One Degree of Freedom change at a time is that it is less disruptive. The obvious disadvantage is that it takes much longer to complete two consecutive projects than a single Two Degree of Freedom project. There are other not-so-obvious disadvantages, mostly dependent on which comes first,

If you elect to first implement ERP based on your current business processes and then later on come back to launch a business process improvement project, you may be very restricted in what you can do. It has been said that ERP systems are like cement: flexible at first, but rigid afterwards. Coming back to re-engineer business processes after the ERP implementation may require so many changes to ERP that you end up doing everything over again. In effect, you then have a One Degree of Freedom ERP project followed by a Two Degree of Freedom ERP project. In the second project you incur most of the costs and risks you would have had anyway by opting for the Two Degree of Freedom ERP project from the start.

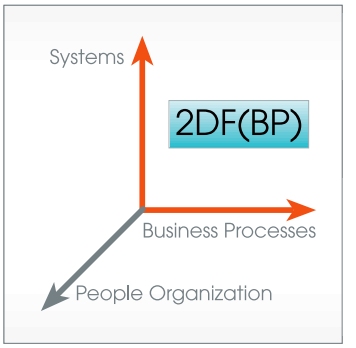
There is also the risk that, once the organization realizes the magnitude of the work that still has to be done after implementing ERP based on the current processes, it loses heart and the ability to summon the energy and resources to go back into large-scale discontinuous change mode. So it just stops right there, the business objectives in the business processes dimension are never realized and although the new ERP system seems to work we hear descriptions of the project such as 'not very successful'; 'did not meet our objectives'; or even 'an expensive mistake'.

If you follow the opposite strategy of first redesigning the business processes and then subsequently turning your attention to ERP, the end result may not be the best you could do for the money you eventually spend since you would not know what to design into the processes in the first project. The business process design project would operate in a vacuum and frequently the ERP project needs to come back to business process design in any case.

There is no correct answer. You need to think carefully through your business objective and the business benefits to be gained for your organization, consider the risks and the time lines; and then decide on an appropriate course of action.

2DF(BP): A Two Degrees of Freedom ERP and Business Processes project

Our earlier classification of all ERP projects into one of four categories according to the Degrees of Freedom Framework does not allow for relative importance between the axes. In practice, if your business objective and the business benefits come from changing both the business processes and the ERP system, it is usually the business process change that is in the driving seat.



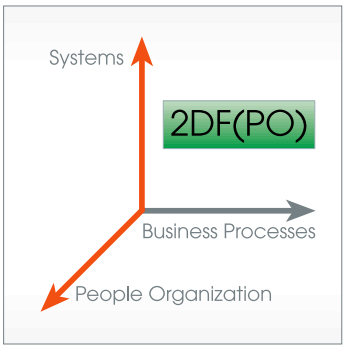
Some of the advantages of a One Degree of Freedom ERP project also hold for this one, since you are still replacing the ERP system and can look forward to better efficiencies and thus lower costs. However, the risk profile of a Two Degree of Freedom ERP and Business Processes project is completely different from a One Degree of Freedom ERP project. Here the whole objective is to change the way the organization operates. Typically, there will be a single go-live day on which lots of things change simultaneously – new system, new processes – which requires newly trained people as well. If all goes well, the business benefits will come; if they don't you may actually be worse off. It is not uncommon in this situation that some new business processes simply don't work on go-live.

The much higher risk of a Two Degrees of Freedom ERP and Business Processes project can be managed, but the way to do it is to take much longer to ensure that you get it right before go-live; to have many more resources on the project to design and verify and test the new business processes; and the executive decision-maker needs to be much closer to the project. Apart from taking longer and being more work, this class of project costs much, much more.

However, the advantages can be huge. With the freedom to design new business processes to improve the business and the intent to implement a system that will support those new processes, a Two Degrees of Freedom ERP and Business Processes project is often a 'bootstrap' project that elevates everything about an organization to a significantly more professional level. Companies use this opportunity to throw out antiquated business processes, they implement best practices that bring them into 'world-class', they launch Lean Manufacturing, Activity-Based Costing and Advanced Planning and Scheduling initiatives – in short, they re-invent and re-position themselves in a major way.

2DF(PO): A Two Degrees of Freedom ERP and People Organization project

Just as in the previous class of ERP project, in a Two Degree of Freedom ERP and People Organization project the ERP system tends to bow to the people and organizational objectives. The significant determinant of the complexity of this class of project is usually the scope of the organizational changes. A Two Degrees Of Freedom ERP and People Organization project that affects only a few functions in the organization is very different from a Two Degrees of Freedom ERP and People Organization project where the whole organization is changed as part of the project.



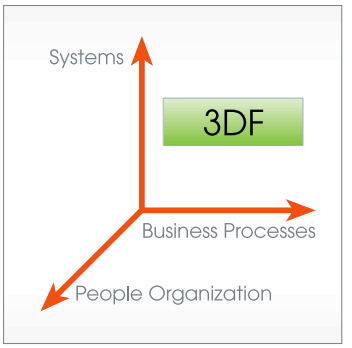
At the lower end of complexity are changes that affect only one or a few of the functions in the organization. In an earlier description we noted an organization that centralizes or decentralizes its purchasing function as an example of a Two Degree of Freedom ERP and People Organization project. Another common occurrence where only one or a few functions are involved is a 'shared services' function to centrally manage a corporation's financial operations.

At the other end of the scale of complexity lie projects that significantly affect most of the organizational functions. Complexity goes hand-in-hand with risk; the more individual organizational functions involved in the ERP project, the higher the risk.

In all Two Degree of Freedom ERP and People Organization projects, though, the primary risk is people-related, which in practical terms means that 'soft issues' like resistance to change and emotional reactions are likely to challenge your ability to achieve benefits from the organizational change.

3DF: A Three Degrees of Freedom ERP project

In a Three Degree of Freedom ERP project you want to change everything simultaneously.



By this time, the executive decision-maker should have no trouble extrapolating from our previous discussions and realize that this is a very high-risk project where things can go wrong in three different directions all at once.

So why would you do it?

The answer is because the business objective demands it. It could be, for example, that to achieve the business objective a radical departure from the previous business processes and people organization is required – which may necessitate a re-configuration or even re-implementation of the ERP system or possibly even a completely new system. If the business objective cannot tolerate the time lag it would take to work through sequential projects or the nature of the change is such that you simply cannot make the change in a step-wise manner, you have a Three Degrees of Freedom change on your hands.

Occasionally, a Three Degrees of Freedom ERP project creates a new entity, complete with many new people organized in a new way, new business processes and yes, a new or drastically changed ERP system to support everything. This new entity may be part of an existing organization or a stand-alone business unit but usually in this situation you don't have many options: it's either three degrees or nothing. You start the new company or you don't; you carve the new business out of the existing corporation or you don't; you set up the new, separate business unit different from all the others or you don't. If you decide to do it, you are faced with a Three Degrees of Freedom ERP project.

And although for the purposes of this book we call this a Three Degrees of Freedom ERP project, as in the previous two cases the ERP is likely to be slightly subservient to the other two axes. Only slightly, because a Three Degrees of Freedom ERP project that fails is often catastrophic – the business unit goes down with it – while on the other hand the ERP system your new business unit uses, for example, can be the advantage you are looking for with the establishment of a new entity.

This is all very exciting and challenging and the enthusiasm that usually goes with a Three Degrees of Freedom ERP project carries organizations through the many challenges that such a complex large-scale discontinuous change project entails. Everybody is part of something new and everybody participates. Executives are hands-on and the focus is directly on what needs to be done. The risks are there, but apathy and push-back are usually absent.

What next?

We propose in this book that your business objective and the contribution of ERP to that business objective place the proposed ERP initiative in one of the four classes in the Degrees of Freedom Framework. The executive decision-maker who answered the chapter one question: 'What are you trying to achieve with ERP and why do you want to do it?' should by now have positioned his or her project firmly in one of those four classes, should understand the benefits and risks and should be ready to think about strategy.

In the next chapters we examine how this classification enables you to quickly arrive at appropriate strategies for selecting, implementing and operating ERP successfully.

Chapter Three: Think strategically when selecting an ERP system

The executive decision-maker who is thinking about ERP has to consider the implementation and eventual operation of the system when selecting a particular ERP system. For this reason, we use the life cycle approach to guide your thinking; specifically the following three life cycle phases:

The Selection Phase is where you choose an ERP system from amongst the available options.

The Implementation Phase is where you make the ERP system work as intended. It is where change happens, including termination of the current systems and, if applicable, the current business processes and/or people and functional organization profile.

The Operation Phase in the life cycle refers to the ongoing running of ERP in pursuit of the business objective.

Because of their implications for strategy, there are some home truths about the relationships between the three phases that the executive decision-maker may want to think through:

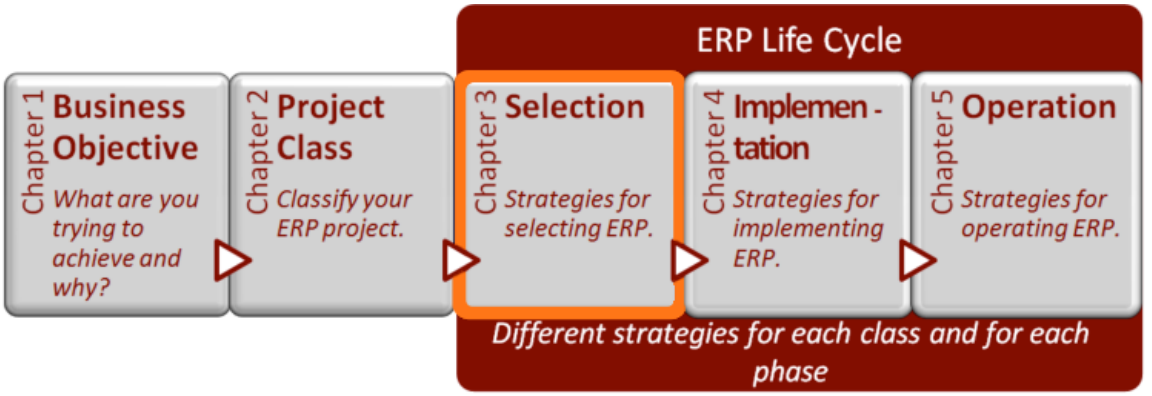
- Only the operation phase delivers business benefits. The other two cost time, effort and money, usually with little or no return in those phases
- Much of the ability of ERP to deliver business benefits in the operation phase is determined by how well the previous two phases proceed
- Of the first two phases, the implementation phase usually takes the longest, costs the most and has the most disruptive influence on the organization. However, the better the selection phase has been executed, the easier it is to keep time, cost and disruption in the implementation phase under control
- Although the selection phase is shorter and in itself does not usually cost much, the decisions made here – and especially how they are made – have profound implications in later phases

This book is about strategy, and no other point we are trying to make is as important as the one that there *has to be* a strategy. Without carefully setting strategy, an organization will just blunder into selecting some ERP system that may or may not be appropriate, launch an implementation project with little ability to tie the money and time spent to the eventual results achieved, and end up operating a system because it's there, not because it particularly adds any value. This book is about helping you, the executive decision-maker, establish the ERP objective and set strategy for each phase in the life cycle.

With a clear strategy, much of the work in the later phases can be comfortably delegated or even outsourced to professionals with knowledge and expertise of ERP computer systems, business process design and organizational structuring. If how the professionals run those

phases is not controlled by a strategy established up-front, own agendas and special interests easily surface later on and can cause the ERP project to drift off on a tangent.

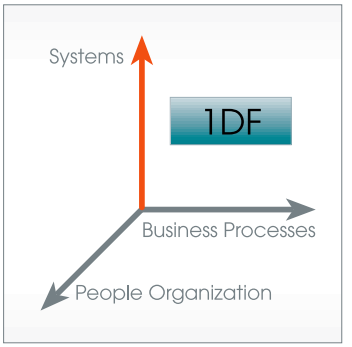
In this chapter we present appropriate strategies to follow when selecting an ERP system. In the next two chapters, we present appropriate strategies to follow in the implementation and operation phases respectively.



The content of chapters three through five are organized around the following headings:

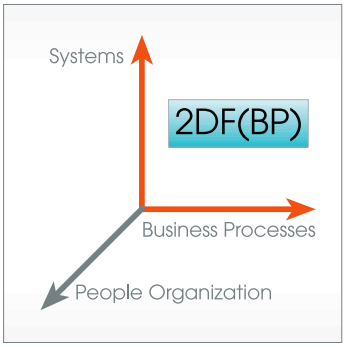
First we discuss the *Strategic Considerations* applicable to all ERP projects that you, the executive decision-maker, should keep your eye on – as opposed to tactical level items that can be delegated once the strategy is in place.

Subsequently we discuss – under the same headings as the Strategic Considerations – issues unique to a One Degree of Freedom ERP project with consequent recommendation of an appropriate strategy for you, the executive decision-maker, to think through.

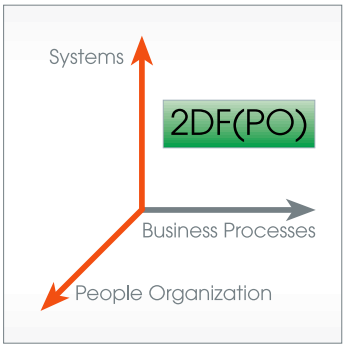


You should read through this section even if you have already determined that your project is one of the other cases in the Degrees of Freedom Framework because - in this book – all cases of change have ERP along the systems axis as one of the degrees of freedom and the strategic issues discussed are applicable to all cases in one way or another.

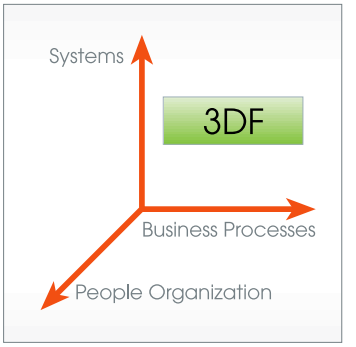
We next discuss the same Strategic Considerations as applicable to a Two Degrees of Freedom ERP and Business Processes project. Where the recommended strategy is the same as for a One Degree of Freedom ERP project, we just say so instead of repeating the whole explanation. The really important parts of the discussion are where the difference between this and the previous class of ERP project lead us to recommend completely different strategies.



Similarly, for a Two Degrees of Freedom ERP and People Organization project we present our recommended strategy in terms of how it differs from the other cases. The line of thinking is, in most cases, very similar to that for the other Two Degrees of Freedom class of project but, because the important differences lie along the people organization axis, the accent shifts to human resource (HR) strategies.



A Three Degrees of Freedom ERP project in one sense should encompass everything that the other classes of projects contain. However, the very nature of doing everything simultaneously demands a strategy that is different from the 'sum of the parts'. We discuss the impact on the Strategic Considerations of such an all-encompassing project.



The objective is to enable you, the executive decision-maker, to arrive at the end of chapter five with an appropriate strategy for selecting your ERP system, project managing the implementation and operating ERP immediately after implementation.

When we say 'selecting an ERP system', we often mean buying a brand-new new ERP system. Occasionally, however, an organization is faced with selecting an ERP system from amongst alternatives which do not include spending money on acquiring a new system. One such example would be a subsidiary company in a group that owns bulk licenses for two or more ERP systems or two or more variants of the same system. We consider these as special cases of the general approach discussed in this chapter: that of deciding on which of the many different ERP systems in existence the organization will spend its money.

Strategic Considerations for the ERP Selection Phase

The role of the executive decision-maker in setting strategy for selecting an ERP system revolves around the process of selection, not the selection itself. What system is eventually chosen in the selection phase is not as important as who selects the system and how it is selected from amongst the alternatives.

Although selecting an appropriate system does not in itself guarantee a successful outcome to the project, the organization which has confidence in its decision is much more likely to succeed. That confidence is built by following a structured and formal approach.

With a few decades of successes and failures in ERP selection to go on, the world has pretty much accepted that the following are critical characteristics of a successful selection strategy (see some of our references [11, 12]).

A. Clear and unambiguous decision-making authority

The selection and implementation of an ERP system is a major project and should be undertaken as a strategic initiative. Most organizations will only purchase a completely new ERP system once every decade or longer. The selection should be managed with no ambiguity in the decision-making authority, especially when the final decision has to be made and there are differences of opinion. It is important to specify the decision-making authorities of the project manager, the executive decision-maker and the chief executive if this is someone other than the executive decision-maker.

The appointment of a project manager is an important strategic level decision. For all but the smallest One Degree of Freedom ERP projects, this is a full-time assignment for a knowledgeable person. Frequently, organizations find it difficult to dedicate an appropriate staff member full time to this role and therefore look outside the firm to contract a consultant to lead their ERP selection process. This has proven quite effective, provided the executive decision-maker directly addresses the potential for conflicts of interest.

The most common and, in our opinion, dangerous conflict of interest occurs where the external advisor leading an organization through an ERP purchasing decision works for a company that also sells ERP systems. Even if the individual tries to remain independent, the pressure to steer the client toward buying a system that is sold by his or her colleagues is enormous. No organization should allow itself to end up in this situation because you will never be sure whether the recommended system is best for you or best for the consultant's bosses.

An organization requiring outside help to select an ERP system is far better off making use of one of the many independent organizations or individuals who offer advice without having a vested interest in which system you buy.

The activities of the project manager should naturally be overseen by an accountable person or body within the organization. This is a specific task carried out by you, the executive decision-maker, or more commonly, a Steering Committee comprising key members of the executive team of the organization and chaired by the executive decision-maker.

The different accountabilities and decision-making authorities are described below.
The project manager is required to:

- Manage the activities involved in selecting an ERP system
- Manage the scope of the selection project
- Manage conflicts that may arise
- Maintain communication at all levels inside and outside the project team
- Make the decisions delegated to his or her level and escalate those that require Steering Committee resolution

[11] D das Neves, D Fenn, & P Sulcas, 'Selection of enterprise resource planning (ERP) systems', South African Journal for Business Management, Vol. 35, 2004.
[12] JB Yang, CT Wu, & CH Tsai, 'Selection of an ERP system for a construction firm in Taiwan: A case study', Automation in Construction, Vol. 16, 2007.

The highest level of authority for the project resides with the Steering Committee chaired by the executive decision-maker. The Steering Committee is required to:

- Commit the project resources, both in terms of money and personnel
- Monitor the selection project's progress
- Empower the project team and specifically the project manager to make decisions
- Verify the elimination of alternatives from the list of systems being considered
- Perform the final selection of an ERP system based on the recommendations of the project team

With ERP systems as costly as they are, the Steering Committee decision is usually only final once it is ratified by an authority even higher than the chief executive; namely the board of the company, the head office of a subsidiary or a similar governing body.

B. User participation and buy-in

The trap to avoid when buying ERP is to place the selection of the ERP system exclusively in the domain of the Information Technology (IT) Department.

The essence of ERP is that it automates and integrates all of the core business processes in the organization. Therefore the selection of a new ERP system should be performed by a team of people representing all the functions working with those core business processes.

It is not feasible to have a separate individual from each business function on the selection team, so practical ways have to be found to satisfy adequate representation and to ensure that the team speaks on behalf of the users. Usually, this selection team contains both technical (as in information technology or IT) people and representatives from the functional areas. There may also be outside consultants who contribute specific skills and insights – apart from the project manager, who may also be an outsider as discussed above.

The representatives from the functional areas are called 'process owners' since they are accountable for and authorized to sign off on the ability of the new ERP system to support the business process design for each of their areas (procurement, sales, finance, planning, manufacturing and so on). Process owners are required to:

- Provide functional knowledge
- Contribute to the design of business processes where applicable
- Assist in the compilation of documentation
- Ensure integration between functional areas

C. Business process definition of requirements

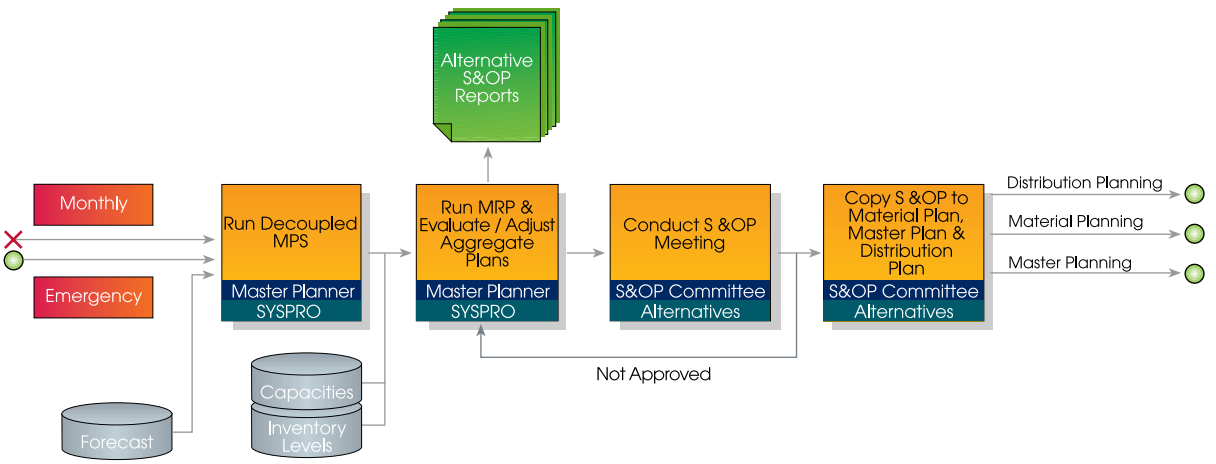
What the organization wants to do with the ERP system is of course paramount in the selection of an ERP system. A document called 'User Requirements' or similar is used to drive the selection process.

The User Requirements document should be based on a description of the business processes. There are various models and techniques that guide business process modeling. (SCOR[13] and ARIS[14] are frequently mentioned; there are others.) The outcome of the modeling – a manual called a 'Business Process Blueprint' – is a description of the sequence of events, the

[13] Supply-Chain Operations Reference-model (SCOR), Supply-Chain Council, www.supply-chain.org.
[14] ARIS Reference Model, IDS Scheer, www.ids-scheer.com.

organizational functions involved and the data and system elements, usually in the form of a flow diagram plus narratives.

The figure below is an example of the flow diagram for a particular business process in the Business Process Blueprint.



From a strategic perspective, it is important to determine whether the business processes that are modeled represent the way the organization currently functions – referred to as the As-Is business processes – or newly-designed business processes that the organization aims to implement with the ERP system – referred to as the To-Be business processes.

The term 'best practices' often turns up during an ERP selection process, sometimes stated as a strategic requirement and sometimes sold as a feature of a particular ERP system. To be useful as a strategy, one needs to be more specific about best practice business processes.

First of all, there unfortunately exists no 'master list' of best practices valid for all times, in all cases, and in all places. In practice, all that is usually meant by best practices is that, of the many different ways in which you may elect to arrange activities and manipulate data in order to achieve the desired business outcome, some usually work better than others; or are quicker than others; or are cheaper to get to the desired result than others; or are less prone to errors and failures than others.

Because of this somewhat vague definition, best practices vary from industry to industry and from country to country. Within industries, one of many alternative best practices may often be employed. Furthermore, best practices change over time. As noted in chapter one, computer technology has over the past decade or so made practical a whole array of best practices that simply did not previously exist. As another example, many business processes that were previously in widespread use have fallen into disfavor because of concerns over vulnerability to fraud and security lapses.

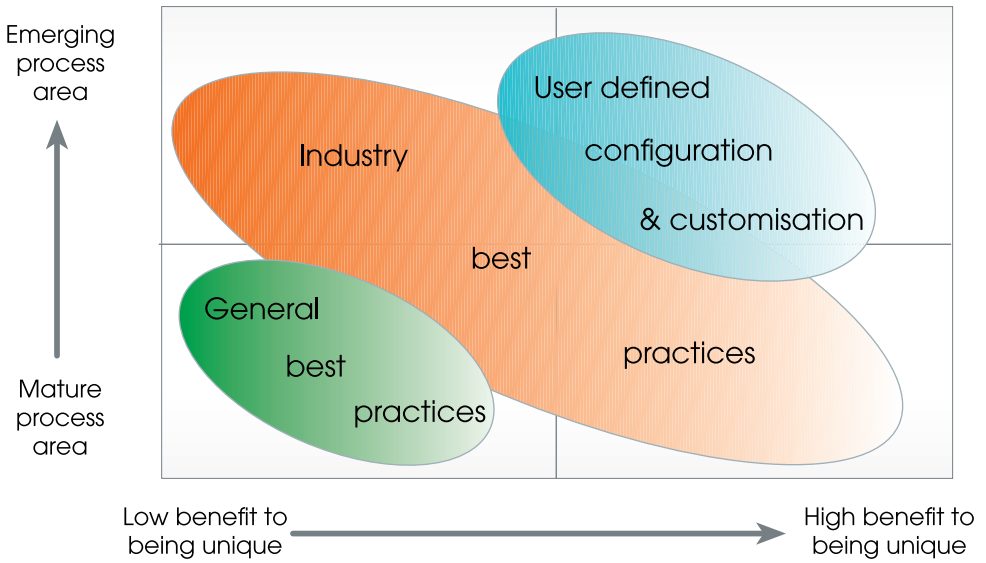
Still, the argument is compelling and generally accepted that most organizations are better served following the best practices for their time and place than working in a way that

their peers agree is less effective. It is also not clever to re-invent the wheel by designing new business processes from start to finish when an existing best practice is available and will serve the purpose with ease.

In practice, one finds that some best practices are specific to an industry; for example, the way to maintain lot traceability of product in the pharmaceutical industry. Some are much more universal, such as the process for placing purchase orders or how to match purchase orders with invoices in an Accounts Payable department.

And some business processes are unique to the firm. Amazon.com founded a global business by designing and implementing a unique business process for ordering books over the internet. Dell built a commanding lead in personal computers by designing and implementing a unique process for customers to directly configure their product orders as an input into manufacturing.

In the diagram below, Gartner[15] finds that best practices tend to be more prevalent in mature business processes (for example, financial business processes) than in new and emerging business processes (for example, new industries or new channels such as internet-based processes) but also in areas where there is little competitive benefit in being unique. (Few firms would argue that the way they do their general ledger gives them a competitive edge.)



D: Clear and unambiguous policies and guidelines

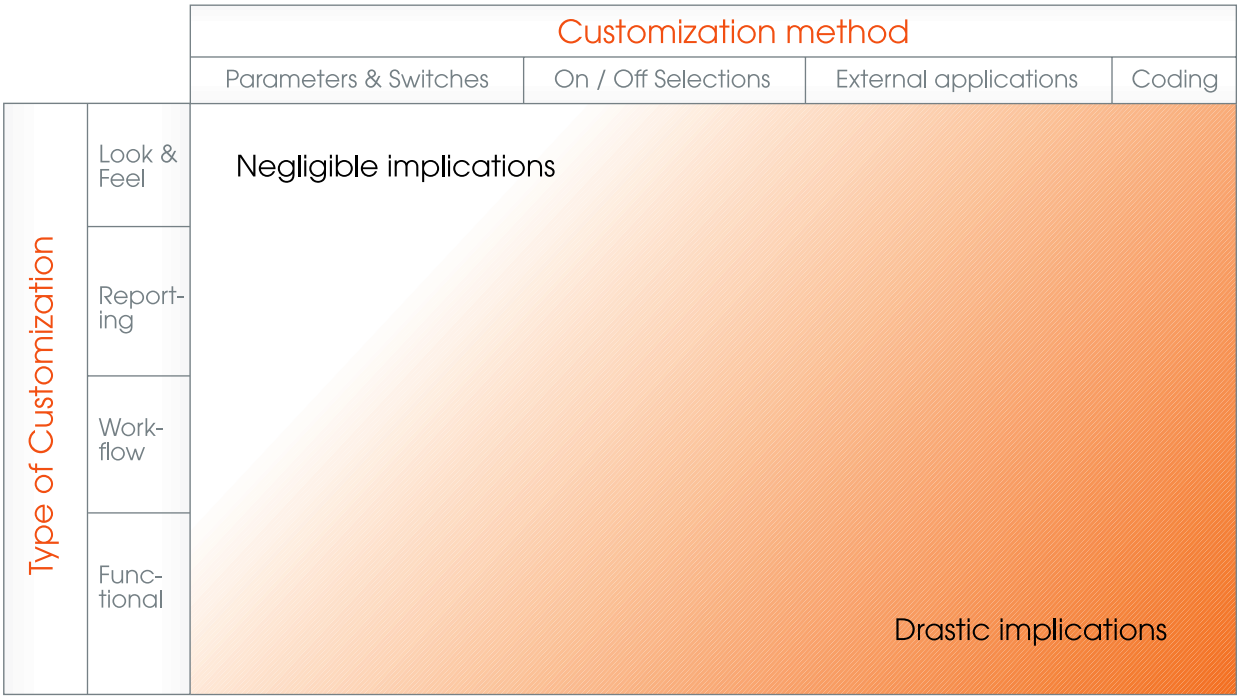
There are always limits to where a selection process may go and these should be thoroughly communicated – preferably in the form of written directives or minutes of Steering Committee meetings. Preferences should be explicit. The selection team needs to know what is 'on the table', what is not and where it may 'push the boundaries' as new knowledge is gained during the selection process.

[15] B Maynard, 'Are ERP Best Practices Best for your Company?', Gartner Group, Stamford, CT, 2006.

One of the directives that we frequently encounter when working with clients who are selecting ERP systems relates to anticipated changes to the system. These occasionally come in one of two extreme forms such as: 'We will just use the standard ('vanilla') version of the system without any modification'; or alternatively 'We will make the system adapt to the business, not the business to the system'. Neither extreme captures the complexity of what you, the executive decision-maker, should think through.

Although actual customization and modification of the system to conform to user requirements will only take place later on (during the implementation phase), the requirement and the ability to perform such customization and modification should play a major role in your selection of a particular ERP system.

Discussions and debates on the topic of customization and modification tend to quickly get very technical, with acronyms and buzzwords floating in and out of the conversation, and it sometimes seems to non-IT people that they are listening to a foreign language. As the executive decision-maker, this should not lead you to lose interest in what is going on – it is too important strategically. Rather, we propose that you demand that the technical people put their arguments in language you can understand. We developed a 'customization matrix' [16] that aids in such understanding. A summarized form of the matrix is presented below and we next describe how to make use of this matrix.



[16] WH Wessels, 'ERP Customisation Matrix', iPlan Industrial Engineers, www.iplan.co.za/thinkingabouterp, 2007.

To a greater or lesser extent, modern ERP systems all have the ability to be changed for use in a particular situation. Configuration, customization, modification, adaptation, localization and many similar words are used in the IT industry to describe this process – all with different interpretations. For our strategic communication purpose, we elect to use the word customization as an all-encompassing term to describe all the activities involved in making changes to software in one way or another, including integrating it with other pieces of software, to fit your purpose.

Sometimes the objective of customization is merely to personalize the look and feel; for example, with logos, colors and the date format. Typically, these have little or no business impact; nor do they require much work. One can usually also modify the reports that come with the standard configuration of the system to present information not normally in those reports but important for the way your particular business process works. Changes to workflow, such as the sequence in which the creation, approval and release of a purchase order takes place in the system, are more complex and not all systems have that capability. The most complex of all modifications are functional process changes - for example, a change in the statistical algorithm that the system uses for forecasting.

The customization matrix progressively maps these more complex types of modifications against the methods used by the software industry to achieve the modifications. All modern systems have the software parameters and switches mentioned earlier. Most also have the ability to 'switch on or off' different parts of the system depending on requirements. If the ERP system you are evaluating does not have your required functionality at all, you can always consider buying an external application (stand-alone software) and integrating it with the core ERP system. In fact, many software vendors complement their own ERP system with third-party software that is bundled in and sold as part of the solution. Finally, programmers can write bespoke code to make the software do exactly what you require.

The customization matrix illustrates what you, as the executive decision-maker, absolutely have to watch out for from a strategic point of view. Parameters and switches that change the look and feel of the software have negligible impact. At the other extreme, it would be an arduous, long and costly process to write code to change or create software functionality – this activity also carries the risk that the new functionality may not work as you intended or may not work at all.

You should demand that proposals to write software code to change or add functionality be very thoroughly motivated in business language; on the other hand, you can afford to only glance over discussions belonging in the upper left part of the customization matrix.

The customization matrix graphically maps the degree of fit between your requirements and the ERP system that you are evaluating. If all of your requirements can be met in the upper left part of the customization matrix, the ERP system is a good fit. If meeting a significant number of your requirements – or just a few but critical requirements – requires activity in the bottom right part of the customization matrix, the ERP system is not a good fit.

A bad fit according to the customization matrix does not necessarily mean that you should not buy the particular ERP system. It does mean, however, that to modify this ERP system to fit your business will have drastic implications and that you have to be sure of your case before selecting this particular system.

The collateral material available for download at the companion website to this book contains more detail on the customization matrix.[17]

E. Structured rigorous selection process

Buying an ERP system is often described as analogous to buying a car, and we find many useful comparisons. It is true that some people will decide to buy a car and immediately head off to the showrooms. They will listen to car salesmen extol the virtues of different models. Sometimes, a salesman will try to sell a car based on features that may not really be relevant (seat warming in a tropical climate) and sometimes a car is bought on an impulse ('I like the blue one').

"If you don't know where you're going, any road will take you there" goes the old saying, and maybe for some people buying a car the above way is acceptable. Serious car buyers, however, are likely to first draw up a list of the functionality that they require (such as room for children in the back and luggage space) and pre-determine some price range before talking to the dealers. Buying an ERP system should follow the latter strategy.

Earlier, we discussed basing the requirements of your proposed new ERP system on your business processes; this strategy leads to functional requirements that your proposed new ERP system should meet. But there are other requirements, many of them only subjectively assessable but nevertheless important. The stability of the software vendor, the scalability (ability to add more users and modules) of the system and so on should also feature.

Finally, there is cost and here you should not only consider the acquisition cost but also the cost of implementation and that of running the system. In addition, there may be hardware costs and companion software license fees associated with one alternative but not with another. All these cost implications should be factored in. In fact, we propose that you follow a strategy of life cycle costing for a five-year period to compare all the costs associated with each alternative. On the companion website to this book we present more detailed methodologies for structuring selection criteria[18].

One of the key differentiators for a successful selection phase is a structured and rigorous process when one gets down to the actual selection of the new ERP system. This process may be adjusted as the selection team learns more about the environment, but a formal process should remain in place because it enhances understanding and aligns expectations. We propose the following five-step sequence of events.

1. Plan

Plan the acquisition and assemble the team. Compile the evaluation criteria and requirements that will be used to select a particular ERP system from all the alternatives.

2. Filter

Gather system information from possible vendors and develop a 'long list' of all the alternatives. Subsequently, filter the entries on the long list using the evaluation criteria and requirements to reduce the number of possible alternatives to a short list (say two to four). There are usually sequential filtering rounds with possible alternatives eliminated at each round using different criteria. For example, a first pass may eliminate ERP systems where the cost would be too much to make it worthwhile considering these any further.

17 WH Wessels, 'ERP Customisation Matrix', iPlan Industrial Engineers, www.iplan.co.za/thinkingabouterp, 2007.
18 AJ du Toit & WH Wessels 'Enabling your ERP decision', iPlan Industrial Engineers, www.iplan.co.za/thinkingabouterp, 2007.

3. Evaluate

Evaluate the short list. This is done by asking for demonstrations on a pre-defined 'script', with the selection team scoring and ranking alternatives with reference to the predefined criteria and requirements. Often, follow-up research is required to gain more information (for example, the cost of implementation).

4. Select

Select an ERP system that best suits the criteria and requirements. This is your job as the execution decision-maker, preferably acting within a Steering Committee and based on the recommendations of the selection team.

5. Negotiate

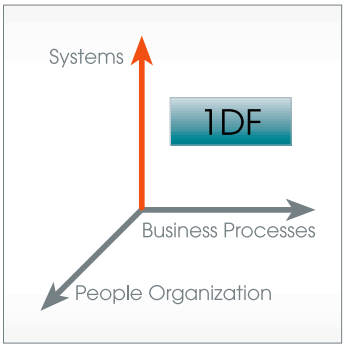
Negotiate the deal.

In the same reference mentioned on page 34 regarding the website containing collateral material, [18] we discuss the five-step ERP selection process in more detail and provide additional references. One aspect, though, should be highlighted as a matter of strategy and that is the need to document the rationale for each decision as the selection team works its way through the five steps. Big money is usually going to be spent over a long period of time and the recipients of this money will be determined by the outcome of the selection process. The later phases in the ERP life cycle will also be influenced and bound by the major selection phase decisions. The rationale behind all these decisions, when and by whom they were made, should be documented and kept for future reference. A paper trail is useful because some candidate systems are going to lose out, so decisions are sometimes challenged after the fact. Even well-meaning participants can derail the process by continuously going back to decisions already made (for example, trying to add a system for consideration after the team has already started negotiations with the selected ERP vendor). Widespread communication of documented decisions, on the other hand, creates a new peg in the ground from which to move forward.

We now turn to specific strategies dependent on the class of ERP project as per the Degree of Freedom Framework.

1DF: Selection Phase strategy for a One Degree of Freedom ERP project

To recap from chapter two: The executive decision-maker who has decided on a One Degree of Freedom ERP project has made a firm decision that the project is about ERP rather than business processes or people and organizational issues. You are looking for benefits from a better system, not from better ways of working or organizing the functions differently (in this project).



Let's think through the implications in terms of the strategic considerations previously presented.

18 AJ du Toit & WH Wessels 'Enabling your ERP decision', iPlan Industrial Engineers, www.iplan.co.za/thinkingabouterp, 2007.

1DF a. Clear and unambiguous decision-making authority

A One Degree of Freedom ERP project is a technical initiative and it is best to get an IT-knowledgeable person to lead the selection process. In many cases, the task is taken up by the IT manager in addition to his or her existing duties. The rationale is that the requirement for a new system is probably best understood by this individual and after implementation it will be his or her responsibility to maintain the system in a way that will realize the business benefits – ERP system-bound in a One Degree of Freedom ERP project.

Sometimes the task is too big for the IT manager to manage part time, or he or she may require more up-to-date IT and, specifically, ERP knowledge and expertise. In that case, an external consultant may be used – with due consideration of potential conflicts of interest as discussed earlier.

1DF b. User participation and buy-in

A fatal temptation is to view a One Degree of Freedom ERP project as 'belonging to IT'. Even though the focus is on benefits to be gained from the new system (and not from better processes or organization), those benefits will still only be realized if the organization as a whole embraces the new system. The integrated nature of ERP is its strength but also its weakness: a failure of the system in one function of the organization will reduce and can even eliminate benefits in other functions.

Therefore, the selection team should be carefully made up of both technical experts – typically the IT department plus (maybe) external consultants – and representatives from functional areas such as procurement, sales, finance, planning, manufacturing and so on. The task of the selection team is to ensure that any new system selected will be able to support the current business processes (since this is a One Degree of Freedom ERP project). Sign-off on that verification is often required of the team.

1DF c. Business process definition of requirements

In a One Degree of Freedom ERP project, your aim is to change the business processes as little as possible – not at all if you can help it. So the new system that you are buying must be able to support the current processes pretty much as they are.

As noted earlier in this chapter, mapping business processes and then using these as the requirements specification for buying the new ERP system is generally accepted best practice in the world today. For a One Degree of Freedom ERP project, this mapping is a small requirement and an easy one: Just go and map the way you are doing it now.

A good selection phase strategy would be to limit the As-Is business process mapping to the minimum necessary to establish the functionality requirements that the new system must meet.

1DF d. Clear and unambiguous policies and guidelines

The fact that the executive decision-maker has decided upon a One Degree of Freedom ERP project immediately leads to the following policies or some version thereof:

- The new ERP system will be chosen to fit the current business processes. Minor changes to business processes will be tolerated
- The current personnel, organized as they are now, will operate the system. Training may be required and minor role changes will be tolerated

Although the systems axis is 'free' in a One Degree of Freedom ERP project, that freedom is not unlimited. There may be company-specific restrictions that the selection team must bear in mind, such as the following examples:

- 'We will not consider any system that costs more than…'
- 'We will only consider systems that have local support; 'local' meaning...'
- 'We will only consider systems that come with regular upgrades and new releases. By 'regular' we mean…'

An example in point: We worked with a manufacturing concern that was part of a group of companies. Most of the other companies in the group were trading organizations. This group had no formal policy for a standard ERP solution, but there was a general understanding of a 'preferred solution'. However, when it came to evaluating alternative ERP systems, the manufacturing company realized that the preferred ERP system would not be a good fit.

The company proposed to buy a different ERP system and submitted this to head office for approval. As no formal policy regarding the preferred solution existed, this proposal could not be rejected outright.

After much internal debate and reluctance, the group head office contracted a consulting company to verify the system evaluation and selection process. It turned out that the consulting company concurred with the assessments and the proposed solution was accepted. In this example the corporate policy, even though informal and unwritten, challenged the project timelines and budgets.

1DF e. Structured rigorous selection process

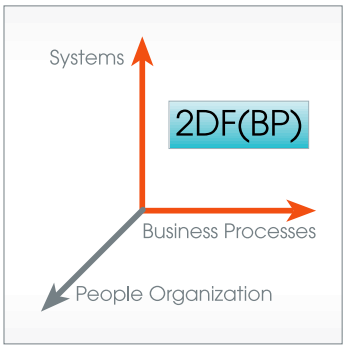
The five-step process described earlier, or some version thereof, should only start after the business process mapping has been completed.

When setting up the criteria for selection in step 1, a specific strategy on acceptable levels of customization may be followed. In a One Degree of Freedom ERP project, all the business benefits will come from the new system and you don't want these benefits to be whittled away by large customization costs. The following directives are therefore common elements of the selection strategy in a One Degree of Freedom ERP project:

- Required customization of the software to enable any candidate system to meet requirements will be viewed negatively if external applications are involved
- No coding of functional requirements will be considered

Having determined that your organization will launch a One Degree of Freedom ERP project, we propose that you take our above recommended strategy, add specific considerations applicable to your case and use the result as your strategy on how the selection phase must play out.

2DF(BP): Selection Phase strategy for a Two Degrees of Freedom ERP and Business Processes project



Again, a recap from chapter two: The executive decision-maker who has decided on a Two Degrees of Freedom ERP and Business Processes project is looking to change the way the organization works – the business processes – and requires a new system to support these new business processes.

In chapter two we discussed the two-step strategy where you elect to first implement a new ERP system as a One Degree of Freedom ERP project and subsequently come back to implement new business processes and/or new people and organizational structures. Even though the implementation phase would be a One Degree of Freedom ERP project, the selection phase would have to consider both the current way of working and the new way of working: a Two Degree of Freedom ERP and Business Processes project for this phase.

There is a flawed (in our opinion) strategy for a Two Degrees of Freedom ERP and Business Processes project that is nevertheless so prevalent that we note its existence: The thinking is that you should first buy the ERP system that is most likely to be able to support whatever new business processes you may come up with in the future. Then you examine the capabilities of that system to determine how to design your new processes. Finally, you design and implement the new business processes and new system simultaneously.

To our mind this system-centric approach means you are likely to buy the most expensive and all-encompassing ERP system you can find, but will only use that portion of it that fits the way you eventually run your business. Surely it is better to decide on the new business processes first and then find a system that will support what you want to do and no more? That way you don't pay for what you don't use!

There is a complication, though. In practice, the process of investigating new ERP systems often raises possibilities that the organization was not previously aware of, and that opens up new opportunities that could be explored. While this seems to motivate looking at ERP systems first before committing to business process design, we have found the most practical strategy of all to be the following.

> *First* design the new business processes at a high level; that is, with only enough detail to enable you to select an ERP system that fits your future requirements sufficiently to meet the strategic objective and realize the business benefits.
>
> *Then*, go and select an ERP system, essentially following the same strategy as in the previous description of a One Degree of Freedom ERP project but based on the new high-level business processes and with some other modifications that we discuss below.
>
> *Finally*, in the implementation project (which we discuss in chapter four), revisit the high-level business process design and design detailed business processes that utilize the possibilities opened up by your new ERP system.

The difficult part for many people to accept is that this three-step approach requires you to start the selection phase of your ERP project by first completely ignoring ERP systems in order to focus on a high-level business process design! Specifically, there are two very different consecutive projects, first a *business process design project* and subsequently an *ERP selection project.*

Both projects are governed by the same strategic considerations discussed previously, but with some specific issues applicable to a Two Degrees of Freedom ERP and Business Processes project.

2DF(BP) a. Clear and unambiguous decision-making authority

Unlike the One Degree of Freedom ERP project described earlier, this is not a technical project. We noted in chapter two that the ERP system in these projects is often seen as slightly subservient to the ambitions of the business in wanting to establish new ways of working; ERP is now more of an enabler that allows the business to re-invent itself. Putting the IT manager in charge is the kiss of death.

At the heart of what you are trying to do is the notion of discontinuous thinking – of recognizing and breaking away from the outdated rules and assumptions that underlie the current business processes and getting a system that will allow you to achieve that. This requires courage and authority; the kind that you as the executive decision-maker probably have. It is also very much a full-time job requiring long hours dedicated solely to the ERP project; the kind you probably don't have.

The solution that the industry has come up with is a kind of partnership between two individuals. The executive decision-maker in this case is very close to the project and retains accountability for the major decisions. We often refer to this role under these circumstances as that of the 'executive sponsor'. The full-time project manager is seen as an extension of the authority of the executive sponsor, on whose behalf and in whose name he or she runs the project.

Obviously, this strategy requires that the executive sponsor has complete trust in the project manager and this trust is of a very personal kind. We often see the full-time project manager role allocated to a promising up-and-coming person in the company that is on a fast track to the top levels. Equally often, the task is outsourced to a professional from outside the firm.

Naturally, if an external professional is used as full-time project manager, our previous discussion on ensuring that there are no conflicts of interest is even more important. The executive sponsor needs to be comfortable at all times that the external professional has only the best interests of his or her client at heart.

The scope of a Two Degrees of Freedom ERP and Business Processes project is of such significance for the organization that it is common practice to require the functional heads to sign off on the new high-level business process design. The significance of sign-off is a confirmation by the organization (as distinct from the project team) of its satisfaction that the new process designs are likely to achieve the business objective and business benefits, and that these specific business process designs can be used to select an appropriate ERP system.

As with a One Degree of Freedom ERP project, the final decision probably has to be ratified by the board, head office or a similar governing body.

2DF(BP) b. User participation and buy-in

There are two distinct sequential projects within the selection phase for this particular case: first the design of the high-level To-Be business processes and, subsequently, the selection of an ERP system that will support those To-Be business processes. The composition of the team to do the work, though, is more or less the same: As in the One Degree of Freedom ERP project discussed previously, the team should consist of both technical and business process people.

We stated in chapter two that this class of project carries much more risk but also much more opportunity. For both of those reasons, it is a good strategy to take more time, involve more people and yes, spend more money to ensure that you get it right than you would have done for a One Degree of Freedom project. Much of the extra money goes towards bringing in outside experts to strengthen the team with both ERP technical experts and with business process consultants.

In the first project, the high-level business process design, the business process people – both internal and external – tend to be in the driving seat, with the technical experts providing somewhat of a reality check on some of the more extreme proposed new business process designs. In the second project, the actual ERP selection, the roles are reversed, with the technical experts taking the lead and the business process experts participating to ensure that the system selected will indeed be able to support the newly designed business processes.

2DF(BP) c. Business process definition of requirements

For this class of ERP project, we recommend that both the As-Is and To-Be business processes be mapped, even though the intention is to replace the As-Is. We find it good practice to ensure that you know the starting point in the change to the business processes you envisage. However, the As-Is business process mapping should not consume much time or money, and so a common strategy is to limit the level of detail in the As-Is mapping.

A common objective for organizations embarking on a Two Degree of Freedom ERP and Business Processes project is to use the opportunity to implement best practices. We refer to our earlier discussion on best practices where we suggested that the organization clarify which business processes provide it with benefits by being unique, and which business processes may just as well be converted to best practices. This clarification is part of the first project: business process design.

2DF(BP) d. Clear and unambiguous policies and guidelines

For the executive decision-maker, we propose that the following policies be considered for inclusion in your selection phase strategy for a Two Degrees of Freedom ERP and Business Processes project:

- The business processes which provide this organization with a high benefit by being unique will be identified during the high-level business process design project and will not be modified solely to suit any new ERP system
- Improvements that further enhance the value of these unique business processes must take priority in time and effort in the high-level business process design project
- Business processes which do not bring benefit by being unique will be designed according to industry best practices, general business practices and other governing principles for this industry

- ERP system selection will be based on the newly-designed business processes (at an appropriate level of detail) and this must be verifiable
- During the selection project, any ERP system which enhances the unique business processes will be viewed favorably
- Roles and responsibilities will change as little as possible. Training may be required and minor role changes will be tolerated

As the system's axis is one of the two with freedom to explore benefits, in a Two Degree of Freedom ERP and Business Processes project the selection team will typically be afforded more freedom to see how technology can better support better processes. Although cost is always a consideration, specific policies are often less restrictive than in a One Degree of Freedom ERP project. Some examples include:

- The system must have been demonstrated to work in our industry
- We must accommodate our anticipated growth

2DF(BP) e. Structured rigorous selection process

There are two projects, each with distinct milestones: to achieve sign-off on the To-Be business processes; and selection of an ERP system that will support these new business process designs.

Project I - Design the new business processes (high-level only)

Again we propose a formal, multi-step approach.

1. Identify the in-scope business processes
   Not all business processes may be affected by the proposed changes. The organization may identify a specific area for redesign while other processes remain unchanged.

2. Identify the process owners for each business process or process area
   Earlier, the importance and role of the process owners was discussed. Selecting good representatives with the credibility to make decisions on behalf of the organization is important for successful business process design.

3. Educate the process owners on best practices
   Process owners will typically have limited exposure to business processes outside their current function in the organization. It is highly beneficial for process owners to be exposed to local and international standards and other possible ways of working. This exposure will broaden their thinking and encourage them to be innovative in their new business process design.

4. Analyze and evaluate the in-scope business processes
   Not all in-scope business processes need to change. If the evaluation by the process owner shows that a certain process conforms to standard, is delivering towards the desired strategy and is not causing any problems for any other process, no redesign is required. A number of reference models can be used to guide the process owners in assessing the need to make changes. We referred earlier to the SCOR[19] model; there is also the CSCMP[20] process standards developed by the firm Supply Chain Visions[21] and other reference models.

[19] Supply-Chain Operations Reference-model (SCOR), Supply-Chain Council, www.supply-chain.org.
[20] The Council for Supply Chain Management Professionals (CSCMP), www.cscmp.org, 2008.
[21] Supply Chain Visions, www.scvisions.com/html/process.htm, 2008.

5. Design new business processes where applicable

A new process design is required for those business processes that do not conform to the strategy or cause problems for other processes within the organization. The new design for a business process will typically be a mixture of the current process and components of a number of different reference models but may also require completely new thinking.

6. Formalize the consensus around the new business processes

New business processes will only be accepted if everybody within the project team and in the broader organization agrees to the new design. Common practice is to run a series of workshops to explain why particular business processes have been changed, the alternatives considered, the extent of the change decided upon, and to present a case for why a new business process design should be approved.

Since one of the degrees of freedom in this type of project is along the business processes axis, the business process design project should allow time and flexibility for team members to investigate various possibilities and solutions to business problems. In the closing steps of this project, strong leadership and facilitation is required to manage the process of reaching consensus on the proposed processes.

The consensus design for the To-Be business processes is documented in a business process blueprint. Formal sign-off of this document signals the end of the business process design project.

Project II - Select a new ERP system

The second project in a Two Degree of Freedom ERP and Business Processes project - selection and acquisition of an ERP solution - will only start once sign-off on the business process blueprint has been achieved. These new To-Be processes will then serve as the user requirements for the system selection and not the current As-Is business processes.

The actual selection follows the same steps as discussed under a One Degree of Freedom ERP project, but with the following additions or areas of particular interest.

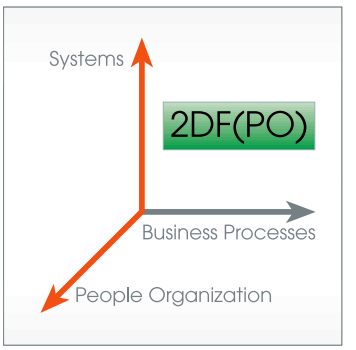
More time should be allowed for the selection phase, since the team is now working off the To-Be business process requirements and not the As-Is with which they are familiar. The user requirements will typically focus on the result or output of each process, and the project team will be allowed to adjust the sequence of events within each business process to accommodate the selected solution as long as the required business outcome is still delivered.

Filtering out alternative ERP systems becomes slightly more complicated as the increase in Degrees of Freedom translates into an increase in possibilities. The long list for a Two Degrees of Freedom ERP and Business Processes project is likely to be longer than for a One Degree of Freedom ERP project while the selection team relearns the old adage 'There are many ways to skin a cat'. The short list should, however, still be aimed at two to four options, otherwise final selection becomes unmanageable. This puts the onus on a filtering process that is ruthless yet does not overlook an ERP system that may initially not appear to be a contender, but could end up as an exciting find for a team willing to consider thinking 'outside the box'.

As the business processes are still To-Be, the options on the short list should also be evaluated according to their ease of adaptability and the possibility of adjusting the business processes once implemented. Our previous discussions about the implications of modifications are applicable. Your strategy in this case, though, should be much more tolerable towards buying a system that requires modification but will then empower ambitious new To-Be business processes. If it works and works well, the modifications may well be worth the time and money because the benefits will come from improved business processes.

There is risk in selecting a new ERP system based on the requirements of new – and therefore untested – business processes. Careful oversight of the selection process is advised and more senior management should be involved in the final phases.

2DF(PO): Selection Phase strategy for a Two Degrees of Freedom ERP and People Organization project



The executive decision-maker who has decided to embark on a Two Degree of Freedom ERP and People Organization project has organizational restructuring at the top of his or her mind. Typically, you want to restructure the organization to increase productivity or managerial control. The ERP system is usually seen as a way to automate a number of tasks in an effort to re-assign or reduce human resources. The way people work, the business processes, is not under consideration and so the objective is to maintain the current business processes and techniques as far as possible.

However, in practice we usually find that the consequential changes to business processes are significant. For example, to create a shared services unit to centralize financial business processes for a group, you are likely to end up having to make significant changes to the relevant business processes just to ensure that the desired business outcomes of all the processes are still being achieved under the new organization structure.

Thinking about the approach to follow quickly leads the executive decision-maker down the same path as discussed above, namely two separate, consecutive projects.

In the first project, the new people and organizational structure is designed to a level of detail where it becomes clear that the business objective will be met and the business benefits will be realized. Consequential business process changes are identified in sufficient detail to enable you to select an ERP system. The deliverable from this project is again a business process blueprint, but now it is one that pays particular attention to the planned changes to people, organizational functions, roles and responsibilities, and so on.

The second project is about selecting an ERP system which will support the new people organization with its consequential changes in business processes.

For both projects, the strategic considerations discussed earlier hold true. Some aspects specific to the selection phase of a Two Degrees of Freedom ERP and People Organization project are described below.

2DF(PO) a. Clear and unambiguous decision-making authority

People and organizational change is always sensitive. It is feasible to bring in external advisors (with all of the considerations discussed earlier), but the sensitivity of people and organizational changes suggests that more of the leadership is provided by you, the executive decision-maker who is driving this initiative.

2DF(PO) b. User participation and buy-in

A Two Degree of Freedom ERP and People Organization project does not necessarily focus on the whole organization, as some of our examples of centralization indicate.

Sensitivities are important considerations in these projects because you are deliberately setting out to change the people and the organization. There is usually not much choice for the people involved (they don't vote on it when you consider the creation of a shared services function in the example above). Still, you need buy-in to succeed and so user participation is important.

2DF(PO) c. Business process definition of requirements

Although it is not the objective in this class of project to change business processes, in practice one finds that when the organization and the people change, significant business process changes need to happen as a consequence - hence the need for an organizational design and business process project prior to the selection project. The tangible outcome is the To-Be business process blueprint.

2DF(PO) d. Clear and unambiguous policies and guidelines

In an environment where the objective is not to change business processes but everybody recognizes there will be some changes, there is always a danger that this project will drift into an unintended Three Degree of Freedom ERP project. Clear policies on scope creep are required.

2DF(PO) e. Structured rigorous selection process

Again there are two projects, each with distinct milestones.

Project I - Design the new people organization profile and the business processes

The deliverable of this project is sign-off on the new people organization profile, along with its business processes as documented in a To-Be business process blueprint where specific attention is paid to the organizational roles and responsibilities that will be effective once the discontinuous change has been implemented.

Project II - Select a new ERP system

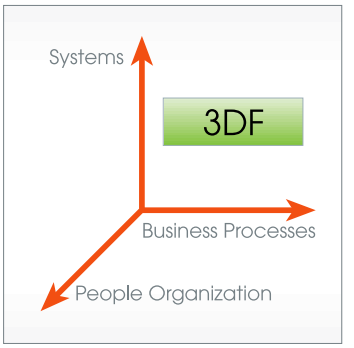
There are some inputs from the organizational and business process design project to consider and some variations on the themes discussed for the previous two classes of ERP project:

- Allowance should be made for the fact that a people-centric project always takes more time because of the consultation and sensitivities involved
- Functional requirements are the same as before, but typically ease of use, user navigation, task automation and so on, are of higher importance
- The solution fit to the user culture and capability should receive a high priority during the selection of the final system

- It may be that proposed ERP systems must be filtered from the long list and even a final decision made before the To-Be organization structure has been approved and appointments made. If this is the case, the ERP system selection process will be done with unknown user counts or without knowing the level of computer literacy of the end-user community, so some flexibility is required

3DF: Selection Phase strategy for a Three Degrees of Freedom ERP project

The following relates to a company that we have been working with for more than a decade.



A few years ago, this company merged with a competitor in the same industry sector. It was a true merger, not merely a disguised acquisition of one business by the other. Both companies had multiple manufacturing operations and distribution and warehousing operations serving more or less the same markets with more or less the same products.

Immediately upon finalization of the merger, a 'merger project' was formed with the assignment to investigate the business processes, systems and organizational roles and responsibilities of both companies and to conclude how the newly-created (merged) entity should proceed. A project was launched and carefully staffed with representatives from both pre-merger companies.

The project team worked its way through the people organizations (structures as well as roles and responsibilities), the business processes and the supporting systems in both pre-merger companies. In each case they compared how, in order to achieve essentially the same objective, each pre-merger company had organized its people, designed its business processes and set up its systems in different ways. In each case they drew conclusions about which was the superior business process design, system set-up and people organization. From these conclusions, a recommended blueprint for the merged entity was gradually built up, in each case picking the best of what the pre-merger companies had to offer. Occasionally the team concluded that neither pre-merger company offered a superior solution; in that case they went looking for best practices to include in the blueprint.

In our terminology this was, of course, a large-scale discontinuous change project with three degrees of freedom. The merger project had the freedom to design new business processes and people organization profiles, and to select systems.

We generalize some strategic considerations for you to consider in the selection phase of a Three Degrees of Freedom ERP project.

3DF a. Clear and unambiguous decision-making authority

A Three Degrees of Freedom ERP project is led from the top. In the example above, the merger project was led by a full-time executive member of the Board.

3DF b. User participation and buy-in

A Three Degrees of Freedom ERP project will be disruptive to almost every area of the business. It is important to understand from the outset that all aspects of the organization could conceivably change and to communicate the motivation behind such changes. As with the previous case, people sensitivities are important but how that translates into specific strategy depends on the situation. In the example above, the merger project was carefully staffed to ensure that both pre-merger companies had equal representation at all levels of seniority and that there was no bias, real or perceived, towards personnel from one or the other of the pre-merger companies.

3DF c. Business process definition of requirements

In general – as in the specific example related above – the business process blueprint literally becomes the blueprint for the new organization; its 'operating manual'.

3DF d. Clear and unambiguous policies and guidelines

If you are going to embark on a high-risk, all-encompassing Three Degrees of Freedom ERP project, 'the end justifies the means' is an appropriate approach towards costing and resource requirements. Money is often not the issue – but time is. In most cases, the new organization goes on hold while the design process is being sorted out. There may be few policy constraints and the team usually has the freedom to consider many different possibilities and options; but they don't have the luxury to take their time. Also, this team is answerable for all change decisions against the organizational strategy.

3DF e. Structured rigorous selection process

Again there are two projects: first design and then select systems.

In the example of the merger above, the system selection in that particular case was constrained by the fact that both pre-merger companies had systems which were generally considered satisfactory and therefore nobody expected the merged entity to go off and buy completely new systems. Coincidently, both pre-merger companies had the same ERP system; albeit configured differently. They both had Advanced Planning and Business Intelligence systems, but these were different systems in each case. The merger project also looked at these differences and selected what they concluded was the superior system and configuration.

Although not a true selection of new ERP along the lines of our previous discussions, in this case the principles are obviously the same. It should also be apparent that, had the company in fact decided to buy a new ERP system, the merger project's work would have had to be completed and the blueprint accepted by the organization before embarking on an ERP selection project similar to the five-step project described for all the other classes in this chapter.

Some general comments are relevant:

- In a Three Degree of Freedom ERP project, the evaluation of different solutions extends far beyond current requirements. Typically you are building for the future and have to consider alternative long-term scenarios
- One must accept that the selection of the final product is based on a design for business processes and organizations which are unproven. There is inherent risk here.

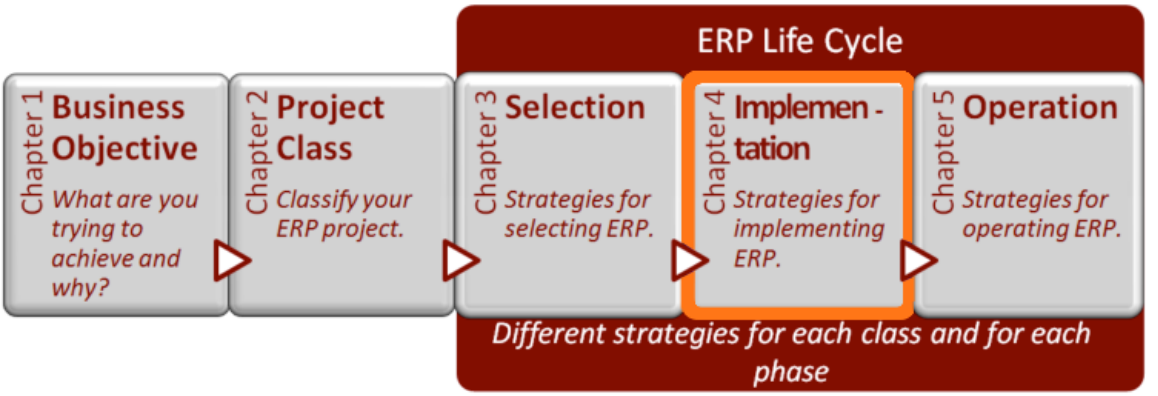
Summary

We recommend that selecting an ERP system should follow the five-step process described in this chapter. These five steps are essentially the same for a One, Two or Three Degrees of Freedom project.

However, the context within which the five steps are executed, the amount of work that needs to be done prior to starting the selection process and who performs all this pre-work is completely different in each case with different inputs, risks and time durations. For Two and Three Degrees of Freedom projects, we specifically recommend separate prerequisite projects to establish the To-Be business process blueprint prior to embarking on the five-step selection process.

At the end of the selection phase, you will have decided upon an ERP system and be armed with a business process blueprint and possibly a new people organization design profile. It is time to think about the strategy that will be followed to make the large-scale discontinuous change happen.

Chapter Four: Thinking through ERP implementation strategies



The difference between a well-run ERP implementation and the other kind is stark. In a well-run project there is a sense of excitement and optimism in the air; people look with anticipation to the new system and other changes; there is plenty of participation in debates about alternatives where everyone has an opinion; and as decisions are made by the decision-makers, people quickly move on to the next topic on the list. Some of us who work in this field do so for the enormous personal satisfaction of being part of all of this powerful creative energy in project after project.

But we have also seen the other kind and it is a horror. The implementation drags on way beyond all reasonable target dates, the costs mount to staggering percentages over budget, the end is not in sight and after a while nobody is even sure what the end looks like. Ownership seems to move to the ERP implementation partner company and maybe one or two isolated insiders; the rest don't know what's going on and have no say in anything. The organization is held hostage to its own ERP project because it has invested so much time, money and personal prestige that it can't break out of the grip. Everyone just wants the pain to stop, so go-live is more akin to a funeral confirming the end of suffering than a birth celebrating a new beginning.

A strong motivation for writing this book is our belief that you, the executive decision-maker, make the difference between these two implementation scenarios. We suggest the critical difference that you can make is to have a well-thought out strategy up-front and then to control the implementation phase to ensure that your strategy is followed. It really is not difficult, as long as you think carefully and with some guidance about the strategy tasks required of you.

Strategic Considerations for ERP Implementation

In our layout of this book, we deliberately separated the chapter dealing with strategies for the selection phase from the chapter handling strategies for the implementation phase. One reason is that, in a number of cases, different executive decision-makers are involved. An example is a head office which makes the selection phase decision about which ERP system to purchase (or decides to standardize on one system for the group) and then instructs its subsidiaries to implement this standard system with each subsidiary assuming responsibility for their own implementation project.

There may also not be any relevant selection phase, such as with the re-implementation of an existing ERP system. The reason for re-implementation may be because the business processes or people organization is to be changed completely from the way they were during the original implementation, or because the original implementation was badly done, or because the original implementation covered only a portion of the current business processes and/or people organization. Occasionally, ERP software suppliers bring out a new version of their software that departs so radically from the previous version that it essentially requires a full-scale implementation project to make the change.

But our most important reason for the different chapters is that the balance between issues you, the executive decision-maker, should keep your eye on and those you can delegate to your team shifts in the implementation phase to far fewer 'Strategic Considerations' – but all of them are absolutely critical to success.

By this time, you know which ERP system you are going to implement, and you know the degrees of freedom of the implementation project. Early on, you should appoint an implementation project manager and then delegate project management of the implementation to that person. Your job is the big picture: keeping the overall objective in focus; controlling the timeline; allocating the resources; and managing the risks.

A. Keep the objective in focus

Naturally the objective to be discussed in this chapter is to implement ERP. However, the word 'implement' is not nearly accurate enough to describe what you are trying to achieve. 'Making the ERP system work in the computer' is sometimes offered as an implementation; we would characterize this as mere installation. For an ERP system to be considered implemented, there should be a complete change from any previous systems to the new system and this change should be reflected in everyday use of the new system by the organization.

Furthermore, in chapter two we positioned changing your ERP system as a large-scale discontinuous change project that may include simultaneous changes to business processes and/or people organization as well. So when we discuss implementation, we mean 'making the change happen'.

What we are edging towards is that implementation is the point of the whole exercise and that change management is therefore your job as the executive decision-maker. Change management is actually one of those few things that really cannot be delegated or subcontracted. If it works and your organization makes the change smoothly, you deservedly take the credit. If it fails…you have failed in this task.

The objective then is to achieve the large-scale discontinuous changes that we describe in this book. In a One Degree of Freedom ERP project, the objective of the change is to ensure that the new ERP system replaces the old and that the new system is in everyday use. In a Two Degree of Freedom ERP and Business Processes project, the objective of the change is to have the organization work according to the newly-approved business process blueprint using the new ERP system. And so on for the other two cases.

The danger to watch out for is when a project becomes a world on its own, drifting out of reality

and relevance to the rest of the organization, losing sight of the original business objective that was the reason for starting the project in the first place, and shifting the target from achieving business benefits to aiming for self-centered project deliverables (for example evaluating technology trends because they are really very interesting).

This is one of your strategic tasks as the executive decision-maker: to ensure absolute clarity upfront about what the objective is and then, as the project progresses, to ensure that that particular objective is kept in focus. Finally, at some point in time, the end of the project will come up in discussions. Of course, the implementation is not complete until the objective has been achieved. Disbanding the project team and determining project performance measurements should be managed around considerations of the original objective.

B. Control the timeline

Another strategic task for the executive decision-maker is to highlight the really important aspects of the implementation and to prevent lesser issues from hijacking the progress towards the goal. The most practical way to do this is to allow sufficient time for those aspects of the implementation project plan that will determine success or failure (of the change management objective) and to challenge the rest.

The determining factor in establishing a good timeline is the magnitude of the consequential changes. Even if you are implementing ERP in a One Degree of Freedom ERP project, for example, there will be consequential changes to business processes and to the people organization and you need to allow time for this. On the other hand, a strategic task for you is to ensure (in the case of a One Degree of Freedom ERP project) that the consequential changes in the business processes, for example, do not become a little project all on their own with significant time, money and effort spent to design improved business processes.

C. Allocate the resources

'He who pays the piper calls the tune'. Of course, inferior pay gets you an inferior piper and thus a tune that is unlikely to please you. It is your task to ensure that adequate resources are made available to the implementation project to match the change that you are trying to accomplish. If insufficient resources are allocated for the magnitude of the change that is attempted, the implementation will fail or drag out interminably. Alternatively, if too many resources are allocated, Parkinson's Law [22] – 'work expands to fill the available time' – comes into play. The obvious resources we are talking about are people who are assigned or contracted to the project and money made available in the implementation project budget. We also discuss under this heading the scarcest resource of all: executive time.

It is virtually impossible to read anything ever written about ERP implementations without encountering the requirement for management involvement. For decades now, we have seen successful ERP implementations attribute at least some of their success to participation at the executive levels of the organization. In other cases, management pleads the impossibility of dedicating significant time to the ERP implementation and questions why more of the implementation duties cannot be delegated to a competent project manager.

Our opinion is that both arguments are valid. Without at least some level of senior executive level involvement, the implementation is unlikely to succeed. We do suggest, though, that this

[22] CN Parkinson, Parkinson's Law or the Pursuit of Progress, John Murray, London, 1960.

scarce resource is best spent on a Steering Committee which takes full responsibility for its duties – primarily making decisions and being accountable for their consequences – and delegating the running of the implementation project to a strong project manager.

The project manager should be a person of stature who is assigned full time to the implementation project. The better the project manager, the less personal time the top level executives of the organization can spend on the implementation without significantly increasing the risk of failure. In some organizations, a senior executive or a fast track up-and-coming manager will be appointed. In others, it's not uncommon nowadays for an organization to hire a professional outsider as project manager for the duration of the implementation project.

In chapter three we discussed the project manager for the selection phase. Most of those considerations also apply to the implementation phase. In fact, where applicable, the person who managed the selection of the new ERP system usually moves on to run the implementation project.

We also discussed (in chapter three) the need to consider potential conflicts of interest when making use of an external person to lead the team. We noted that the conflict of interest to watch out for during the selection phase is an external consultant who steers the selection towards an ERP vendor in which he or she has an interest. Once you have selected your ERP system, that particular problem no longer exists, but another one can become an issue: Sometimes the person leading the team from the ERP implementation partner company is also contracted to be the project manager for the client. The potential exists for a divergence of interests between the client and the ERP implementation partner company.

An example of such a divergence of interests is where the contract basis is time and materials (as opposed to fixed price) and it thus becomes in the interest of the ERP implementation partner company to prolong the implementation project. We have also observed occasions where a fixed price is negotiated but during implementation the deliverable for that fixed price is gradually whittled away so that the client ends up having to choose between getting less or paying additional money.

A good solution in the case of an organization which does not have a full-time senior executive or manager assigned to the implementation project is to contract an independent external implementation project manager. This person's task is to watch out for the interests of the organization and, on behalf of the executive decision-maker, oversee the activities of the team (including the project leader from the ERP implementation partner company). This arrangement has some other advantages too: One common occurrence during implementation is that the ERP implementation partner company has legitimate issues – some with monetary consequences and some without – where both parties benefit from having an independent and unbiased ERP-knowledgeable authority at hand to facilitate decisions and resolve issues in a co-operative manner.

Selection of an ERP implementation partner company frequently comes with the software. Some ERP vendors designate a specific ERP implementation partner company during negotiations: if you select their software, you get that partner. Sometimes the actual negotiation for buying the software will not be performed by the ERP system provider because they work through a network of dealers which are also implementation partners (called Value Added

Resellers). In that case you are probably already talking to the ERP implementation partner company about buying the particular software and implementing it as a single deal. For others, you have a choice of ERP implementation partner company and the strategic level issues that you should consider are no different from those for any other supplier of expensive and long-term services - an assessment of competency, financial stability, management ability, and so on.

The composition of the project team was also discussed in chapter three, and again a common practice is to roll over the selection team to become the implementation team. Even if there was no selection team, the discussion in chapter three on the composition of the team in terms of internal, external, technical and functional representatives is still directly applicable.

To summarize the people resources: We recommend that you assign the following roles and responsibilities to the people whom you allocate to the implementation project.

The *Steering Committee* is the highest level of authority for the project and is required to:

- Commit the project resources in terms of money and personnel
- Monitor the project's progress and its impact on the organization
- Empower the project team, and specifically the project manager, to make decisions
- Resolve issues which have been escalated
- Confirm major decisions such as go-live and the completion of project deliverables at the end of the implementation project

The role of the *project manager* is to:

- Manage the implementation project
- Maintain communication at all levels inside and outside the project team
- Manage any scope issues
- Manage conflicts that may arise
- Make the decisions delegated to his or her level and escalate those that require Steering Committee resolution

As mentioned in chapter three, the representatives of the functional areas are called *process owners* since they are accountable for and authorized to sign off on the business process blueprint for each of their areas (procurement, sales, finance, planning, manufacturing and so on). Process owners are required to:

- Provide functional knowledge
- Contribute to the design of the To-Be business process blueprint
- Assist in the compilation of documentation
- Ensure integration between functional areas
- Acquire high skill levels in their respective areas
- Assure the quality of work undertaken
- Train other users

Allocation and monitoring of the financial resources are no different from the way you would manage any other large-scale discontinuous change project – with a structured financial budgeting and approval mechanism. All costs should be accrued and accounted for against the project budget to mitigate the risk of uncontrolled project overspending. This also keeps the project focused and on target.

D. Manage the risks

The final 'doing' task for the executive decision-maker is to keep an eye on the risks. Essentially, you do this with oversight of the project. On the companion website to this book you can download recommended milestones[23] which would typically be used to monitor the project. Although all of the milestones are important and should be monitored, the 'Gap Fit', 'Conference Room Pilot' and the 'Go/No-go' decision are the points where significant risks, if present, will surface.

The Gap Fit milestone is where reality checks in. Up to this point, ERP projects tend to be ambitious with talk of 'we can do anything'. But no ERP system will be a hundred percent fit to your organization and this milestone is where shortcomings (areas where the proposed solution will not support your business processes or your people organization) are identified. Recommendations are made at this time for addressing these gaps with workarounds, customizations, interfaces or acquisition of third-party software – and all of these carry risks. This is also the milestone where the business process blueprint and the system come together and, therefore, where debates on whether the business processes should be adapted to fit the system or the system should be changed to fit the business processes get heated. You should keep in mind our customization matrix of chapter three which maps the impact of modifications as a function of the type of modification and the method to be used (discussed under the 'Strategic Considerations' heading of 'Clear and unambiguous policies and guidelines'). If talk during the Gap fit milestone drifts towards the bottom right-hand part of the matrix, the risk profile of your implementation project picks up significantly.

Later on, the Conference Room Pilot is where your team test drives the solution – the exact business processes complete with roles, responsibilities, system settings and preferably even actual data which will demonstrate what you are going to get after go-live at the end of the implementation project. The risk is that, if you don't pay attention, you might approve a solution because it works in the computer but it does not achieve your business objective and will not bring business benefits. If you are going to send the team back to the drawing board, the time to do it is now; before you start spending serious money and accept severe disruptions in your organization (with training users, manipulating data, and so on).

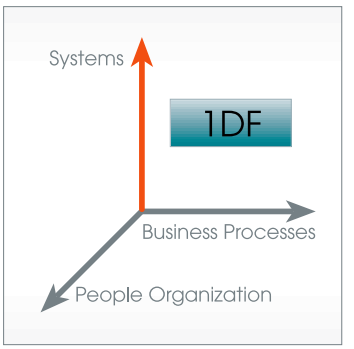
The Go/No-go decision is your last opportunity to control changes to this project. If you decide 'Go!' then immediately (usually within hours) your previous systems will be terminated, previous business processes will no longer function and business information will only be available from the new solution. If things turn out to be a shambles after go-live, you cannot simply 'undo'; you would have to launch a new mini-project to revert to the old system and way of working. Be sure to ask hard questions of your project team in the run-up to go-live and never, ever delegate the Go/No-go decision.

We next address how the Strategic Considerations – the above four specific 'doing' tasks for you as the executive decision-maker – are modified depending on the degrees of freedom in your ERP implementation project.

[23] AJ du Toit & WH Wessels 'Key milestones for a one degree of freedom implementation of an ERP solution', iPlan Industrial Engineers, www.iplan.co.za/thinkingabouterp, 2007.

1DF: Implementation phase strategy for a One Degree of Freedom ERP project

In a One Degree of Freedom ERP project, the objective is to implement the ERP system while minimizing the consequential changes in business processes and people organization. The benefits come from having the new system instead of the old (or the new configuration or version of the system over the old in the case of a re-implementation). These benefits are usually in the form of greater efficiency and reduced costs. The risk is relatively low since you are operating in familiar territory with your current business processes and your current people organization.



Frankly, we believe you should 'just get on with it' and so a good strategy for this phase is to implement as fast as possible. Since the business benefits of reduced operating costs will be offset by how much you spend on implementation, another strategy should be to contain the cost of implementation. 'On time; on budget' are excellent performance measurements for the success of a One Degree of Freedom ERP implementation project.

1DF a. Keep the objective in focus

The objective is to replace the system – no more. At the start of this chapter we noted that you may not have been involved in the decision-making process for the selection phase, as in the example of a subsidiary company implementing a system decided on by head office. A further example is where a company is acquired and has to change to the same ERP system as its new parent. We also sometimes see businesses go through such a major upgrade to their ERP system that they effectively have a new implementation with all of the strategic issues we describe in this chapter – but of course without going through the preceding selection. These are all One Degree of Freedom ERP projects.

For a One Degree of Freedom ERP project it is also important to do expectation management - to understand what the objective is not and adjust expectations accordingly. This project will not create optimized business process designs. It will not streamline organization functions. It will often establish the functionality to enable these, but will not deliver them in this project.

1DF b. Control the timeline

A One Degree of Freedom ERP project may lull the executive decision-maker into complacency that it is all about IT. As we explicitly stated in chapter two, the fact that you want to minimize the consequential changes to business processes and people organization in a One Degree of Freedom ERP project does not imply that there will be no changes or that these won't be large, complex or difficult.

Regardless of the scale of consequential changes in the business processes, because you are implementing a new system there will be changes. You also need to train your organization on how to operate the business processes based on familiar techniques, but using a strange new ERP system. The best way to do this is to develop a comprehensive map of business processes. For that reason, a good strategy is to spend time on creating a To-Be business process blueprint. The difference between what you have today and what you are going to implement, as specified in the business process blueprint, should give you a good idea of the magnitude of the project and which aspects are on the critical path.

1DF c. Allocate the resources

The key drivers for a One Degree of Freedom ERP project are speed and cost. If, however, you have to do things over again to make it work because you cut out important activities in a too-ruthless attempt to reduce cost and time to go-live, you will eventually end up paying more and taking longer to get the benefits. This is because it is much, much more difficult to fix things after go-live than to do them correctly the first time during the run-up. A useful analogy is to consider the increased difficulty in making changes to an electricity network when the power is on versus making those changes before the switch is thrown. The analogy holds for the increased risks as well…

Training and business process mapping are at the top of the list, both in what is important and what we observe organizations do not do. We often stand amazed that a company will write a check for millions to buy the software, but balk at spending tens of thousands to ensure that their people know how to use it effectively on the day they go live.

A One Degree of Freedom ERP project is synonymous with tight financial control and budget management. A detailed project budget is required, and often suppliers (such as the ERP implementation partner company) are requested to provide a fixed price quotation. It is common for suppliers to be paid on the achievement of milestones rather than on a time-and-material basis.

As far as people go, a One Degree of Freedom ERP project would typically be resourced with more full-time technical staff than business personnel, and the project manager is likely to have an ERP background. It is, however, critical that process owners form part of the decision-making hierarchy, even if they are not assigned to the project on a full-time basis.

The management of part-time project resources introduces a very specific set of challenges to implementation and this requires additional commitment from the executive management level. At certain stages within the project, choices between project deliverables and normal operational work will have to be made on an almost daily basis.

1DF d: Manage the risks

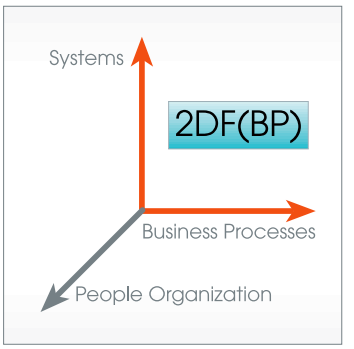
In a One Degree of Freedom ERP project, risks normally relate to the achievement of the deadline and the project budget. However, these projects also run the particular risk of ignoring the requirements of the business and focusing on the technical attributes of the ERP system. This risk is increased if the process owners are not assigned to the project on a full-time basis.

Earlier in this chapter we discussed our view that it is your task, as the executive decision-maker, to manage the change. What we often see is that 'change management' is listed as a lower level task on a project plan, universally acknowledged as necessary by everybody – and then promptly ignored. Sometimes a junior person or an outsider is assigned to 'come and do this change management stuff'. When pressed for details, the talk becomes vague and terms like 'attitudes' and 'touchy feely' are used. We firmly place this task under your responsibilities because we find that it is only once the people in the organization buy into the motivation for the change that change will in fact happen. That buy-in is dependent on your authority and must also happen in the style to which the organization is accustomed.

Another risk particular to a One Degree of Freedom ERP project is the temptation of scope creep to include optimized business processes and organization improvements. We observed a corporation that set out to replace the ERP systems in all of its subsidiaries with a single standardized system. The whole program was directed from head office, which selected and configured the new ERP system with a head office team. Much later in the project, after they had configured the standard system to be rolled out to all the subsidiaries, they directed each subsidiary to present a business benefits case for their individual implementation based on how their business processes would be improved.

There was strong resistance from some subsidiaries because they concluded that their business processes would not particularly benefit from the system configuration imposed by head office and that if they were required to show such a business benefit, they might just as well not implement the new standard. Whereas the goal started out clear – standardization on a single ERP system; a One Degree of Freedom ERP project – head office confused everything by sneaking in business process improvement as an objective by the back door part way through the project.

2DF(BP): Implementation phase strategy for a Two Degrees of Freedom ERP and Business Processes project



In a Two Degrees of Freedom ERP and Business Processes project, the focus is on changing the way the business works. Success in making the ERP system work 'in the computer' accompanied by failure to achieve important To-Be business process changes (with their anticipated business benefits) accounts for many a sour feeling of let-down at the conclusion of an ERP implementation project. An even worse experience than not achieving the desired level of improvement in business processes is what happens when you abandon the old business processes during go-live just to have the new To-Be business processes fail on you, partially or even completely. The difference between just replacing the system and your particular objectives with this Two Degrees of Freedom ERP and Business Processes project should be clearly reflected in the implementation strategy.

To implement as fast and cheaply as possible is exactly the wrong strategy for this class of ERP project. Speed and cost as drivers will automatically put the focus on getting the ERP system live in the computer as soon as possible and on cutting out anything not contributing to this goal – which means you will lose the business process improvements and, with that, probably not achieve your business objective.

2DF(BP) a. Keep the objective in focus

Instead of time and cost, the drivers for a Two Degrees of Freedom ERP and Business Processes project should be business benefits. You are going to take much longer and spend much more money than with a One Degree of Freedom ERP project, so you want to keep the focus on the business benefits which will make it all worthwhile. The key to that goal is the design and implementation of the new business processes.

There is a real risk that a Two Degree of Freedom ERP and Business Processes project will run out of steam on the effort to design and implement a new way of working. Again, the

danger of scope creep appears, but this time in the opposite direction: the project effectively degenerates into a One Degree of Freedom ERP project even though the resources were allocated to achieve a much more ambitious objective.

Appropriate performance measurements for the success of the implementation phase of a Two Degrees of Freedom ERP and Business Processes project are the quality of the business process blueprint, the degree of organizational buy-in for changing to the new way of working represented by the business process blueprint, and the degree to which the As-Built (the business processes that you eventually run on) represent the To-Be business process blueprint.

2DF(BP) b. Control the timeline

An appropriate strategy for a Two Degrees of Freedom ERP and Business Processes project is to take as much time as you need to ensure that the whole organization and you as the executive decision-maker are all comfortable with the To-Be business process blueprint. In fact, it is fairly typical to divide the planning step on the project plan in two: develop the To-Be business process blueprint and only subsequently plan its implementation on the system.

In a Two Degrees of Freedom ERP and Business Processes project, the Gap Fit is compiled taking into consideration the freedom to change the business processes where the new ERP system is unable to support the designed process. This usually leads to a number of iterations between changing the business process blueprint or, alternatively, changing the system configuration. There is no perfect fit, and there will always be something that should be documented and understood as a gap between the required and provided solution. Similarly, the Conference Room Pilot is again an iterative process as the designed To-Be business processes may be changed once the users experience how they will work in practice.

The change in business processes demands that users understand and agree on the new business processes before they are confirmed as the new To-Be. This requires sufficient time to workshop the proposed changes before sign-off on the business process blueprint.

Finally, it is really critical to allow sufficient time for both education and training before the users are expected to operate new business processes using a new system.

2DF(BP) c. Allocate the resources

The financial controls are the same as for a One Degree of Freedom ERP project. There is, however, less of a focus on budgetary control, with more changes being evaluated on a cost-benefit basis. If the cost of changing a process is justified by the anticipated benefits, the change should be included in the project. If this was not originally budgeted for, a budget change request should be raised.

We recommend that key process owners be allocated to the project team on a full-time basis for a Two Degree of Freedom ERP and Business Processes project. The team should consist predominantly of functional representatives, with IT experts playing a lesser role. The project manager should understand all areas of the business and manage the project from a business perspective. Do not appoint the IT manager as the project leader.

2DF(BP) d: Manage the risks

In comparison with a One Degree of Freedom ERP project, a Two Degree of Freedom ERP and Business Processes project has a much increased requirement for user buy-in and participation.

We recently had a case where an executive decision-maker aimed to implement a much-improved business process but failed to take his organization with him. The chief executive briefed the design team, mostly staffed by outsiders, on his vision for improved product offerings and service levels. The business process design part of the project proceeded well, with significant opportunities for improvement identified and designed into new To-Be business processes.

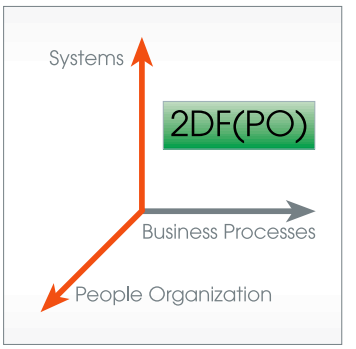
Then sign-off workshops were scheduled with middle management. There was a lot of push-back as middle management did not share the chief executive's vision. In the end, no consensus was reached on the proposed new business processes. The process design exercise was concluded, but the organization never took the next step of actually implementing the changes.

The business risks in a Two Degree of Freedom ERP and Business Processes project are much higher as the change in business processes may directly affect the organization's ability to perform its daily tasks. These projects also run the risk of exceeding the original timeline and budget, but, more severely, it may be that upon implementation the new business processes cannot handle the required activities accurately; or in terms of speed and volume; or in terms of integration between different processes. Just imagine going live and discovering you are unable to invoice your customers or take in new sales orders! It is quite possible to launch a Two Degrees of Freedom ERP and Business Processes project and end up being worse off than you were before…

Finally, there is a risk of rushing the implementation and making changes to business processes willy-nilly to meet deadlines. In that way you may end up with the 'As-Built' business processes not nearly resembling the 'To-Be' – and thus probably not achieving the desired business benefits.

2DF(PO): Implementation phase strategy for a Two Degrees of Freedom ERP and People Organization project

The strategy that automatically comes to the fore for this class of ERP project derives from the fact that changing the people organization is always sensitive and requires a high degree of care and confidentiality from within the project team. The organization is working on determining which roles and positions will be affected and which business areas require specific attention. It's about people.



This type of project is often seen when a business acquires a new company or different companies within a group are amalgamated. These scenarios usually create opportunities to centralize functions while at the same time one of the companies will typically go through an implementation to move onto a different ERP system. (Again, there is no relevant selection phase; it's just implementation.)

2DF(PO) a. Keep the objective in focus

In a Two Degrees of Freedom ERP and People Organization project, the focus is on changing the way the organization is structured and resourced. Similar to the previous case, the driver should be the business benefits to be gained from implementing the change.

2DF(PO) b. Control the timeline

A Two Degree of Freedom ERP and People Organization project does not necessarily focus on the whole organization. It is also virtually impossible to get user buy-in in a situation where some of the users will be retrenched or adversely affected by the exercise. These projects require a more sensitive touch than the normal ERP implementation and are prone to exceeding the original timeline, mainly due to negotiations and consultation.

The implementation strategy is very similar to that for a process change project, but the emphasis in the To-Be business process design shifts to new people organization profiles, roles and responsibilities and similar organizational and people changes.

2DF(PO) c. Allocate the resources

Leadership of the organizational change that a Two Degree of Freedom ERP and People Organization project is all about cannot be effectively outsourced. This project must be directly led by you, the executive decision-maker. It is feasible to bring in external advisors, but the sensitivity of the organizational changes suggests that their role should be less than in the other classes of project.

In a Two Degrees of Freedom ERP and People Organization project, you are changing people around and that frequently means relocations and retrenchments. It may also happen that the skills required in the new structure are not available internally and recruitment of new appointments, with additional training, may be required.

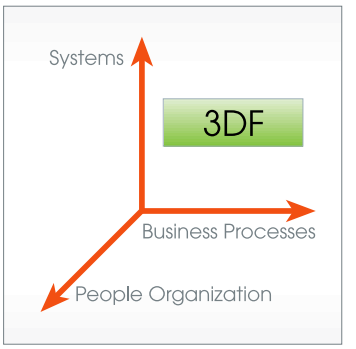
2DF(PO) d. Manage the risks

The more organizational functions are involved in the ERP project, the higher the risk. Furthermore, the risk is people-related, meaning that it is not even necessarily rational. Getting user buy-in and participation where restructuring will take place is extremely difficult. Project management should be very formal and, where required, should include negotiation and consultation. These projects create a sensitive organizational climate and should be handled accordingly; otherwise you run the risk of catastrophic failure.

One of the major risks in these projects is the possibility of losing people that the organization would prefer to keep. In many organizations, informal processes are made to work by very experienced individuals who, time after time, succeed in somehow getting the job done despite the official processes. How many companies' business processes would founder if one or two individuals, who keep everything running, were not there? Yet it is precisely these individuals who are threatened by a Two Degrees of Freedom ERP and People Organization project that often sets out to formalize roles and responsibilities.

3DF: Implementation phase strategy for a Three Degrees of Freedom ERP project

The implementation of a Three Degrees of Freedom ERP project is an attempt to change many different aspects of the organization in a very short period of time. It incorporates many of the milestones, risks and implications of all the previous types of projects already discussed.



A Three Degrees of Freedom ERP project does not necessarily include the whole organization or all the business processes. We were asked by a client to evaluate its manufacturing, distribution and sales operations. We came to the conclusion that, while business processes such as production and inventory control were working reasonably well, there was an almost a total lack of adequate planning at virtually all levels. A project was therefore launched to design a planning processes framework from the ground up, including a new centralized function to run some of those new planning processes. This new business processes design required a very significant change to the configuration of their ERP system. In the terminology we use in this book, this was a Three Degrees of Freedom ERP project but with only an implementation phase and with only the planning business processes in scope.

The need for speed comes from two directions. Firstly, the business objective which determines the requirement for a Three Degrees of Freedom ERP project in the first place is usually overwhelmingly urgent. We previously mentioned examples such as the establishment of a new business unit or even a new business altogether; the business case typically calls for new processes, organization and systems now.

Secondly, even if you were able to proceed a bit slower, we recommend that you don't. A Three Degrees of Freedom ERP project is a high-risk implementation because of instability in the time interval after you have started with the large-scale discontinuous change and before everything is in place. It just makes sense to limit the time when things can most easily go wrong.

Usually the business case allows you to trade off time with money. If that is the case, we recommend that you put a powerful budget in place for this class of implementation to buy speed and reduce risk. (This strategy is, of course, completely different from the one for a One Degree of Freedom ERP project where the appropriate strategy is also fast but in that case low cost.)

3DF a. Keep the objective in focus

We noted in chapter two, where we first introduced Three Degrees of Freedom ERP projects, that these projects are typically driven by a very compelling business objective. The difficulty is not in understanding what you want to achieve; it is the change management of making it happen in the face of a relentless time crunch.

3DF b. Control the timeline

Sometimes the best way to go faster is to first go slower. We propose that the best strategy for a Three Degrees of Freedom ERP implementation project is to do the bulk of the work before starting on the ERP system. New business processes should be designed and agreed; new organization structures and roles should be clarified; and technology objectives should be formalized – and all of this signed off in a comprehensive business process blueprint.

This To-Be business process blueprint is a critical document in this type of project. It will form the basis of all training documentation and also, eventually, the input for the writing of standard operating procedures. The To-Be business process blueprint truly becomes the blueprint for the future. Take a little bit of extra time and get it right…

And then go as fast as you can with the ERP portion of the implementation!

3DF c. Allocate the resources

We already mentioned that the appropriate strategy for a Three Degrees of Freedom ERP project is to provide sufficient money to reduce time and risks.

As with a Two Degree of Freedom ERP and People Organization project, leadership needs to come from within, not be outsourced. If the scope is a comprehensive, organization-wide Three Degrees of Freedom ERP project, we in fact suggest that this should come right from the top; we often see a board-level or just below person assigned as the project manager for such a project.

3DF d: Manage the risks

The risks are many, because they essentially include all of the risks discussed for the other classes of ERP project plus the compounded risk of doing everything simultaneously. A problem in any one dimension can affect the whole implementation.

We worked on a project where the business objective was to centralize planning across five geographically dispersed factories of a corporation. The factories essentially made the same products from the same materials, but with significantly different unit costs of production, unit costs for inbound logistics of material and big differences in capacity. Previously, each factory by-and-large produced for the market in its geographical area, but the business benefits case showed significant financial incentive to 'make everything everywhere and ship to where it is needed'.

So a project was launched to centralize planning of all factories at head office and implement Advanced Planning and Scheduling (APS) capabilities for this central planning office to direct rates of production, procurement of raw materials and shipment of finished product at all five factories.

The determining factor of success or failure in this project turned out to be not the capabilities of the new APS system or the new centralized planning processes, but the attitude of the executives who ran the factories. Prior to the change, they were Business Unit managers with bottom-line accountability for such things as revenue for their area, plant utilization and inventory levels. The change project moved all of that to the new central planning office at head office. This had drastic consequential changes in virtually all the organizational functions within each factory; mostly downscaling them. Most importantly, the job description of the senior executive essentially became that of a plant manager doing what the central planning office told him to do.

There was fierce resistance to this change in some quarters and thus difficulty in realizing the anticipated business benefits. For a while, the project was held hostage to the positions of the

five executives running the factories and no amount of technological innovation in the systems axis or superior business processes was going to change that.

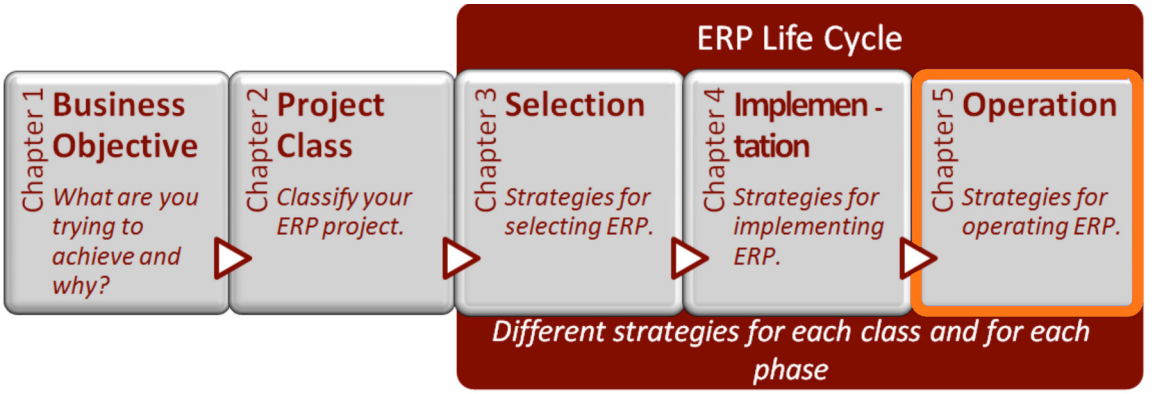
Summary

The thesis of this book is that the executive decision-maker can use the classification of his or her ERP project in terms of the Degrees of Freedom Framework to arrive at appropriate strategies for selecting, implementing and operating ERP.

For implementing ERP, we propose that an appropriate strategy for a One Degree of Freedom ERP project is to go fast and low-cost. For a Two Degrees of Freedom ERP and Business Processes Framework, on the other hand, the appropriate strategic approach is to ensure consensus on the business process blueprint and then to subordinate everything else to this document. For a Two Degrees of Freedom ERP and People Organizations Framework, the appropriate strategic approach is to focus on people management. For a Three Degree of Freedom ERP project, speed again comes to the fore but this time without cost; in fact we advocate spending money in order to save time.

Going live isn't the end of the ERP initiative; only the end of the beginning. It merely highlights the point at which the business benefits start paying off. Ensuring that this happens and continues to happen requires strategic thinking, albeit not solely in terms of discontinuous change. We discuss this in the next chapter.

Chapter Five: Operating ERP to realize benefits



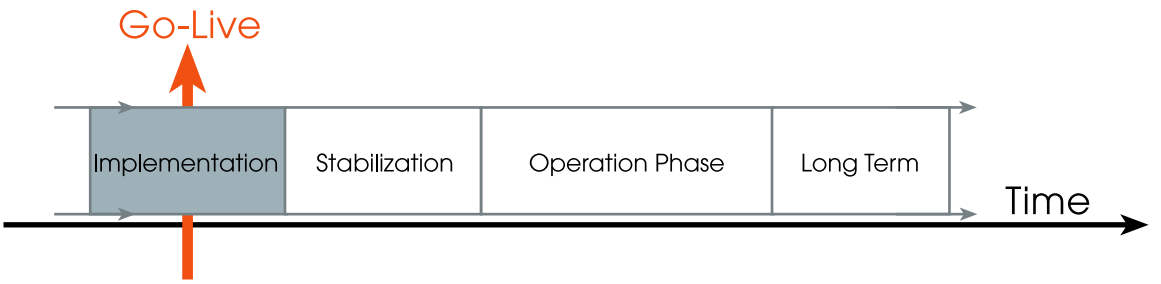
What is there to think about?

Operating an ERP system is not a front-of-mind activity for most executives. But operating the system is why you embarked on this journey in the first place, and it is only after go-live that the business objective is achieved – or not – and the business benefits are realized – or not. Success or failure is determined during this phase, and there are strategies you can and should follow to ensure that the ERP-enabled business benefits and strategic objectives are sustained and optimized.

What you really want is to have an ERP system that achieves the business objective and continues to deliver business benefits without requiring active day-to-day involvement from the executive suite. To provide your organization with the energy to be able to handle ERP so well at the tactical level that it becomes transparent at the executive level requires that you give some thought to the strategies that will achieve this in the operation phase.

The Operation phase

In the diagram below, we distinguish between different time periods after go-live. Technically, the new system and/or business processes and/or people organization will be in operation immediately after go-live. We use slightly different terminology:



First of all, we consider the period after go-live and up to the first month-end as part of the implementation phase. Usually, the implementation project team is still fully engaged. The first month-end is seen as a test of whether everything is working as planned. Once that has been proven to be successful (which sometimes requires extending the implementation project to a second or even a third month-end), ownership passes from the implementation project team to the functional organization. This is usually achieved during a formal sign-off (and a big party) marking the end of the large-scale discontinuous change project that will have started many months, maybe even a year or two, ago. The implementation project team disbands and operation of the new system, processes and structure is handed over to the users.

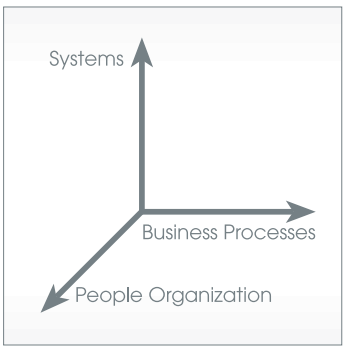
Usually, there is a need to settle down, a stabilization period that can last up to a few months during which the organization integrates the large-scale discontinuous change. What we address in this chapter of the book is what happens after stabilization. We are not so much concerned with the long-term outlook, where organizations tend to see how things are going and then develop appropriate strategies and tactics. In this chapter, we propose that you, the executive decision-maker, should set a specific strategy for what happens after stabilization and before everything settles in for the long term. Most importantly, we believe that your strategy for this operation phase should be established up-front, even before you start working on the implementation.

The reason is that the most significant business benefits are only likely to be realized sometime after the go-live date. Also, some organizations tend to lose focus after go-live and that creates the danger that you may actually start losing some of the benefits for which you have invested considerable money and effort.

We first discuss strategic considerations for not losing benefits and then turn to extending the benefits.

Maintenance strategy for operating ERP

In exhorting you to think about ERP maintenance strategies, we don't mean technology maintenance: we mean maintenance of the business benefits of superior business processes; maintenance of the skills of the people to achieve business objectives using the ERP system; and a strategy of keeping up to date as technology advances. The enemy is entropy and you need a strategy to keep it at bay.



Entropy

In chapter two we introduced our Dimensions of Change Model, repeated here, as a useful method of characterizing the changes you envisage. Our discussions were about deliberate efforts of the organization to make changes for the better; to improve the operation of the system, and/or the business processes and/or the people organization.

But could it be that without any intention of the organization to cause a change to happen,

such change occurs all by itself? Very much so, and it is highly unlikely that unintended changes will be for the better. More often, things happen which change matters for the worse. Systems falter; business processes fail; people become dysfunctional; unfortunately these things happen.

SYSPRO uses the term 'application erosion' to describe an observed effect among its customers: A sales person would do his best to sell a fully-featured ERP system with all the 'bells and whistles' attached. Once the implementation team steps into the picture, it may do away with some of these features in favor of more practical solutions. After the system has been implemented, users utilize the functions they remember best from training and use immediately. After some time has passed, they only use the features they are familiar with from regular use. When newcomers take over, they get taught only a subset of what the organization started with. Even though all the system features may still be there, the practical application degrades over time.

Borrowing an analogy from physics, this is the law of entropy at work in the business world.

The law of entropy is also known as the second law of thermodynamics and the central idea is that nature tends from order to disorder. Whenever an energy distribution is out of equilibrium, a potential force exists that spontaneously acts to dissipate or minimize that energy. In short, left to themselves, things are more likely to get worse than they are to get better or stay the same.

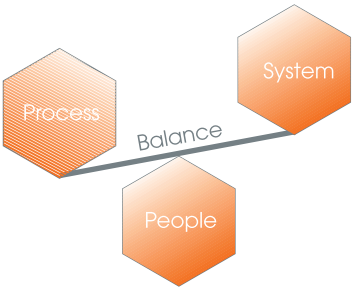
Balance

It is possible to have a meal at a table where one leg is shorter than the rest – but you're at risk of spilling your coffee because the table may tilt at any moment. You can balance yourself on a three-legged bar stool with legs of slightly unequal length – but your perch is precarious and it takes energy just to keep yourself in place.

We extend this analogy to our observation that businesses work better if the three dimensions of business processes, people organization and systems are in balance. It can work otherwise, but it takes more energy to maintain the status quo and the risk of something going wrong is much higher. It is more vulnerable to entropy.

We introduced our three dimensions of change in chapter two by describing people organized into functions who do the work, the business processes which rule how that work is being done and the systems which carry the data being worked on.

Obviously, the goal is to have business processes which achieve your business objectives fully but are not unnecessarily complex. You want a system that supports your business processes fully and minimizes additional or more complex functionality that you have no need for and should not be paying for. And you want enough people with the skills to operate your processes with your system. All three aspects are in balance and we use the figure at right to represent this optimum equilibrium point.



Occasionally, however, we observe a situation where the organization ambitiously goes for advanced business processes but tries to run them using an inferior system incapable of supporting those processes. Or, a truly state-of-the-art ERP system is implemented but the organization fails to train its own people or hire sufficiently qualified people to operate the system. This state of imbalance is obviously undesirable, since you are paying all of the cost but will only get some of the benefits, a phenomenon known as Liebig's Law of Minimum [24].

Lost yield potential

Liebig used the image of a barrel to explain that just as the capacity of a barrel with staves of unequal length is limited by the shortest stave, so the overall benefit derived is limited by the dimension in shortest supply. If the benefit in shortest supply degrades, the overall benefit from all of them together will reduce accordingly.

Automatic degradation

We observe in practice another consequence of an imbalance in the three dimensions of systems, business processes and people organization: over time the unused potential degrades to a new level where all three dimensions are in balance again. (Applied to Liebig's barrel, we would say the longer staves rot away until all are the same length as the shortest one.)

In physics, a state of equilibrium that is disturbed will find a new state of equilibrium, usually at a lower level of energy. (A man losing his balance while upright sometimes recovers by using his hands to support himself.)

We observe the same thing in business where a balanced status of systems, business processes and people organization is disturbed by some event and then, over time, automatically finds a lower equilibrium at a point where all the dimensions are in balance again.

Following our discussion on entropy, the initial degradation may be completely outside the control of the business and even be unexpected. But one can also readily observe that some unintended change in one dimension has consequential negative changes in the other dimensions as well.

For example, a resignation by a key individual can destabilize the functional organization of a business, requiring modifications to the business processes and possibly requiring changes to the system to enable those left behind to cope with the new situation. The new business process will often not work as well as it did before the key individual left and the system may operate in a less than optimal fashion – equilibrium at a lower level.

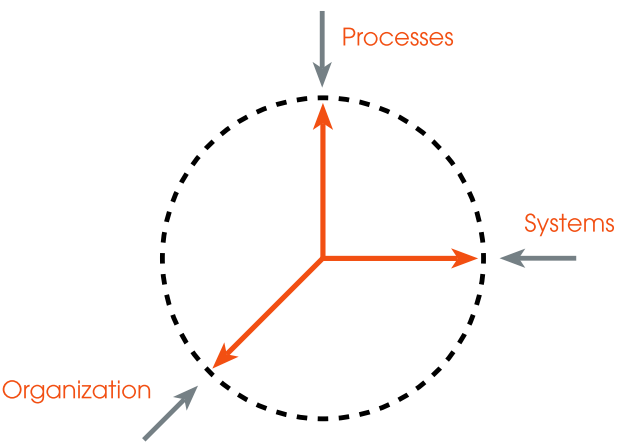
Another example of undesired, negative change in one dimension causing changes in the other two is where a major customer suddenly demands a change in the way its orders are handled (for example, that additional information be made available about the products it is buying). This unintended business process change may require changes to the ERP system that manages sales orders and product data and may also require additional personnel to cope with the changed business processes - all adding costs.

[24] Liebig J, Organic chemistry in its application to agriculture and physiology, Taylor and Walton, London, 1840.

What we are observing is the corollary of our Degrees of Freedom model where in chapter two we described how intended change in one dimension causes consequential changes in the other dimensions. Here, spontaneous degradation in the capabilities of the organization in one dimension causes sympathetic degradation in the capabilities of the other dimensions.

One may argue that these changes are the very fabric of business life and that much of the challenge of business management is not just always to improve but also to fight against deterioration of performance due to things that happen unintentionally, every day, which upset the status quo.

To summarize: There is a natural tendency to regress, driven by entropy. If one of the dimensions of systems, business processes or people organization regresses, the actual benefit will immediately reduce according to Liebig's Law of Minimum and subsequently the other dimensions will also regress to a new, lesser state of equilibrium.



To prevent this from happening requires a clear and definite strategy – organizations should work to maintain their hard-won business benefits. And the strategy has to be that all three dimensions will receive attention in a balanced mode.

The tactics of such a strategy can be readily researched in numerous places and we also present a brief discussion on the companion website to this book . For our purposes here, we briefly note the following:

In the systems dimension, the maintenance strategy should result in actions designed to ensure that the system operation is maintained at a sufficient level. Upgrades to software and hardware should be kept up to date and there should be sufficient funding and staffing of technical personnel.

In the people organization dimension, the maintenance strategy requires regular education and training, not only to maintain skills in current personnel but also to bring new recruits up to the same level and address shortfalls when people are reassigned from one function to the other.

In the business processes dimension, the maintenance strategy requires that business processes are regularly reviewed for relevance and to ensure that business process documentation is in use and kept up to date.

It is clear that the maintenance strategy does not entail discontinuous change. In one sense, the ongoing efforts not to lose capability described in this chapter represent a kind of continuous improvement.

Fortunately, there is also the more literal kind of improvement which leads to more and more benefits accruing over time.

Improvement strategy for operating ERP

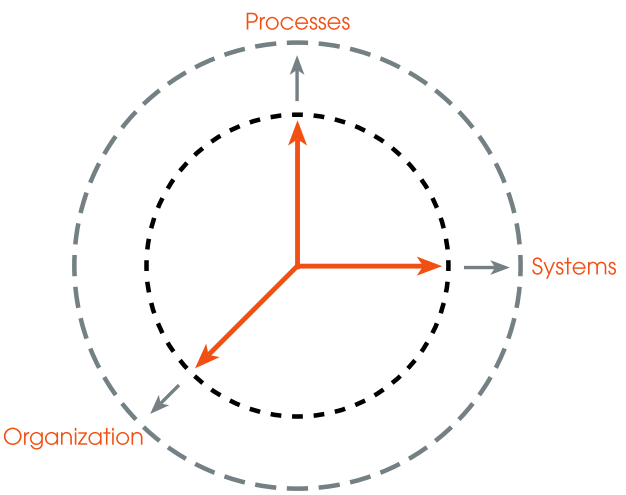
In a landmark study in the late nineties, Deloitte Consulting referred to the improvement efforts after implementation as 'ERP's second wave '. The study reports that many ERP users follow the stabilization period immediately after an ERP go-live with a synthesis period where companies seek improvements by implementing improved business processes and add complementary solutions – often non-ERP. Over time, this evolves into new competencies with redefined business processes without launching wrenching, large-scale discontinuous change projects.

They may not be large-scale, but these types of improvements are still discontinuous changes. A business process will change from one method to an improved way of working on a specific day. Any new add-on to the ERP system will have a go-live. Most likely, though, we are referring to discontinuous changes that affect only one or a small number of functions in the organization. We will refer to these as 'small-scale' discontinuous changes.

Small-scale does not mean risk-free. As with any other discontinuous change, the type of initiatives launched under an improvement strategy creates some instability before settling down. If you have an unstable situation before you begin, trouble looms. What we are getting at is that an improvement strategy – unlike a maintenance strategy – works best if you start from a stable base.

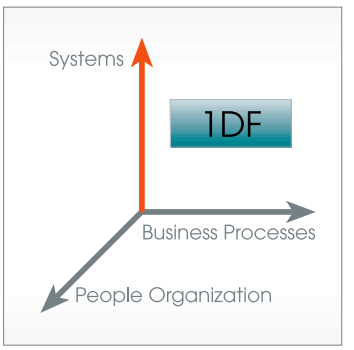
Our previous argument about balancing the different dimensions holds as much for an improvement strategy as it did for the maintenance strategy discussed earlier. The objective with the improvement strategy, however, is to 'push the envelope' while maintaining the balance between the three dimensions, as illustrated graphically below.

Naturally you would like to have a maintenance strategy as well as an improvement strategy. However, we contend that in the immediate aftermath of the stabilization period, organizations are better served by focusing on one or the other to begin with. We suggest this should be determined upfront so that in the excitement and stress of the go-live, everyone already knows what will happen next. Most specifically, we propose that the class of implementation project in terms of our Degrees of Freedom Framework should slant your strategy towards one or the other.



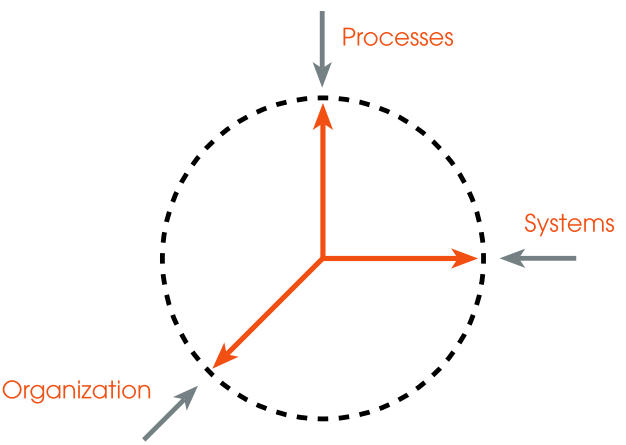
1DF: Operation phase strategy for a One Degree of Freedom ERP project

By definition, a One Degree of Freedom ERP project aims to extend the capabilities of the system while minimizing the consequential changes in the business processes and the people organization.



The usual motivation for a One Degree of Freedom ERP project is that the lack of a good system is holding you back. In this scenario, implementing a new system brings you back into balance.

The scale of the improvement in the system dimension may, however, be more ambitious - namely to put you ahead of the curve in system capability for the next few years. The diagram on the right illustrates this notion.



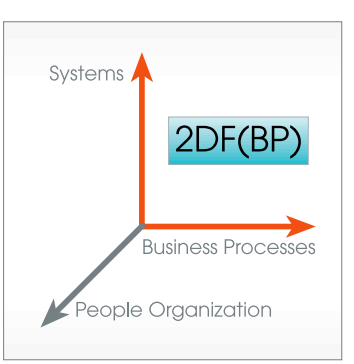
However, Liebig's Law of Minimum argues that your benefits will not reflect the scale of your investment unless you immediately follow up with a strategy to bring the other dimensions up to the same level.

In other words, we recommend that an improvement strategy is planned for immediately after the stabilization period following go-live on the new ERP system. Specifically, such an improvement strategy should be to launch initiatives that investigate the capabilities of the new system to determine how these can be utilized to improve business processes and/or people organizational profiles. We would expect many such opportunities to be found.

Your improvement strategy should be to provide the resources and the drive to launch many small-scale discontinuous improvement projects.

2DF(BP): Operation phase strategy for a Two Degrees of Freedom ERP and Business Processes project

A Two Degrees of Freedom ERP and Business Processes project is a big deal. In our experience, it usually takes a year or longer and requires a huge investment in terms of money, dedicated resources and executive focus. It also entails big business risks since you are deliberately changing the way you run the business in one giant step.

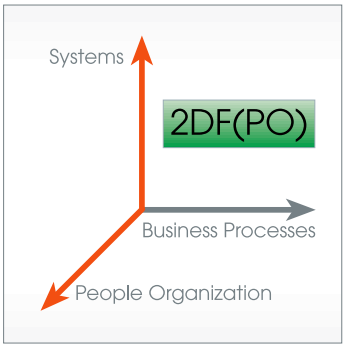


Completion of a Two Degrees of Freedom ERP and Business Processes project is thus also accompanied by organizational fatigue. No matter how successful, there is a sense of 'having your

life back'. The organization wants to take up many of the other things that were probably put on hold during the push for the large-scale discontinuous change.

Now is not the time to immediately launch the next discontinuous change project or series of projects. We recommend a maintenance strategy for the operations phase: make sure your achievements are not whittled away through inattention, but postpone new initiatives for the long term.

2DF(PO): Operation phase strategy for a Two Degrees of Freedom ERP and People Organization project

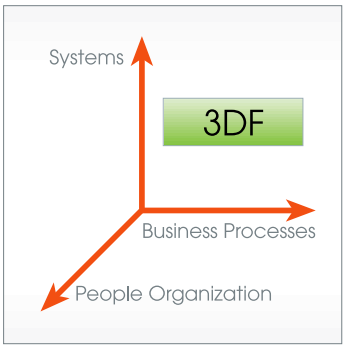


A Two Degrees of Freedom ERP and People Organization project is about the people, as discussed in some detail earlier in the book. People issues determine the timeline, and user buy-in has the attention of the implementation team. The ERP system, although also a degree of freedom, is definitely in a support role.

Usually this means that the capabilities of the new ERP system are not fully exploited during implementation; leaving untapped potential for business benefits. ERP systems by their very nature cut horizontally across the organization. An ERP implementation will therefore establish new connections between organizational units which may previously have been operating in silos and create opportunities for information and knowledge which used to be local to become more widely shared. A reasonable strategy may be to first implement the ERP system and then use the system itself as an enabler for business change in the operation phase.

We therefore recommend that as soon as the new people organization has stabilized, a business process improvement initiative be launched to take benefits to the next level. Go for an improvement strategy.

3DF: Operation phase strategy for a Three Degrees of Freedom ERP project



The implementation strategy for a Three Degrees of Freedom ERP project typically calls for a fast implementation. 'Fast' when you implement new business processes, a new people organization and new systems all simultaneously, usually translates to sticking to the absolutely necessary aspects to make the whole thing work and leaving everything else for later.

The operation phase falls under 'later'. It is highly unlikely that the optimum equilibrium point will be achieved on go-live. The constraining dimension or dimensions should be identified and improvement initiatives launched.

Our recommendation of an improvement strategy for the operation phase is tempered, however, by the observation that the environment requiring a Three Degrees of Freedom ERP project in the first place often drives even higher priorities. For example, if you are creating a new business unit and you go live, you will probably need to focus on business first and not have the luxury of optimizing your processes, people and systems. This improvement strategy has a 'time and resources permitting' caveat attached.

Alternate strategies for the operation phase

Keeping and extending the benefits of ERP will not happen by itself. You need a maintenance strategy to guard against the ravages of entropy and the regression of unused potential. This strategy should aim to keep the three aspects of people organization, business processes and ERP system in balance.

You also want to exploit the time, effort and money invested in your ERP initiative through an improvement strategy. In the long run, you need both. For the time period immediately after implementation, however, you are better served to pick one or the other, based on the degrees of freedom classification of your implementation project.

The bottom line: Different strategies for different objectives

1DF If your objective is to change the ERP system, your strategy should be to select a system that supports your current business processes and people organization, implement fast and low-cost, and afterwards exploit the capabilities of the new system.

2DF(BP) If your objective is to change the way your organization works and you need a new (or newly configured) ERP system to do that, your strategy should be to first design that new way of working and then select a system that will support your ambitions. Your implementation strategy should be to first achieve consensus on the detail design of the new business processes that will achieve the change you are looking for and subsequently to implement the new systems and processes following the blueprint. Finally, you should implement a strategy to maintain your achievement.

2DF(PO) If your objective is to change your people and organization and you need a new ERP system to accomplish this objective, your strategy should be to select an ERP system that will support this goal, carefully design how the new people organization would work with the new system and then implement the organizational change and the ERP system in one go. Immediately afterwards, your strategy should be to expand the possibilities of the new system and people organization.

3DF If your objective is to simultaneously change your business processes, your people organization and your ERP system, your strategy should be to first design the blueprint and then select an ERP system that will support what you want to do. Your implementation strategy should be to achieve consensus on the blueprint for the new set-up and then to implement fast, spending money to speed things up and cover for risk. A strategy of revisiting the design of your business processes, your people organization and even your system configuration after implementation depends on having the time and people resources to do so.

We propose that if you, the executive decision-maker, set strategy for your ERP project by thinking through this framework, you can expect your ERP project to have a high probability of success.

References

Collateral material available for download

At the web address www.iplan.co.za/thinkingabouterp that serves as a companion to this book, we elaborate in more detail on some of the models, concepts and templates briefly referred to in the book. The interested reader is encouraged to browse through and download whatever seems interesting and relevant.

At the web address, we also present some white papers at the next level of detail where one begins to transition to the tactics for the individual phases of selection, implementation and operation of the ERP system.

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