Enabling your ERP decision

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A white paper to assist management when selecting an ERP solution

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1 INTRODUCTION

1.1 Background

Enterprise Resource Planning (ERP) software is a suite of application modules that link back office to front office operations as well as internal and external supply chain functions.

Among the more important attributes of ERP systems are their ability to:

- Automate and integrate an organisation's business processes;
- Share common data and practices across the entire enterprise; and
- Produce and access information in a real time environment.

It is these functionality that turn ERP solutions into powerful strategic tools, but it is also this same capability that, should the wrong product be selected, can adversely affect the organisation as, in several different areas and on several different levels, even to the point of jeopardizing the existence of the organisation a whole.

A 1999 study revealed that 40% of all ERP implementations perform below expectations, and 20% are scrapped as complete failures. For most mid-size organisations a failed ERP implementation implies financial disaster and no effort should be spared to preventing this. One of the key steps towards eventual success is selecting the right solution. Although making the right decision initially does not guarantee a successful outcome to the project, management must have the comfort that they made the right decision, irrespective of the outcome of the project. This comfort is derived from following a structured and formal selection and decision making process.

1.2 The context of this paper

The selection of an ERP solution must be seen in context of the ERP life cycle. This life cycle can be organised in four conceptual stages, i.e. Strategise, Evaluate, Implement and Manage.

Selecting and ERP solution is the key activity with the Evaluate stage of the ERP life cycle.

1.3 Purpose of this paper

The purpose of this document is to provide the management team with a step-by-step process and supporting guidelines on how to select an ERP solution.

1.4 Target Audience

This document is targeted at the senior management and project management teams of organisations that have made the strategic decision to implement and ERP solution and now need to move to the next step.

2 HOW TO ENABLE A DECISION

Acquiring an ERP solution should follow business process like any other such major business decisions. The process should consist of a set of logically related tasks or activities performed to achieve a defined business outcome. The majority of ERP acquisition projects show a sequence of events consisting of five steps:

1. Plan;
2. Gather information and filter options
3. Evaluate;
4. Select; and
5. Negotiate

2.1 Plan

According to Pressly (2006), ERP implementations are a careful exercise in strategic thinking, information system planning, organisational design and business process engineering. The first step in the acquisition process is therefore centred around planning the acquisition and understanding the effect it will have on the eventual project. All levels of planning are included, from the strategic level, all the way down to detail schedules and steps.

2.1.1 Defining the project implementation strategy

Like all major business activities and processes, the acquisition will derive its direction from a strategic level decision. The acquisition and subsequent ERP life cycle activities will continuously benchmark against the defined strategy. The strategy is closely related but not limited to the main reason for the search for a new solution. The paper: "An engineering approach to implementing and ERP solution" (Syspro 2007), states that the ERP strategy be defined according to the three degrees of freedom available to the initiative. The three degrees of freedom cab be defined in the diagram below.

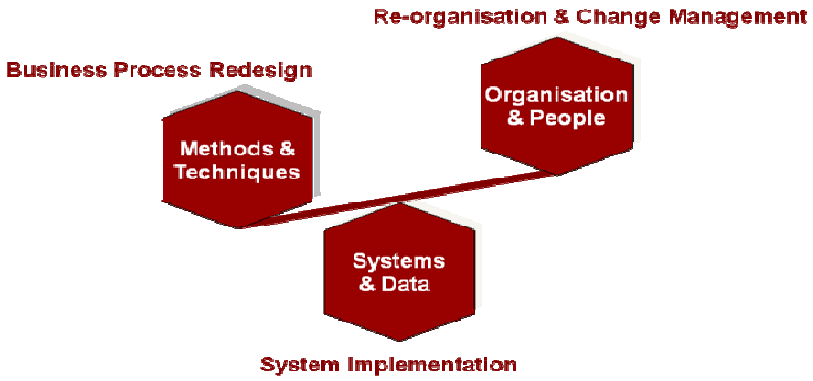


Figure 1: The three degrees of freedom for an ERP implementation initiative

The degrees of freedom concept implies that the project will result in changes in one or more of the three dimensions defined:

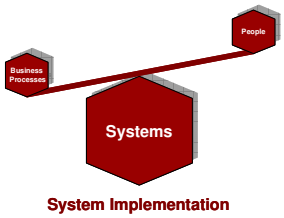
- "***Methods and techniques***" - the best practices to be followed in a given situation, the procedures to be followed and the calculations to be performed, if any;

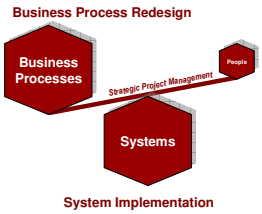
- "***Organisation and people***" - the people that have to execute the steps in the business process, the roles and responsibilities and the work flow required; and

- "***Systems and data***" - computer systems, data structures and task automation.

Although an ERP change project ***always*** requires simultaneous change in all three of these dimensions it is the magnitude of change in each independent direction that defines the project strategy.

A One-Degree-of-Freedom strategy typically implies that the project will be limited to a system replacement project. Little or no changes will be made to business processes or organisational structures, resulting in low business benefits as well as low business risks. Implementation strategies are often fast and low cost. This will be an acceptable strategy where the current technological architecture or platform has become unstable or is no longer supported.





Two-Degrees-of-Freedom implies the replacement of technology with an accompanying improvement in business processes. A project based on this strategy will typically include business process re-engineering elements. Projects of this nature are applicable when organisations feel their processes are not performing optimally, or where processes are to be standardised across the organisation. A large change in business processes usually require a simultaneous large change in systems and thus become a two degree of freedom project. High business benefits and risks are attributes of this strategy

A Three-Degrees-of-Freedom strategy implies the replacement of technology, with business process improvements, and organisational restructuring. For example, centralising or decentralising a function requires new or drastically changed business processes – which may require re-implementation of systems.

Defining the project strategy in this manner allows for an unambiguous understanding of the scope of the project and its expected outcome.

2.1.2 Compiling evaluation criteria & requirements

The initial filtering and even the final choice of a solution to use should be based on a comparison of possible solutions against predefined criteria. Well defined requirements and criteria ensure that the organisation (and not the respective vendors) takes control of the process. The saying by Yogi Berra "If you don't where you are going, any road will take you there" also applies to an ERP decision - if you don't know what you want to change, any solution will do.

Evaluation criteria should be divided into four categories:

- Functionality criteria;
- Vendor & Implementation partner criteria;
- Technical criteria; and
- Financial criteria

2.1.2.1 Functionality criteria

Determining and documenting functionality requirements for an ERP solution have always been problematic for any organisation. In the absence of a functional requirement ERP vendors may be tempted to do "feature selling", focusing on specific capabilities in their solution. In 2006 a study by the Aberdeen Group showed that the actual adoption of ERP functionality is still predominantly limited to core modules, with limited use of the more "exotic" bits of functionality that ERP solutions might include.

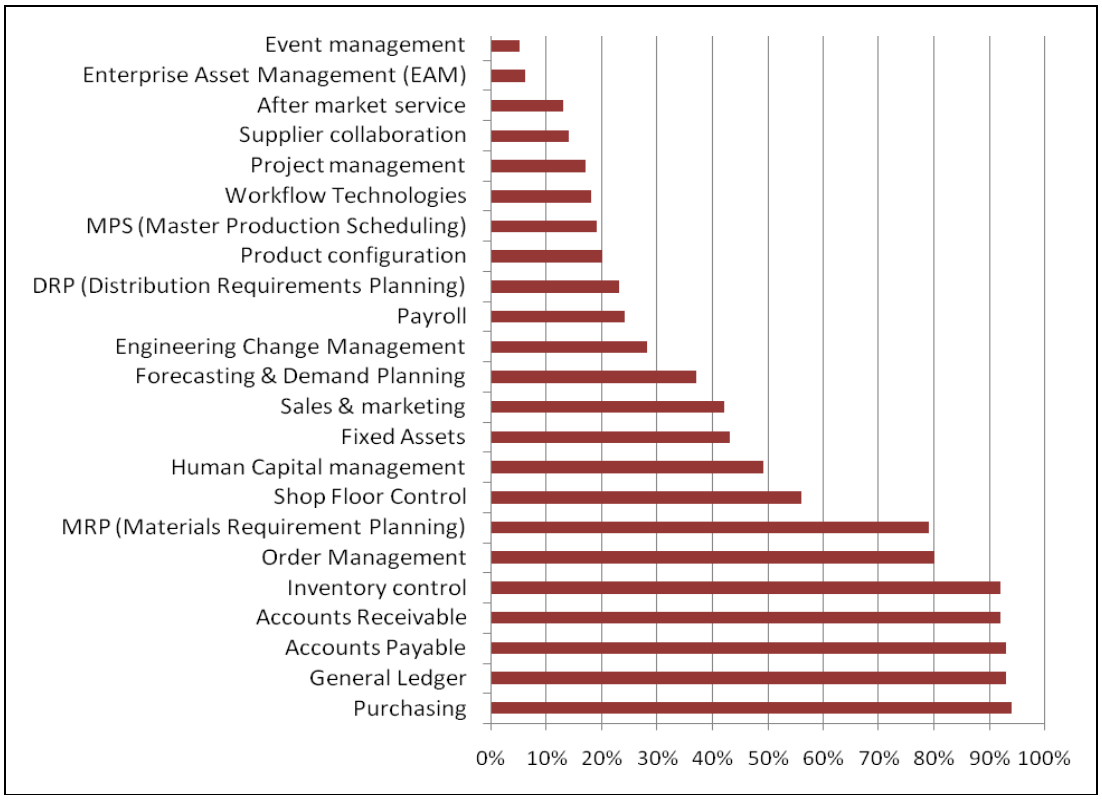


Figure 2: Percentage of core modules implemented (Adapted from the Aberdeen Group 2006)

The most common approach to documenting functionality requirements is by compiling a high level business process blueprint, depicting all processes the organisation would like to support with the proposed ERP solution. The process maps should include the sequence of events for each process as well as the key business rules governing the execution of the process.

In a one-degree-of-freedom project the objective quite often is to keep the business processes as they are and find the solution that best suit the current requirements. However, as ERP solutions have become more comprehensive, organisations often elect to adjust the business processes according to the best practice processes supported by the solution. This does however raise a question on when should the processes be changed to adjust to the solution, and when should the solution be customised to support the process requirement, if it does not do so as part of its standard functionality.

Companies often accept and adhere to system best practices in the belief that it will lead to a lower cost of ownership and faster implementation times. However, it is critical for companies to understand that best practices will forfeit the benefits normally associated with innovation and creativity. Table 1 show some and advantages and disadvantages of adopting system best practices.

Table 1: Advantages and disadvantages of adopting best practices (*Gartner 2006)*

Advantages	**Disadvantages**
The business can start to realize the benefits quickly	Some business process will have to be changed to fit the pre-defined processes No time will be allocated to customize or develop interfaces to the business applications
Users will have to spend less time on the project away from their primary jobs	Users will not be able to do business their way Users and technical resources will not understand the full capabilities of the business applications
There will be fewer business disruptions during the implementation project	Users must be able to change the way they do business in a fact transition The IT structures will not have the skills to support the production environment when the business application is ready to go live
Decisions can be made quickly	A small group of senior people participate in order to make decisions quickly
Implementations cost less	A higher upfront cost is required during a phased implementation

Gartner argues that many organisations commit to implementations using best practice or "vanilla" applications without fully understanding the implications. When an organisation conforms to general best practice processes, they are at risk of having to fit the business to the software whilst losing their competitive advantage.

The key decision is therefore to determine which processes provide the organisation with a competitive advantage, and list them as processes where user defined configuration would be essential. It is recommended that for processes that do not provide a competitive advantage, the best practice be accepted. This approach ensure that some of the benefits of accepting best practices will be achieved, without sacrificing the innovative advantage of the company. One way of doing this is by grouping and mapping business process according to their maturity and the value of being unique as shown in figure 4.

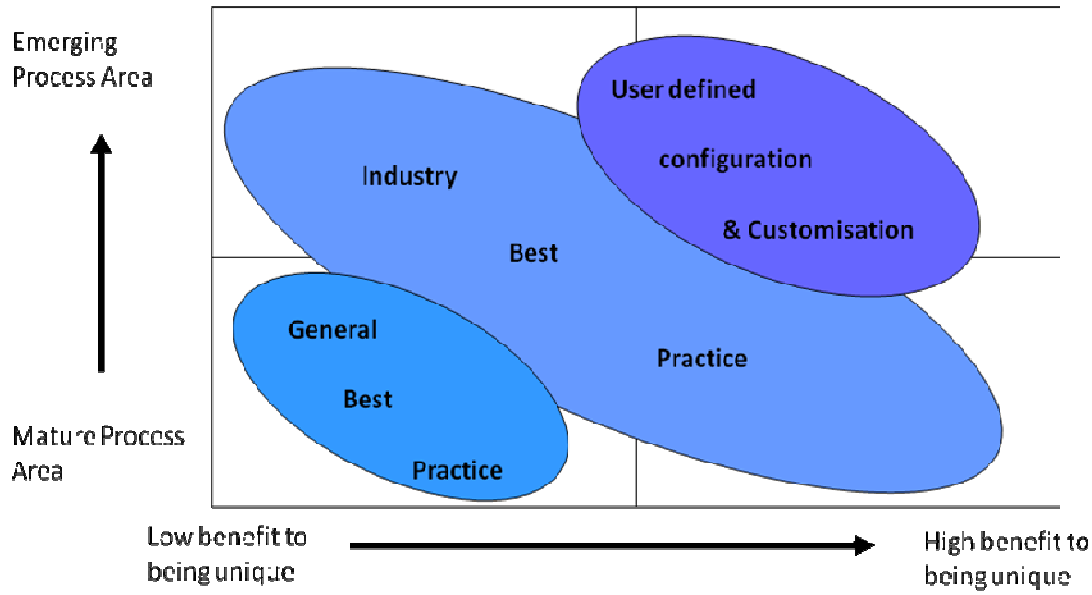


Figure 3: Best practices vs. User-defined configuration (Adapted from Gartner 2006)

Business processes with low benefit to being unique should adopt general best practices configurations. Best practices often benefit the organisation by converting inefficient processes to standardised structured processes.

On the other hand, there is a strong case for user defined configuration and customisation in business processes where there is a high benefit to being unique. Business processes that provide a competitive advantage should not be supported by general best practice configurations. When alternative solutions are evaluated, managers should be cautious of adopting pre-configured processes with the assurance of a reduced total cost of ownership and implementation time.

2.1.2.2 Vendor Criteria

Although current functionality is often the primary criteria in the selection of an ERP solution, the evaluation must consider the possibilities of additional future requirements. As it is difficult to predicting future requirements the organisation must ensure that the solution selected has a sustainable future, with continuous development. The vendor criteria must therefore evaluate the sustainability of the principle vendor and its partners. In addition the cultural fit between organisations must be established and the vendor's ability to deliver. Typical criteria used to ascertain these qualities include:

- Financial stability and size;
- Development programme;
- Implementation methodology;
- Market rating, market share, reputation and sustainability;
- Domain knowledge;
- Reputation and service infrastructure; and
- Number of installations performed by vendor locally.

2.1.2.3 Technical Criteria

Technological change is an important challenge affecting an organisation's competitive position. Integrating technology and strategy should therefore be a dynamic process geared towards maintaining a competitive advantage. As shown figure 5, technology change follow an exponential curve. When evaluating the technical aspects of an ERP solution the primary objective is to ensure the selection of a solution that will keep the organisation on the technology curve through future upgrades and new releases.

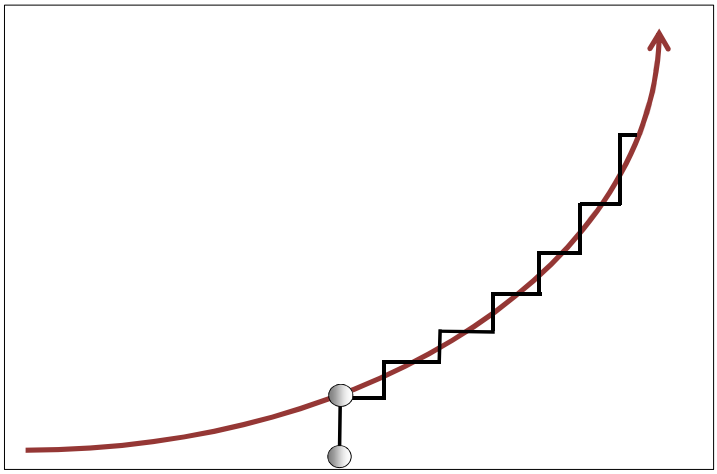


Figure 4: Maintaining an organisation's position on the technology curve through upgrades and new releases.

Criteria used to evaluate the technical attributes of a solution typically include:

- Adherence to current standards in information technology;
- Supported database, server and client environments;
- Reliability;
- Customisation potential;
- Interfacing requirements; and
- Speed and ease of implementation;

2.1.2.4 Financial Criteria

When organisations are questioned about their evaluation criteria, the eventual cost of the solution is seldom considered to be the deciding factor in selecting a solution. Organisations typically give precedence to those criteria that stand in support of their strategic initiative. However, excessive costs is one of the primary reasons ERP implementations are deemed to be failures. A paper by das Neves from the University of Cape Town (2003) lists not excessive costs but inadequate financial research as one of the primary reasons ERP implementations fails.

To avoid surprises in terms of the cost of a solution, organisations should consider the total cost of ownership of each of the proposed solutions.

The total cost of ownership is normally calculated over a five year period. The initial capital investment should at the very least include:

Table 2: Total cost of ownership over a five year period

Software licences	Hardware	Implementation
▪ ERP solution ▪ Proposed additional software ▪ Operating system ▪ Database	▪ Severs ▪ Clients ▪ Networking ▪ Printers	▪ Process mapping ▪ Configuration ▪ Data migration ▪ Development ▪ Interfacing ▪ Testing ▪ Training ▪ Report writing ▪ Support

In addition to the abovementioned capital expenditures the total cost of ownership should include the projected maintenance and support costs for the next five years. The organisation should also consider the increase in internal costs due to the proposed solution. In the small to medium sized market it is often found that the internal information technology resources need to be increased to support a complete ERP solution.

2.2 Gather Information and filter alternatives

After compiling the evaluation criteria the acquisition process can progress to the next step: gathering information.

The transition from planning to gathering information is not necessarily clear cut, as the gathering of information will already start during the compilation of evaluation criteria and requirements. This is especially true for gathering information from internal sources.

Once the evaluation criteria and requirements are finalised the focus of gathering information shift to external sources as the acquisition team start looking for possible solutions. This search is typically a broad based search starting with gathering information from the Internet to compile a list of possible vendors. The acquisition team may also elect to approach independent organisations for a list of possible solutions. This list is filtered using strategic criteria as compiled during the planning phase.

The objective of the filtering activities are to create a short list of vendors that will be invited to do demonstrations based on the detail user requirements. Filtering is an iterative process, with the focus on reducing the number of alternative solutions on the list with each iteration.

Once a list of possible vendors has been compiled a Request For Information (RFI) is sent to each of the vendors on the list. The request for information is typically focused on high level criteria and broad functional requirements. For example, the request for information would ask whether the proposed vendor has the ability to manage accounts payable, but will not include the detail requirements for the accounts payable process.

RFI Evaluations - The first reduction of the list of vendors will be based on the responses to the request for information. The acquisition team reviews each of the responses and will reduce the list of possible vendors according to the strategic criteria defined.

Request For Proposal (RFP) evaluation - A shortened list of possible vendors is then asked to prepare proposals in response to a document including the detail process requirements and

other evaluation criteria. This proposal should include detail pricing and anticipated time schedules

Invitation to demonstrate - Once the responses to the request for proposals are received, the acquisition team reviews each response. Again the list of vendors is reduced, with typically only three to four being asked to demonstrate their ability to support the processes as outlined in the RFP in a detailed one to two day proof of concept demonstration. Vendors that reach this stage are typically also asked for reference sites. With smaller organisations reference site visits are typically restricted to the area of operations or to conference calls with key personnel from the reference site and the acquisition team.

2.3 Evaluate the short list

The acquisition process draws to a close with the final evaluation of the short listed vendors. Vendors are evaluated against the predefined criteria and either scored independently, or ranked comparatively. Organisations have been known to use complex weighting and statistical models to assist to come to a single number to identify the preferred solution. This process is typically complex and often inconclusive.

A simpler yet effective approach is to rank or score the different solutions within the four criteria categories identified (functionality, technology, vendor and cost), but keeping the four categories separate for evaluation purposes.

2.4 Select a vendor and implementation team

As discussed in the previous paragraph, it is very difficult to reduce the solution evaluation to a single number indicating the right solution. If the four criteria areas are kept separately the acquisition team can identify which solution has the best functional fit, which solution is technically the most advanced, which vendor is the most suitable and which solution will cost the least. Unfortunately it very seldom happens that one single solution is rated at the top of each of the four categories.

The final selection is a cognitive process, where the acquisition team tries to balance the advantages and disadvantages of each of the short listed solutions as defined in the four categories of criteria.

One of the key considerations in this process is that the selected solution must strike a balance between the three degrees of freedom identified in the project strategy. Organisations often struggle in situations where an advanced solution is selected, but the methods and techniques deployed are not adjusted (nor was there any intention to change them), or the people in the organisation are not equipped to make full use of the capability provided. In the same vein, a company using advanced methods and techniques will struggle with an inferior technical solution.

Once the final selection is made the selected vendor is normally requested to do a detailed proof of concept demonstration to validate the decision. If this demonstration supports the decision, a recommendation can be made to the steering committee.

As with most capital investments this recommendation will typically be accompanied by a case for change, highlighting the reasons for and the anticipated benefits of the proposed solution. Although traditional financial measurements like return on investment is typically

applied, these measurements often fall short due to the difficulty in quantifying some of the benefits.

As with most capital projects this recommendation should include a justification for the cost of ownership by calculating the expected return. To date the ERP industry as a whole still finds this question challenging, no doubt due to the strategic nature of the projects and difficulty in quantifying the benefits.

Most business disciplines are struggling with the issue of valuing intangibles benefits in monetary terms. A recent Arthur Andersen study of 20 years of data from more than 10 000 publicly traded companies indicates that, between 1978 and 1998, the non book value of all companies rose from 5% to 72% of market value, which implies that just 28% of value was reflected in the traditional balance sheet[1].

We suggest the table below as a guideline for thinking about the classification of ERP benefits.

The table is a product of two white papers. The first two columns are from research done by Shang & Seddon2 who provides a comprehensive framework of ERP benefits categorised in five dimensions. The second two columns are from work done by Murphy and Simon3 on the intangible benefits of ERP projects. They used the framework to classify the benefits on a four-point scale as to their degree of tangibility and quantifiability (Low, Some, Most, Full).

[1] RE Boulton, BD Libert, and SM Samek, *A business model for the new economy,* Journal of Business Strategy, 21, p29-35, 2000.
[2] S Shang & PB Seddon, 'Assessing and managing the benifits of enterprise systems: the business manager's perspective', *Info Systems,* 2002, pp. 271-299.
[3] KE Murphy & SJ Simon, 'Intangible benifits valuation in ERP projects', *Info Systems,* 2002, pp. 301-320

Table 3: ERP benefits framework and extent of tangibility and quantification (adapted from Shang & Seddon, 2000)

Dimensions	Sub-dimensions	Tangible?	Quantifiably?
Operational	Cost reduction	Full	Full
	Cycle time reduction	Most	Full
	Productivity improvement	Most	Full
	Quality improvement	Some	Most
	Customer services improvement	Some	Most
Managerial	Better resource management	Some	Most
	Improved decision-making and planning	Some	Some
	Performance improvement	Most	Most
Strategic	Support business growth	Some	Full
	Support business alliance	Low	Most
	Build business innovations	Some	Some
	Build cost leadership	Some	Some
	Generate product differentiation	Some	Low
	Build external linkages	Low	Some
IT Infrastraucture	Build business flexibility for current and future changes	Low	Low
	IT cost reduction	Full	Full
	Increased IT infrastructure capability	Some	Some
Organisational	Support organisational changes	Low	Low
	Facilitate business learning	Low	Low
	Empowerment	Low	Low
	Build common visions	Low	Low

2.5 Negotiate the deal

Upon acceptance of the recommendation the acquisition process is concluded with the final negotiations regarding pricing and payment terms. Although contracting procedures vary, it is recommended that the acquisition team keep the following guidelines in mind:

- An ERP deal is a large undertaking for both the client and the vendor, and it is recommended that the contract is reviewed by a legal expert
- System functionality should be formalised in the contract
- Identify all the costs and deliverables. These may include:
  - Initial costs (Hardware, software and installation)
  - Maintenance/ongoing support cost
  - Technical support
  - Documentation
  - Integration costs of existing systems
  - Entitlement to new releases/bug fixes
  - The cost of customisation
- Ensure the contract is future proof:
  - What happens if the organisation change/grow/shrink?
  - What happens if the supplier change/grow/shrink/disappears?
  - What if the technology changes?
  - What if the project is delayed/changed/scrapped

- Fees are negotiated either in terms of fixed pricing or time and materials depending on the project. Whatever the terms are, ensure that project risks are shared between the organisation and the vendor.
- If source code is not supplied ensure that ownership of the source code is held in "escrow" on behalf of the organisation.

3 CONCLUSION

The purpose of this paper is to enable management of small to medium sized organisations to select an ERP system. The ERP life cycle was categorised into ten activities of which the software selection activity is one.

Although a good ERP decision does not necessarily result in a good ERP outcome, it does enhance the chances of success. In addition, a vigorous process enhances understanding and aligns expectations. The ERP decision should be aligned with a predefined strategic outcome which could be achieved by following five sequential steps:

1. Plan the acquisition and understanding the effect it will have on the eventual project. Compile evaluation criteria and requirements also forms part of the Planning step.
2. Gather solution information from possible vendors and filtering options to reduce the number of possible alternatives.
3. Evaluate of the short listed vendors by scoring and ranking alternatives with reference to the predefined criteria
4. Select of a vendor and implementation partner that balance the criteria and requirements with the three degrees of freedom identified in the project strategy.
5. Negotiate on contracting activities, this brings the acquisition process to a close.

Apart from steps followed, the management team should adhere to the following guidelines:

- **Clear and unambiguous authority -** The selection and implementation of an ERP solution is a major project, quite often undertaken as a strategic initiative. The process must be and managed with no ambiguity in the decision making authority
- **Structured rigorous process -** Most organisations will only purchase an ERP solution once every ten to fifteen years. One of the key differentiators for a successful selection program is a structured and rigorous process. This process might be adjusted as the acquisition teams learn more about the environment, but a formal structure should remain in place.
- **Process definition of requirements -** The compilation and documentation of user requirements form the basis for the selection process. These requirements are best stated as business processes rather than functional requirements.
- **User participation & buy in -** It is standard that the acquisition and evaluation team is assembled with members from all areas within the business. This creates a problem in smaller organisations with limited capacity. Normally the acquisition team consists of a core of two to three members, which is then expanded once the short listed vendors are reviewed.
- **Document rationale for each decision -** It is recommended that the rationale behind decisions taken during the selection process be documented. This documentation will proof to be invaluable during the implementation project and in subsequent similar projects.

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