ENABLING BUSINESS PROCESS OUTSOURCING WITH BUSINESS FRACTALS

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ABSTRACT

Many organisations are involved in one way or another with optimisation initiatives caused by the continual pressure to deliver acceptable returns to shareholders. Business process outsourcing is one of the business strategies used by organisations to ensure more cost-effective delivery. This paper presents a business process outsourcing (BPO) initiative in the microfinance industry, between a service provider and the South African Government. In this mandate, effective delivery is not the only key objective: sustainability and outreach must also be achieved. The core of this initiative is based on the application of business fractals so that the service provider delivers the outsourced business process to the customer.

Key Words: Business fractals, business process outsourcing, micro-finance, South Africa.

INTRODUCTION

Problem-solving is a critically important capability in any organisation. For business process outsourcing (BPO) initiatives, problem-solving focuses on having an accurate understanding of the scope of the business process to be outsourced, and its related links and performance objectives. This is critical because it lays the foundation for a proper risk-sharing model between all stakeholders in the initiative. Achieving this ensures that the intended business process performance objectives are met from the customer's perspective, while the service provider is able to enjoy a sustainable outsourcing contract.

The South African Government is currently embarking on a number of initiatives to link the so-called second economy (informal sector) with the first economy (formal sector) in an effort to eradicate poverty in South Africa. One of its flagship projects, the South African Micro-finance Apex Fund (SAMAF), provides wholesale funding to a number of micro-finance institutions such as savings and credit unions, micro credit outlets, and village banks. In a bid to create sustainable micro-finance institutions, it launched a capacity-building process to ensure that these organisations have the capability to deliver cost-effective micro-finance services to their customer base. In establishing the business, SAMAF decided to outsource the capacity-building process through partnering with a service provider that has extensive knowledge of capacity-building and delivery into communities.

In the search for greater understanding of the business process, this paper presents the application of the art and science of fractals in the problem-solving and decision-making process for BPO initiatives. Expanding on the concept of fractals, business fractals or "business shapes" are introduced to model the business or organisation in the intricacy and complexity required to support business process outsourcing.

APPROACH

To explain the application and use of business fractals in business process outsourcing, the following structure is used in the paper:

a) *Introduction to Business Process Outsourcing* provides an overview of business process outsourcing and its required dimensions for successful agreements or contracts.

b) *A p*rimer on Business Fractals covers the principles and the generic construction set of a business fractal. It includes the basic "business geometric shapes" used to generate the fractal, as well as the templates and recursive processes to abstract and model the business process.

c) The *IGR Building Blocks* are a detailed set of actions through which business fractals are used to construct the business process. In this section the initiator (I), the generator (G), and the recursion (R) are defined and explained.

d) *Case Overview and Application*. The application of business fractals is demonstrated in a BPO contract that entails the capacity-building processes for micro-finance institutions being outsourced to a service provider on behalf of the South African Government's Department of Trade and Industry.

e) *Conclusion*. The paper concludes with an overview of the applicability of business fractals in BPO initiatives, as well as providing a way forward in the discipline of business fractals.

BUSINESS PROCESS OUTSOURCING

According to ICGcommerce (ICGcommerce, 2006), Business Process Outsourcing is the outsourcing of business processes (critical or non-critical) to a third party. In this agreement the service provider is responsible for performing and managing the outsourced process on behalf of the customer. However, to qualify for a BPO agreement, the service provider must take overall responsibility for the business process (ICGcommerce, 2006).

For Mani, Burua and Whinston (Mani et al, 2006), BPO should be used to attain a strategic advantage for the organisation in the long run, rather than trying to save a few pounds in a localized operational cost. In their survey of 145 executives in various businesses that have outsourced business processes, the authors concluded that BPO arrangements stand a better chance if the proposed outsourced business process is evaluated in several dimensions, and the contract is then tailored to fit the dimensions of *complexity*, *independence,* and *strategic importance* (Mani et al, 2006).

Complexity is defined as the degree to which people dealing with their work in the process have access to immediate, established solutions to process problems. *Independence* is the degree to which the process can act independently of the organization. *Strategic importance* is the degree of competitive advantage that the process gives the organization.

BUSINESS FRACTALS

A fractal is defined as a shape that can be broken into smaller parts, each echoing the whole. A business fractal is a shape (fractal) that echoes the business system as a whole, and can be broken into smaller parts. In defining a business fractal, pictures or models will be used to support the basic "business geometric shapes" that form fractals in a business system. Mandelbrot maintains that pictures are undervalued in science – due in part to the 200-year legacy of the French mathematicians Lagrange and Laplace, who laboured to reduce all logical thinking to formulae and carefully chosen words (Mandelbrot, 2004). The pictures below (Figures 1 and 2) show the stock market behaviour of the Top 40 companies in South Africa, in support of the Mandelbrot fractal theory.
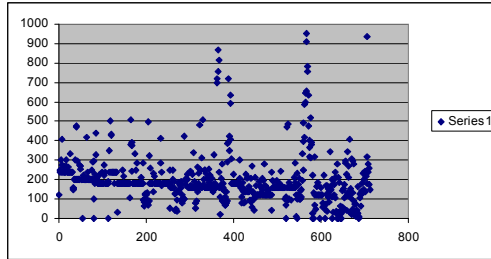
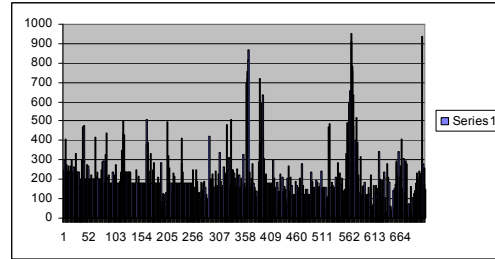

Figure 1 – Market memory

Figure 2 – Market volatility

To give a complete definition, a fractal is a function of market memory, market volatility, and a pattern. The pattern is a simple geometric shape that forms the deterministic part of the fractal (Figure 3). Market memory (or autocorrelation) defines the shape, size, and timing of recurring events, while market volatility defines the power law behaviour of the fractal. Whereas the pattern is *deterministic*, market memory and volatility contribute to the *stochastic* behaviour of the fractal.
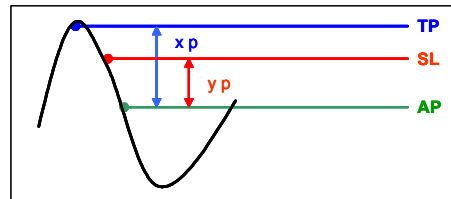

Figure 3 – Pattern

The basic building blocks for fractal constructions are based on the initiator (I), the generator (G), and recursion (R), which form the DNA (deoxyribonucleic acid) of the business fractal. The construction of the fractal starts with a classic geometric object such as a triangle, straight line, or solid ball. This is called the initiator (I). The template or generator (G), from which the fractal is constructed, is a simple geometric process followed to replace elements in the initiator. The final building block for the fractal, the rule of recursion (R), replaces parts of the geometric shape with the generator.

A business fractal is constructed in the same manner as a fractal defined by Mandelbrot (Mandelbrot, 2004). It starts off by identifying simple patterns in the business system, building and replicating them in three system dimensions, X, Y, and Z. The X dimension represents the particular business object view to be modelled from the analyst's perspective (that is, what is important from the BPO initiative). The Y dimension determines the plane of detail (complexity) in the organisation, while the Z dimension is the applicable timeframe in the business cycle.

A business fractal model is built from a specific change framework viewpoint, be it productivity, market expansion, or new market creation.

The discipline of fractals is relatively new (Mandelbrot, 2004), and the definition of business fractals even more recent. In the following section an overview is presented of the initial process to define business fractals. This only includes the deterministic part of the business fractal (the pattern), but over time research will add the stochastic components of memory and volatility.

The research and application of business fractals in BPO initiatives is based on the hypothesis that if the economic characteristics of companies can be modelled through fractals, the lowest level of organisational activity can be analysed and designed according to a business fractal.

BUSINESS FRACTAL DNA

As mentioned in the previous paragraph, the basic building blocks for constructing a business fractal are the initiator, the generator, and recursion. The following paragraphs provide an overview of these construction sets and their basic workings (Van Rensburg, 1996).

Initiator

The basic shape or pattern used for the initiator in the business fractal is an object (Euclidian shape: block) and a relationship (Euclidian shape: straight line). In the semantics of the object and relationship, the object refers to an intangible or tangible "thing" that has a meaning and descriptive attributes. This pattern is extended through defining a number of relationships for the purpose of building a simple transformation model of the business (Figure 4).
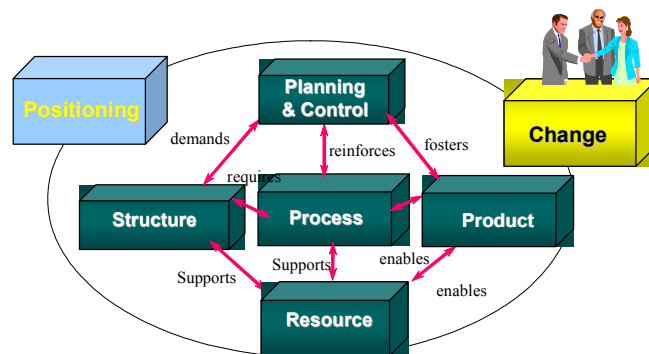

Figure 4 – Basic business fractal pattern

The relationship defines the connections that an object has with surrounding objects. Table 1 shows the objects and relationships that can be found in a basic business fractal.

Table 1 – Generator fractal relationships

Business fractal component	Type	Understanding/meaning
Positioning	Object	Strategic position of the business fractal in the environment, on any given XYZ plane. This includes, but is not limited to, strategic objectives, corporate and business strategies, partners (customers and suppliers), and strategic information.
Change	Object	The required process for changing the business fractal due to movement in the position of the fractal. Causes include productivity improvement, new market creation, and existing marketing

		expansions.
Planning & Control	Object	Contains the principles, processes, and methods to plan and control the operational structure of the business fractal.
Structure	Object	Describes the role, position, and organisational structure of people in the business.
Process	Object	The activities required to deliver the product proposition to the customer.
Product	Object	Product proposition is the bill of delivery to the customer, which includes products and services, or a mix of both.
Resource	Object	Includes all resources (balance sheet and income statement) used in the business to deliver products and services to the customer.
All	Relationships	Refer to Figure 4 for different types of relationships that can exist between the identified objects.

Generator

Figure 5 below depicts the process followed to populate the initiator with appropriate objects on the specific XYZ coordinate level. The model consists of a number of steps, R0 being the selected change framework to be followed for implementation; R1 is positioning of the business model, including but not limited to corporate objectives and strategies, role and position of the selected business system, partners and suppliers, as well as strategic Management Information Systems (MIS). R2, the product positioning, covers the bill of delivery (products and services) as well as the revenue model. R3 is the process component of the generator, and consists of the network or supply chain, process technologies, facilities, and the way jobs are structured to perform the process. The final phase of the generator, R4, deals with capacity planning of the system, and component planning covering material, information and customers in the process.
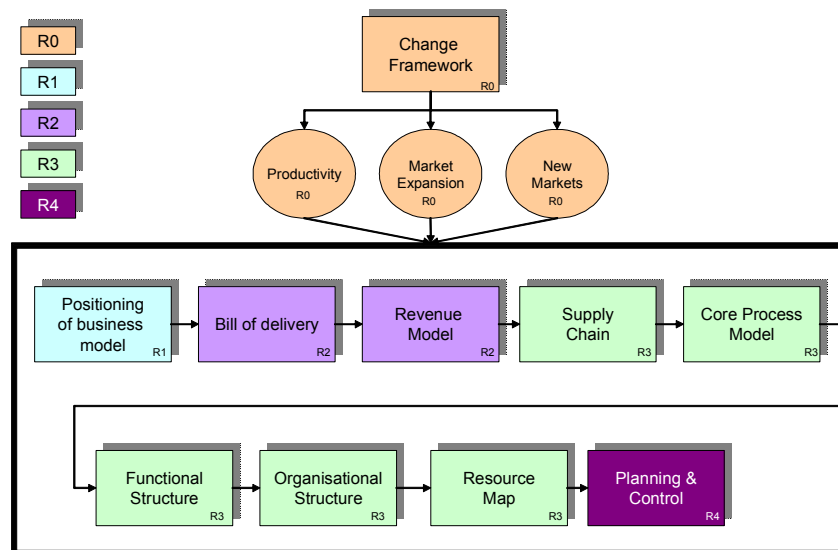

Figure 5 – Generator

Recursion

The recursive action is normally initiated in the following manner – depending on the given application of the business fractal.

1. The first step is to define the viewpoint of the model from the analyst/stakeholder's perspective. Included in this is the requirement to define the applicable change framework, whether it be productivity improvement, new market development, or current market

expansion. Note that BPO normally forms part of the productivity improvement change framework.

2.   The next step is to determine the applicable level of complexity on which to build the model. Within the XYZ plane, a starting point for the business fractal is defined.

3.   In the X plane, the analyst decides what fractal components are included or excluded from a modelling perspective, to ensure that only relevant information is included in the decision-making process.

4.   The Y plane is planned by using the initial XYZ coordinates as a starting point and deciding the relevant level of detail or complexity at which the model will be completed.

5.   After the X and Y planes are defined, the Z plane is planned from a time perspective. In this process, the analyst or stakeholders will decide which part of the lifecycle of the business system is included. This lifecycle will typically cover concept, design, implementation, planning and control, maintenance, and improvement.

6.   After the planning in the previous steps, the generator is used to complete all the objects of the XYZ coordinate on a deterministic level.

7.   To move to the next XYZ coordinate, the sub-tasks of the process object are defined.

8.   Using these sub-tasks as the next level process objects, the generator is repeated for the next level.

9.   A number of Y recursions are repeated until a sufficient level of detail is attained, as defined in step 4.

10.   When the deterministic model has been completed, stochastic information is fed into the model at the desired level of system parameters.

11.   The model is simulated, and the behavioural coordinates of the business fractal matrix are evaluated.

Depending on the experience of the analyst, these steps can be executed in any order, and any step/s may be omitted at the discretion of the analyst.

By building the business fractal and studying the matrix of coordinates, the analyst begins to understand the behaviour of the business process in respect of its complexity, independence, and strategic importance – the three dimensions required to understand and successfully conclude the business process outsourcing agreement.

CASE STUDY INTRODUCTION

South Africa's first democratically elected government has been faced with unprecedented levels of unemployment and poverty, in particular among the historically disadvantaged black communities (SAMAF, 2005). The Department of Trade and Industry (DTI) is charged with the responsibility of devising strategies and actions to address these poverty issues, mainly through job creation to stimulate economic activities. The DTI has formed a new organisation, the South African Micro-finance Apex Fund (SAMAF), to focus on providing financial services for very small and micro enterprises (VSMEs). These services include, but are not limited to, wholesale lending, capacity building, and product development (SAMAF, 2005).

The mission of SAMAF through these interventions is to broaden and deepen access of the poor to financial services, to facilitate their participation in productive economic activities and thus smooth their financial troughs for a better livelihood (SAMAF, 2005).

The value chain of SAMAF encompasses the core capabilities of marketing, capacity building, lending operations, and risk management. The main services delivered through these core capabilities are:

i)   Provision of Micro Entrepreneur Loans.
ii)   Provision of Poverty Alleviation Loans.
iii)   Provision of Institutional Capacity Grants and Loans.

As mentioned in the introduction, capacity-building is targeted as the BPO initiative to support the Institutional Capacity Grants and Loans (ICGL) product. Building institutional capacity in the partner organisation (PO) includes assisting in the development of capacity in the following organisational elements:

i)   People (board, management, employees, and clients).
ii)   Management planning and control activities of the PO.
iii)   Resources (infrastructure, telecoms, systems, offices, etc.).
iv)   Processes for all management, support, and operations.
v)   Policies, procedures, forms, documents, and training materials.
vi)   Appropriate PO product design and products.

From a strategic perspective, the capacity-building process supports the SAMAF balanced scorecard objectives shown in Table 2.

Table 2 Balanced Scorecard Extract

Strategy	Performance Objectives	Measures
Professional and customized services.	Cost to Income Ratio.	Ratio (Cost/Income).
Broadening and deepening of access to financial services.	Outreach.	Number of clients per PO.
Facilitating participation.	Capacity-building.	Rating Scale (0 to 5).

The capacity-building process has two main deliverables. The first focuses on business support interventions, and the second on people training interventions.

For the business intervention deliverable, the capacity-building process must deliver on a number of objectives: (1) the required physical infrastructure support to enable capacity in the partner organisation's delivery; (2) adequately defining the products and services from the perspective of risk management, organisational sustainability, and outreach measures; and (3) capacity-building that covers the operations policies, procedures, processes, and regulatory issues in running the operation.

The second deliverable, people-training interventions, focuses on delivering mainly training and education to stakeholders in the partner organisations. The main strategy for this part of the capacity-building process is defined as being to "*create capacity for the microfinance institution so that it is a good corporate citizen, being sustainable and creating wealth for the community*". The main objectives are:

a.   Being a good corporate citizen. This refers to issues such as operating a legally sound business vis-à-vis the Receiver of Revenue, maintaining good credit records, and complying with regulatory laws.
b.   Running a sustainable business. This includes training to run a successful micro-finance institution, and focusing on the key success factors of the organisation.
c.   Having a community-based structure. Community-based structures include organisational structures such as co-operatives to run and manage micro-finance institutions.
d.   Wealth creation, which includes wealth building principles, and how the micro-finance institution can achieve wealth building in its community.

BUSINESS PROCESS OUTSOURCING INITIATIVE

From a strategic perspective, capacity-building constitutes a core competency for SAMAF as it effectively replaces loan collateral with the capacity to deliver to SAMAF (that is, being able to repay the wholesale loan). The stakeholders and service provider agreed that delivery of effective capacity-building into the communities was hampered by the lack of knowledge and skills in the government department. With this as the departure point for developing the BPO initiative, the service provider developed a business fractal of the capacity-building process within the overall SAMAF process, focusing on complexity, independence, and strategic importance.

For the BPO, the coordinate of the Y axis was done at the lowest level of business sense to determine the strategic importance, complexity, and independence. Furthermore, the definition included the Z axis from concept to maintenance, while the X axis defined complete detail to allow the service provider to manage the business process content, and enable workflow. Complete operational training manuals were included.

Figure 6 depicts the lowest level of the business fractal, designed to deliver capacity-building to a partner organisation. The complete set of specifications for the fractal included, but was not limited to, policies, procedures, job descriptions, product specifications, and information technology specifications.
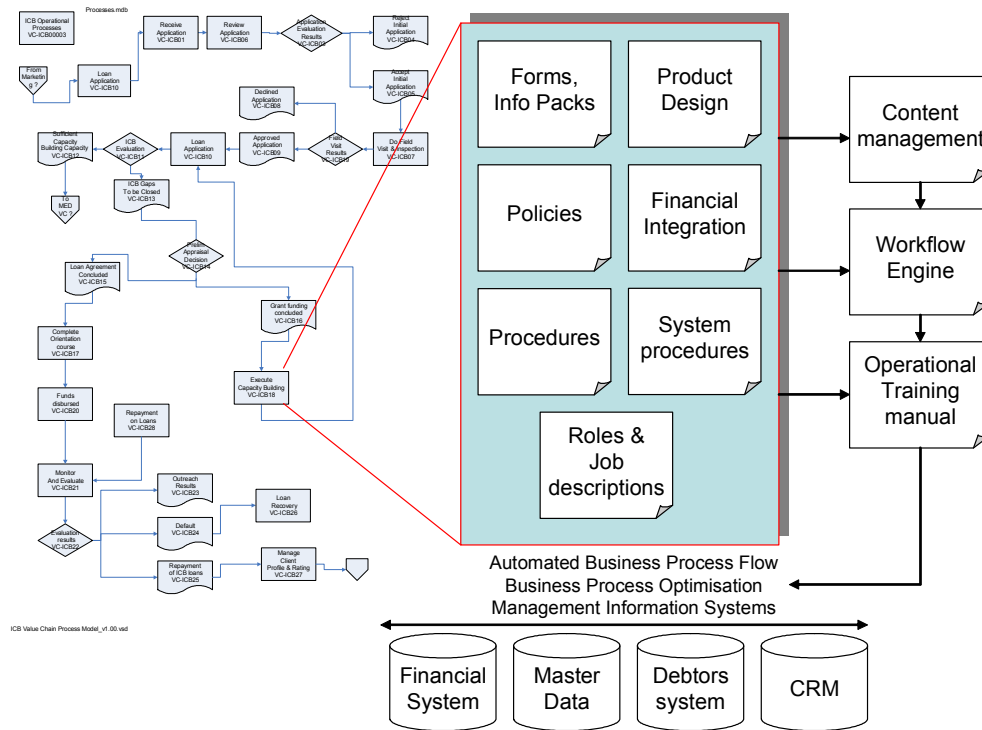

Figure 6 – Business fractal XYZ coordinate

While the deterministic construction of the fractal did not pose real challenges to the business, the stochastic construction raised huge issues, as reliable data for the South African environment was not available. The service provider knew that the deterministic model was a best practice model with no real system performance – thus increasing the risk at the service level agreement of the business process outsourcing contract.
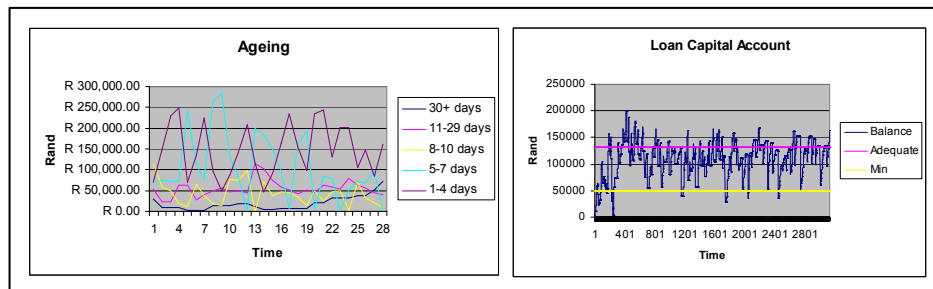
To overcome the problem of the stochastic process, the service provider purchased a company that fitted the profile of a partner organisation, and ran the partner organisation on the proposed capacity-building business process. Figure 7 shows certain stochastic process results from this exercise, helping the service provider to scope the BPO initiative service levels appropriately.

CRITICAL FACTORS CONSIDERED IN IMPLEMENTATION

This approach cannot be implemented like a cookbook recipe, as it relies on the application of a large number of disciplines, skills, and competency areas. Thus a pragmatic philosophical approach is followed when implementing business fractals, guided by a core set of values and principles to ensure successful execution. In the experience of the author, a number of critical success factors need to be considered during this process (Van Rensburg, 2005).

The first success factor is to comprehend the business strategy of the organisation wishing to embark on the BPO initiative. In many organisations, business strategy is not clearly understood throughout the organisation, making it difficult to relate to clear and consistent objectives and performance measures for a business process. The obvious issue is that if an organisation cannot identify and measure the performance indicators for a business process within the context of a business strategy, outsourcing becomes difficult.

The second success factor deals with management information. Management information needs to exist through applications, techniques, and reports to produce a stream of relevant information that supports decision-making. In the absence of relevant and applicable information on performance measures, baselines, and performance levels, management of the business process initiative is virtually impossible.

The third success factor deals with the capability of the employee to understand the context of the business process, changes in the business process scope and details, and risk management in the business process. If this capability is lacking, the ability to manage and execute the business process in independence is severely hampered.

The final success factor addresses financial information and financial systems in the organisation. The basic process and system design of the business process should ensure that financial information is not a lagging indicator in the process, but rather a leading indicator, as financial information ultimately depicts the well-being of the business process. This means that financial information design should focus on timeously integrated and well-translated information that depicts bottom-line financial results. Again, if this approach and design is lacking, measurement of BPO impact is difficult.

The business fractal approach aims to provide a well-balanced framework for the BPO initiative, in such a way that the overall well-being and optimal performance of the organisation is supported.

CONCLUSION

Decision-makers are always seeking new ways to support the decision-making process at an acceptable level of risk – especially in business process outsourcing initiatives. Normally the level of risk in business processes can only be determined by understanding and studying the behaviour of the business process, either from historical observation or from simulated experiments.

It has been found that traditional routes for completing process specifications based on deterministic models, or even stochastic models, may not always cover all the inherent risks that a BPO initiative

entails. Through a business fractal, the analyst tries to develop more realistic models to understand the dimensions of the business process through the characteristics of memory, volatility and patterns.

As such the practical application and implication of a business fractal is to provide a real-world model for decision support in defining, developing, and implementing the BPO initiative. This in turn proves to be a valuable tool in the risk management toolkit of all BPO stakeholders.

However, as discussed in the paragraph on critical success factors, this process is difficult to achieve in practice, due to the number of key capabilities required to understand, scope, and manage the business process.

The use of a business fractal to enable a business process initiative is a new discipline, as well as a paradigm shift. The value of this approach is to provide the decision-maker with a toolkit that approaches the problem of understanding the business process to be outsourced in a realistic manner, so that risk is transparent to all stakeholders.

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