

E-BUSINESS STRATEGY FORMULATION: AN OBJECT ORIENTED APPROACH

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Name of Conference: **The 2006 International Conference on e-Business, Enterprise Information systems, e-Government & Outsourcing (EEE'06)**

Abstract - Like any emerging field, eBusiness is changing fast and in so doing it is changing the way businesses formulate their strategies and conduct their business through realisation of those strategies. This paper identifies issues involved in the formulation of eBusiness strategy, steering towards defining the process in object terms, proceeding to develop a framework encompassing the eBusiness strategy formulation process.

Keywords: **E-BUSINESS STRATEGY OBJECT ORIENTED APPROACH**

1. Business Object

It is our intention to attempt to define the process of eBusiness strategy formulation in object terms through extending OMG's Business Object Architecture (www.omg.org) (discussed below) and attempt to formalise this through the development of a formal framework. Our reasons for this pursuit are;

- Although much has been written on eBusiness strategy, there is no formal framework to allow the businesses in pursuit of learning to connect (synthesis) all the facets of the problem domain.
- Given that there is a strong rationale by the industry and academia for the use of object oriented paradigm in the design and development of eBusiness infrastructures. It would be a logical extension to define eBusiness strategy in object terms in the first place.

For the purposes of this paper, we subscribe to the school of thinking that object-oriented frameworks offer the opportunity to greatly improve the flexibility and responsiveness of information systems development efforts (Larman, 1998) [18]. We do however recognise that alternate and strongly argued cases exist that argue against this assertion. Therefore, business objects on the other hand, are independent entities, which perform specialised functions with minimal knowledge about other components in a domain. However, in order to collaborate with other domain objects, they require a common frame of reference, which clarifies how object categories are related to one another (BODTF, www.omg.org). The OMG Business Object Architecture (BOA) represents real world concepts

and business processes in a natural way (www.omg.org). OMG Business Object Domain Task Force (BODTF) define BOA as "To represent the components that are used to model the business problems and build the system" [Casanave95] [2].

Business objects exist at the micro and macro-levels of system architecture. They are designed to plug-and-play into a larger architecture, with perhaps a few minor customisations [Malveau et al, 1997] [2]. That is, business objects are intrinsically dependent on the framework, which acts as their operating environment for portions of their functionality. There is no standard way defined to create business objects, therefore, for our purposes, we propose to use OMG's Unified Modelling Language (UML). Specifically we will use Event diagrams, which will provide an overview of the business processes involved in the formulation of eBusiness strategy. Then an Interaction Diagram to describe the business processes step-by-step. The Use Cases and Actors bring out the names of the tasks and how to perform them.

2. eBusiness Strategy

From all that is written on and about eBusiness, we can synthesise that, essentially, eBusiness is about new business models, strategies, and tactics that are made possible with the capabilities brought by the Internet and related technologies. On the same token, eBusiness opportunities should support the business strategy aligned with business drivers.

Decisions to deploy eBusiness initiatives should be made with a clear understanding of the impact they will have on all aspects of the business, its existing strategy, business partner relationships, business processes, branding, and so on. This also means that the business must own the strategy, the information technologist may be a catalyst for eBusiness, but the business areas should be the owners. During the strategy formulation process, the business executives and other key stakeholders in the business areas should be closely involved, both to contribute their views and input, and to own the decisions regarding what should be done with eBusiness, and when.

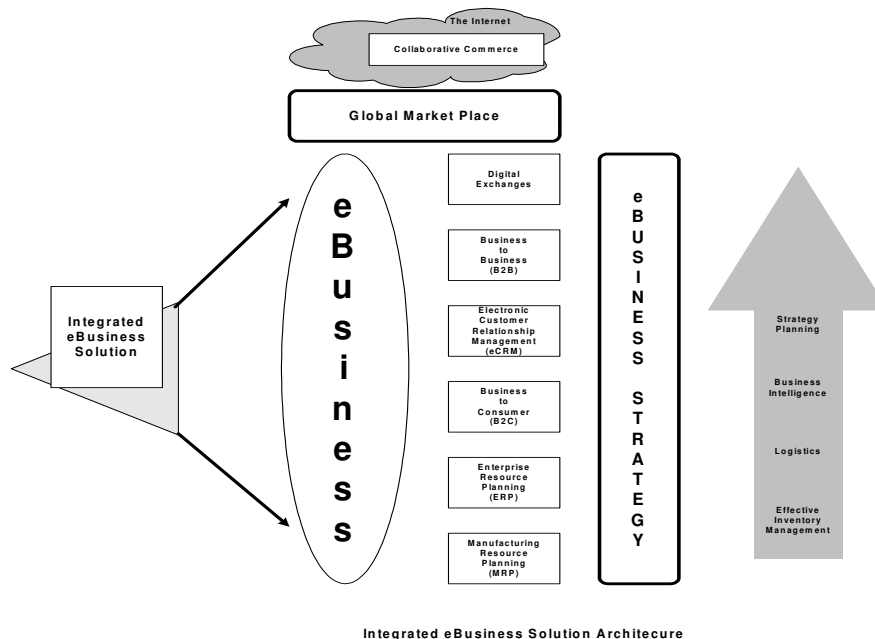
But, the term eBusiness also implies the transformation of existing business processes to make them more efficient. To engage in eBusiness, companies need to be able to unlock data in their legacy (back-end) computer systems, so that they can share information and conduct electronic transactions with customers, partners, and suppliers via the Internet. For some companies, engaging in eBusiness means adopting new web-enabled business models, such as selling products directly to consumers, or joining in online business cooperatives with their competitors (digital exchanges).

The purpose of including the figure below is to highlight the realisation of the eBusiness strategy in practice. That is, we believe that the strategy creator should have at the very least a broad understanding

important that the business area owners should own the strategy that consequently means owning the realisation of the strategy. Hence the business-oriented stakeholder should have a good comprehension of the eBusiness strategy in practice. It is important to note that by owning the “realisation of strategy”, we mean owning the resultant architecture and infrastructure and not the day-to-day operational issues that are managed and owned by the information technologists.

The architecture diagram below identifies the various facets of an integrated eBusiness solution from traditional manufacturing resource planning (MRP) through B2C/B2B to participation in digital exchanges, this in strategic terms maps to effective inventory management at the MRP facet at the lowest level through logistics (ERP) to strategy planning at the higher-level facets. Thus, in order for an organisation to develop a successful eBusiness strategy, the first step in the roadmap of the strategy formulation process should be to identify its point of engagement as identified in the architecture diagram. That is, at what point of participation in eBusiness does the business think it can gain the maximum benefit. Clearly this is totally dependant on the type of business it is and what product or services does the business think will gain maximum benefit.

eBusiness is a way to make possible improvements in a company’s existing business processes (this also



of what this realisation will look like in practice. As we have discussed in the previous section it is

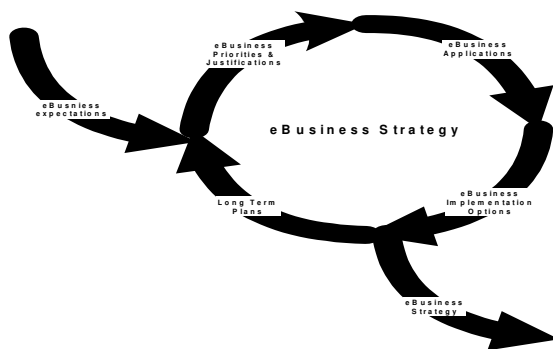
takes the assumption that the existing business processes are in a rationalised form). Therefore, the

processes that will be integrated into the eBusiness infrastructure must be both known and technologically achievable (hence the need for the strategy formulator to have at the very least a broad understanding of the realised strategy in practice). To implement eBusiness without clearly understanding the company's business goals or processes is likely to lead to failure. Therefore we can conclude that, the goal of an eBusiness strategy is to help the company answer the following questions: (eBusiness Strategy Development, Base Consulting Group, 2000) [1]:

- What are the eBusiness priorities and their justifications?
- What type of eBusiness applications make sense and why?
- What are the implementation options and challenges for the high priority applications?
- What is the long-term plan and timeline for implementing the applications?

3. eBusiness Strategy Lifecycle

In defining our eBusiness expectations, one or more process driven business objects require identification. In discovering the latter, each business object examines a set of the organisation's business processes to determine the opportunities for process improvement and web implementation. The eBusiness strategy lifecycle model below identifies the eBusiness expectation discussed above as the point of engagement for the strategy formulation process and the formulated eBusiness strategy as the exit point. The important point of comprehension however, is the iterative process between engagement and exit denoting that both expectations and formulated strategy are dynamic in nature and subject to continuous evaluation.



eBusiness Strategy LifeCycle

The initial definition of eBusiness expectations determines both a direction and a framework within which the eBusiness strategy formulation can be performed. Example expectations could include some or all of the following;

3.1 Reach new markets; potential target customers use the web more and more to identify solutions to existing problems. Organisations who wish to reach these new and presently unknown customers can do so through successful implementation of an eBusiness strategy.

3.2 Improve perception of company and products; a successful eBusiness strategy can express the strengths and vision of the enterprise. Products and services can be demonstrated as a total solution (turnkey) to customer problems.

3.3 Eliminate intermediaries and redundancy; distributors or resellers within the supply chain of an organisation and its customers add cost to the end product, or service sometimes without adding any significant value. Furthermore in some instances these also prevent the organisation from understanding the true customer needs. A successful eBusiness strategy allows the organisation to deal directly with the consumers of their products and services.

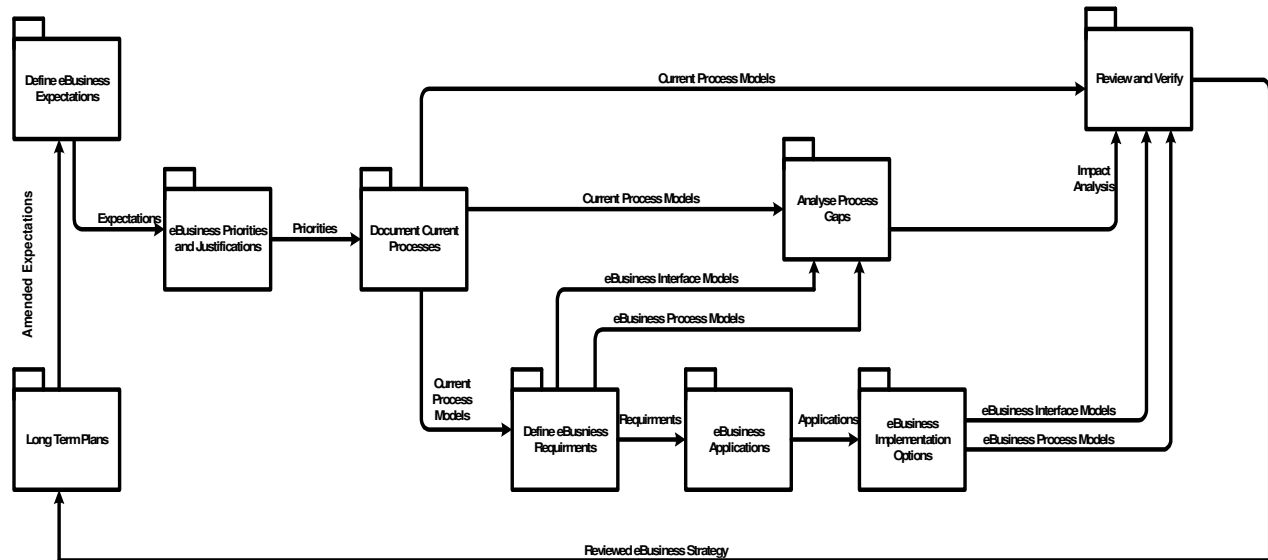
3.4 Lower transaction costs; stakeholders within the organisation perform most of the interaction with external parties. A successful realisation of an eBusiness strategy allows for the possibility to deal directly with these parties through automated business processes (business objects), where appropriate. This removes the need for knowledge workers (the most expensive resource) from these interactions and thereby lowering transaction costs.

3.5 Convenience to external parties; all automated business processes provided via the implementation of an eBusiness strategy available to any link within the supply chain at any time (24X7 business operating hours).

3.6 Reduce delivery times; through utilisation of eBusiness processes, customer transactions are more direct and immediate. For example, orders, containing correct information, are received directly and can be fulfilled and shipped more rapidly than with traditional methods.

3.7 Personalise and improve customer service; eBusiness strategy implementations with

It is important to note that in the process of identifying eBusiness expectations, defining too big of an expectation could result in too big of a business object with resulting unmanageable implementation.



strong data accessibility offer customer interaction that is more personal and customised. That is, customer data allows the automated business process to present the customer with customer-specific information and offer new information that fits the customer's profile (eCRM).

The eBusiness expectations also determine the portion of the overall corporate strategy that will help to define the eBusiness strategy and its final implementation.

4. Business Interaction Model

The business interaction model illustrated over page describes the eBusiness strategy lifecycle illustrated earlier in object terms. Each business object determines a business process and more importantly the impact of the process on the business itself as discussed earlier. This is achieved through identification of a set of eBusiness objectives that the organisation should realise as a result of the eBusiness strategy formulation. It is also envisaged that the business interaction model should also serve as a basis for discussion through allowing the participants to concentrate on

- Customer relationships,
- Supplier relationships,
- Internal relationships and
- Competitive issues individually.

Whilst on the same token defining too small of a expectation will result in insignificant business objects that in implementation will result in too small of a competitive advantage to be of any significant business value. The business interaction model above profiles the portion of the business that falls within the scope of the eBusiness strategy. The work packages and the business objects therein also identify the major stakeholders involved in the formulation of the eBusiness strategy. The business interaction model also highlights the existing political boundaries within the business. The arrows express participation (relationships) between these internal and external business objects.

It is important to note however, that our business interaction model does not concentrate on the definition of the individual strategic business units involved, rather on the communication of information between these boundaries. The eBusiness strategy formulation process also focuses upon these participations in the business interaction model to identify opportunities to eEnable interactions with customer, suppliers, and within the business itself.

The eBusiness objectives mentioned earlier are then developed through examining the goals, strengths and weaknesses that currently exist in each relationship through carrying out formal analysis methods such as SWOT. Given these, qualities and objectives are set for the areas that can be strengthened through

applying eBusiness approaches and technology enablers, eBusiness objectives can target;

- Realisation of, and meeting customer needs and requirements,
- Reduction of “time-to-market”, for products and services,
- Establishment of more effective customer relationships,
- Meeting or beating competitor/industry best practices,
- Achieving desired market share,
- Excelling in, or changing the market profile in which the business exists in,
- Establishing better relationships with suppliers,
- Reduction of day-to-day operating costs, etc.

Using the business interaction model and the eBusiness expectations, the eBusiness formulation practitioners determine the scope of the eBusiness strategy through identification of the following:

- Which organisational interactions can benefit from eBusiness technology?
- What business processes implement these interactions?
- What events initiate these business processes?
- What resources do the processes require?
- What products and/or services do the processes produce?
- Who is involved in the process by providing resources, performing activities, or receiving the

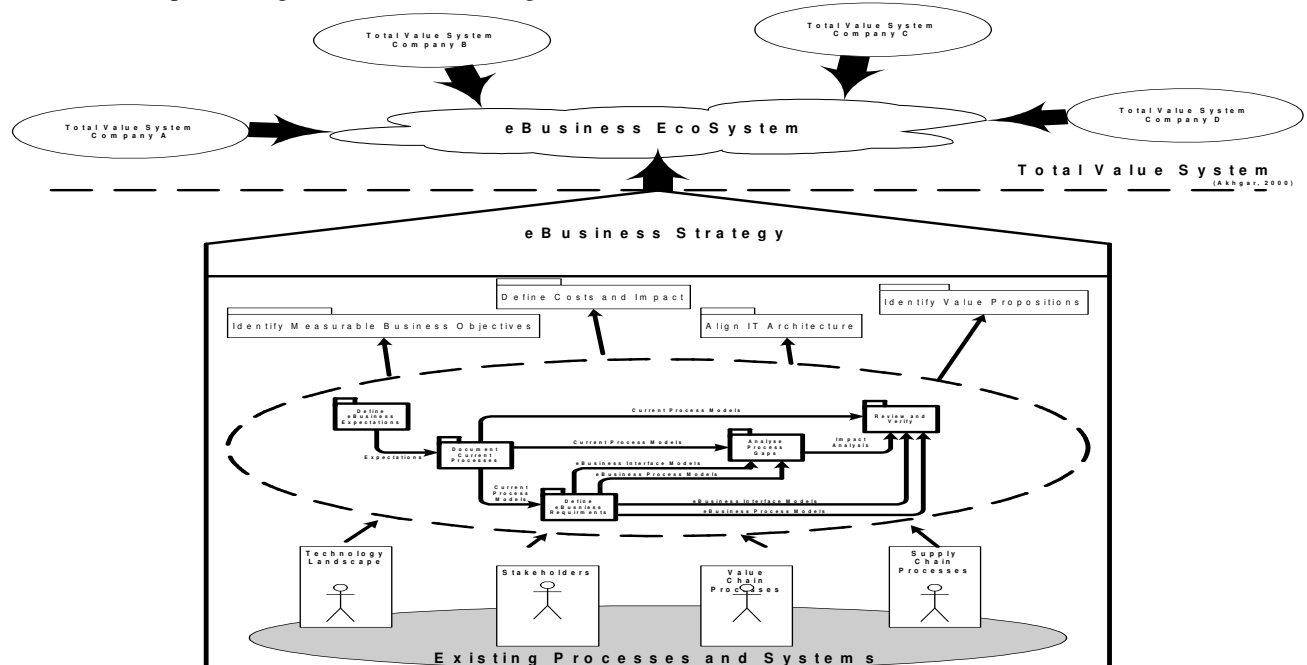
products and services?

- What locations are affected by process change?

The current state of each business object is documented utilising usecase models. Through this method of representing the business objects will allow us to identify obvious problems and limitations such as, non-value-adding activities and process disconnects. Usecase models will also reflect the various facets of the processes under analysis, such as its “who, what, when, how, how much and how long”. Utilisation of usecase models in the formulation of eBusiness strategy also allows us to better understand the current cross-functional (and cross enterprise) aspects of a business object. We submit that, it is in the usecase models where eBusiness opportunities are identified. Furthermore, during detailed analysis in the creation of usecase, we also can identify issues such as poor communication, poor data quality, poor availability, poor responsiveness, etc. Review and verification is critical in bringing the eBusiness strategy formulation to successful implementation. Just as it is to ensure that expectations are met.

Having explored the constituent components in formulating an effective eBusiness strategy, we can synthesise these in the framework illustrated below.

The framework above illustrates the eBusiness strategy formulation roadmap mentioned earlier in diagrammatic form, where existing business processes are modelled through utilisation of usecase modelling techniques, as well as formal analysis techniques such as SWOT, BPEST, Stakeholder analysis, etc. The result of these investigations is the input to the business interaction model discussed before. The business interaction model and the business object



discovery process can draw us to synthesise that to build an Effective eBusiness Strategy, there are four key issues that apply to most organisations and can be viewed as a prerequisite to formulating an effective eBusiness strategy, these are;

4.1 Identify measurable business objectives; implementing an eBusiness strategy is a major undertaking. To ensure it is successful, objectives need to be identified in the beginning and measurable goals set. These may include cutting out steps in a business process, reducing errors by eliminating paper-based transactions, introducing new market opportunities or improving information access among managers, departments or strategic business units.

4.2 Define costs and impact; the costs of implementing an eBusiness strategy are measurable in terms of time, resources and money. Some strategies may have lower upfront costs, but the time-to-implement may be so lengthy and complicated that the actual costs are much higher. The impact on business units also must be anticipated. Introducing an eBusiness strategy in one department may result in crossover benefits to other operating functions of the organization, such as, using eBusiness technologies to reduce routine HR functions frees HR professionals to take a more active role in strategic planning for the organisation.

4.3 Align IT architecture; introducing eBusiness technology across multiple strategic business units may require a major commitment of IT department. Using an open architecture configuration eliminates this concern since eBusiness applications are transparent to all major hardware platforms, operating systems and databases.

4.4 Identify value propositions; implementing an eBusiness strategy will be a lot smoother if its value is made clear to all stakeholders. eProcurement applications, for example, add value at the purchasing department level by reducing errors and streamlining processes. At the organisational level value is added by facilitated group purchasing which cuts costs and vendors receive added value because they have faster access to information so they can track invoices and payment. The execution of the business interaction model will place us in a position to clearly identify and apply quantifiable values to the four issues discussed above, the net result of which is the eBusiness strategy itself.

5. Conclusion

eBusiness technology provides organisations with a great opportunity to enhance relationships with external and internal parties across its value and supply chains, to realise its competitive advantages.

In doing so, however, the solution is not in the application of technology alone, to develop an effective eBusiness strategy and realise a successful implementation, existing business interactions must be modelled and analysed to identify the interactions that will benefit from this paradigm.

The business processes supporting these interactions must be redesigned to effectively perform the procedures behind the interactions. These changes to the business will drive changes to the supporting technology and to the stakeholders that perform the business processes using the technology.

In this paper, we have attempted to put forward a framework that encompasses and defines this process in object terms, we have accomplished this by adopting the OMG's Business Object Architecture and UML notation.

What we mean by the term model is to represent the problem domain at its most fundamental levels. That is, to model the existing business processes via UML event diagrams to initially map an overview of the business processes. Interaction diagrams (business interaction models) are then used to describe the business processes involved in detail and to identify candidate business objects and their impact on the business. Use case interaction models are used to identify cross-functional and cross-enterprise communication between business objects to help in identification of eBusiness opportunities.

From what we have discussed, it can be synthesised that the eBusiness strategy formulation process for any organisation is simply an instantiation of the framework we have submitted. Where the individual packages are serialisable interfaces that extend the core classes represented in the framework.

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