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Implications of SOA on Business Strategy and Organizational Design

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Abstract: The need to somehow change the way we do business as a prerequisite to unlocking the transformative potential (and resulting competitive advantage) inherent in technological innovation is becoming increasingly recognized.

The scope of discussion this time around however moves beyond organizational efficiencies to whole of market efficiencies, and the strategic implications this has in terms of planning and organizational design. Many business leaders have grown progressively indignant towards the over-sold and under-delivered powers of technology to effect their bottom line - these, the same people who are responsible for setting strategic direction, business planning, and capital investment.

This is the first in a series of articles targeting the business community. It explores the implications of SOA on strategic planning and organizational design – from a business perspective.

Introduction – From Business Tasks to Business Services

Since the release of Hammer & Champy's "Manifesto for Business Revolution" [REF-1] it has been well recognized that the manner in which business is carried out can be improved by leveraging the potential of technological innovation. This publication established a clear link between technology and business strategy, taking IT from the basement to the boardroom, giving it an authoritative voice in "how" the corporation should conduct its business. The condition that precipitated this revolution was the emergence of the digital enterprise - the pervasive connectivity of people, information and tools across the corporation.

The digital enterprise was not the result of any single disruptive technology - it represented rather a tipping point in terms of the adoption of a collection of harmonious technologies that lead to a fundamental shift in the way we viewed the corporation. In the case of Hammer & Champy, it was the realization that corporations were more than a collection of tasks; they were a collection of processes. This realization effectively overturned the century-old view that tasks were the fundamental building blocks of the corporation [REF-2] and that organizational efficiencies could be realized at the task-level, by applying scientific methods to determine (and technology to enable) the most efficient way to do a job.

Hammer & Champy argued that technology could be applied at the process-level to significantly improve organizational efficiencies through streamlining organizational processes, structures and governance, thereby bringing to the mainstream the discipline of business process reengineering, and the concept that business processes are the fundamental building blocks of the corporation.

A decade later, we have reached the next tipping point marked by the emergence of the digital market - the pervasive connectivity of organizations, people, information and tools across the marketplace, which is driving a fundamental shift in the way we view the corporation, i.e. as more than a collection of processes, but as a collection of services. As such, technology is now targeting the service-level to significantly improve market efficiencies, bringing to the mainstream service-oriented architectures, and the concept that business services are the new fundamental building

blocks of the corporation.

The IT Utility Curve

Understanding the historical context is useful as it helps to expose the underlying pattern that exists in the evolution of technology and corporate strategy. Technology is enabling in so much as it creates efficiencies in the current business context. But more importantly, it is disruptive because it leads to seismic shifts in thinking that are the result of accumulated pressures from technology build-up over time which displace the current order, creating a new competitive landscape. The threats and opportunities that exist – and therefore types of strategies required to succeed in each – are markedly different.

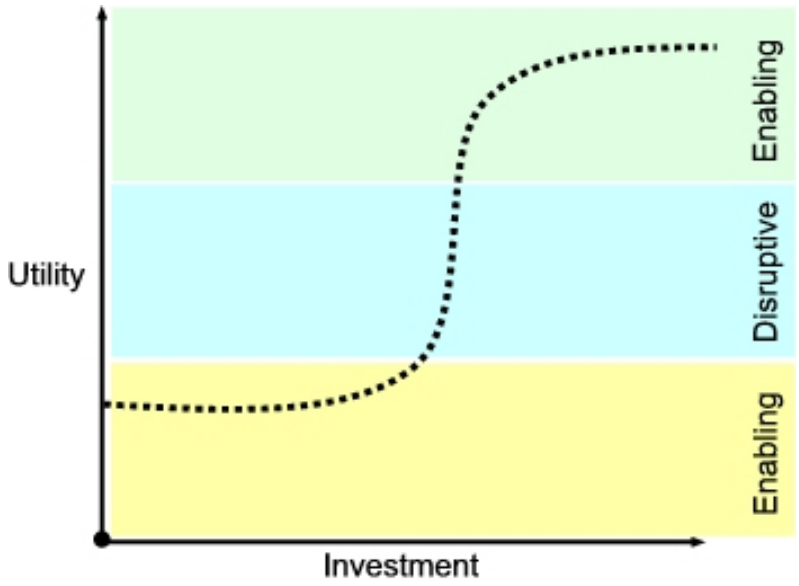

Figure 1: Utility Curve: Phases.

The transitions between periods of enablement and periods of disruption form an evolutionary pattern resembling an "S" curve. (Figure 1). Understanding the dynamics of this curve is critical to corporate strategy around service-oriented design.

The IT Utility Curve oscillates between phases where technology is applied to extend existing business models (enabling), and periods where it displaces them (disruptive). Overlaying this are three distinct modes that characterize the way in which technology is exploited within the corporation: Experimentation, Innovation, and Commoditization (Figure 2). Together, these form a useful framework for differentiating between strategic and tactical opportunities from a corporate planning perspective.

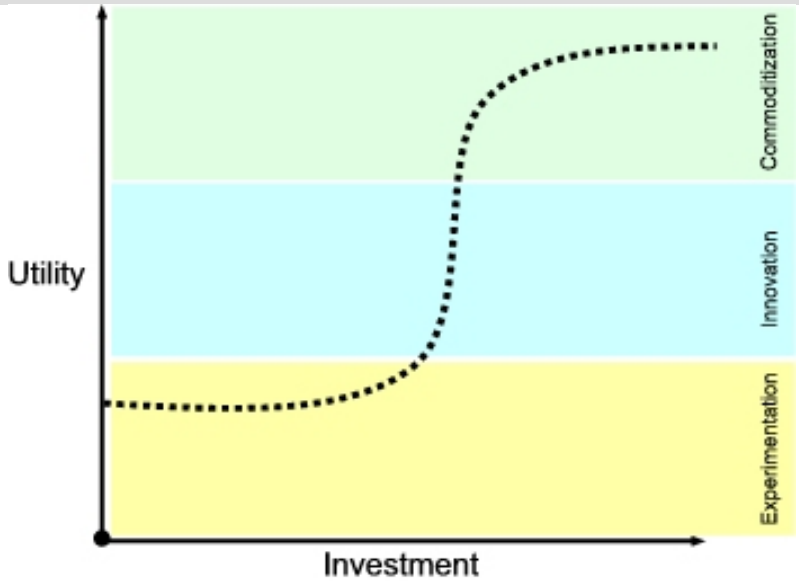

Figure 2: Utility Curve: Modes.

Experimentation: Adopting Service Technologies

Experimentation uses technology as an enabler to solve existing business problems. Exploitation of new technologies within the existing business context can provide marginal cost/quality efficiencies. Often however they can also add cost to the business and erode overall customer satisfaction. Early efforts to exploit Internet technologies as a service delivery channel for example effectively resulted in duplicating service delivery costs without any appreciable difference in customer base.

The point is adopting new technology will not provide any sustainable competitive advantage or fundamentally change the competitive positioning of the corporation. Further, it is unlikely that the potential disruptive opportunities lying dormant in the new service technologies will be immediately apparent – even when they are described to us! If it were that easy – they would all do it, and there would be no relative advantage. Experimentation mode (and the necessary technology investment to support it) is nevertheless an essential part of the utility curve, as it provides the learning environment necessary to progress to the next phase – Innovation. The appropriate planning posture here is tactical. SOA-driven technology investments should be supported by sound business cases with short-term planning horizons.

Phase	Enabling	Disruptive	Enabling
Mode	Experimentation	Innovation	Commoditization
Planning Posture	Tactical	Strategic	Tactical

Table 1: The Experimentation Mode of the Opportunity Assessment Matrix

Innovation: Strategic Application of Service Technologies

Innovation is characterized by the exploitation of new service technologies through fundamental changes in corporate strategy and design that disrupt the competitive landscape. In this mode, the corporation is the enabler in that changes to corporate strategy and design enable the successful exploitation of new technologies to create significant cost advantages, and/or new value propositions. During this disruptive phase, a new order based on service-oriented computing is gradually established from which new markets and market leaders emerge. Often first movers capitalize on a new uncontested market-space, creating an insurmountable advantage over would-be competitors. Alternatively, in the absence of barriers to entry common to established markets, it is the second movers who capitalize on the mistakes of early SOA adopters generation in order to “get it right”.

The point is that speed; agility and resolve are critical to succeeding in the disruptive phase. The appropriate planning posture here is strategic. Changes to the business context and competitive landscape require a strategic response, in terms of anticipating and understanding the nature of the underlying change, and the ability and willingness to adapt to

the new order. The traditional business case approach is of limited use as it is based on the legacy business context. Technology investments during a disruptive phase should be selected based on their strategic fit. The majority of investment however will not be technology related, as a good deal of the technological capability will have been built-up during the previous phase. The real effort will be in implementing the changes necessary to adapt to the new order.

Clearly not all corporations will be willing to take on the risk of committing to wholesale changes in their business in response to an anticipated or emerging change in the competitive landscape. In fact, the incumbents or market leaders of a receding order are often displaced in a disruptive phase, as they have too much at stake in the status quo, and are therefore often unwilling to accept, or unable to see the impending changes to their business context. Similarly, it is often a competitive force from outside a given industry that emerges as the market leader, as they are not mired in the current business context, and are therefore better able to see disruptive opportunities.

In response to this corporate inertia many organizations have adopted the practice of “spinning out” (while maintaining a financial stake in) parts of their business to improve their ability to anticipate and react to disruptive opportunities. It is only during this brief disruptive phase that the opportunity to create a new market and become a market leader exists.

Phase	Enabling	Disruptive	Enabling
Mode	Experimentation	Innovation	Commoditization
Planning Posture	Tactical	Strategic	Tactical

Table 2: The Innovation Mode of the Opportunity Assessment Matrix

Commoditization: Services as Products

While few corporations will execute an innovative strategy during a disruptive phase, most if not all will participate in the commoditization of the new order. Market commoditization involves the adaptation of the market to the new competitive landscape and market leaders. Operational efficiencies are replicated driving convergence and standardization, and products and services are created and/or adapted to complement (and thereby reinforce) those offered by the market leaders. Investments in technology are made to enable corporations to survive in the new business context – but without the substantial return on investment.

As stated at the outset of this article, we are approaching a new tipping point precipitated by the arrival of the digital market. Business services are the new fundamental building block of the corporation. Service-orientation will be key to innovating during the approaching disruptive phase. Evidence of experimentation abounds in the many case studies of organizational efficiencies realized through service-orientation. The next seismic event however will not be intra-organizational (although it will be enabled by significant changes to the organization). It will be inter-organizational, with whole of market efficiencies arising from the event-driven dynamic arbitrage between service-level supply and demand.

Given the above (albeit grossly simplified) description of the emerging strategic landscape, how do corporations with an interest in (and stomach for) competing for new markets and market leadership adapt to the new order? While we can’t definitively answer this question, we can improve our general understanding of the opportunities that lie ahead by giving some thought to the boundaries of the corporation – that is, why organizations choose to internalize certain activities (manage as part of the organization), and why they choose to externalize others (purchase in the market), and the concept of commoditization from a product or service perspective.

Phase	Enabling	Disruptive	Enabling
Mode	Experimentation	Innovation	Commoditization
Planning Posture	Tactical	Strategic	Tactical

Table 3: The Commoditization Mode of the Opportunity Assessment Matrix

Services and Business Transactions

While much has been written on the boundaries of the corporation, the seminal work is attributed to Ronald Coase's Transaction Cost Theory (TCT) [REF-3]. According to TCT, the decision to internalize an activity, or alternatively rely on the market is based not only on a comparison of cost of the product or service (assuming equivalent value); it must also consider the cost of the transaction itself. The cost of the transaction would include the cost of sourcing, negotiating, monitoring, dispute arbitration, and exit.

For commodity products and services, these costs tend to be lower. They are accessible. What is being exchanged is well understood by all parties. There is no persistent obligation. There is limited risk. The contract is terminated with the completion of the transaction. In short, most organizations tend to externalize activities that have been commoditized. They do this because the transaction costs for commodity products and services are significantly lower than non-commodities. Transaction Cost Theory, coupled with economies of scale (increased volume results in lower unit cost) and principle of focus (optimizing activities around focused set of products or services results in greater efficiency and quality) provide a powerful conceptual framework capable of explaining why organizations choose to internalize or externalize business activity.

This has extraordinary implications for service-oriented architecture. The two levers then that must be considered from a service oriented business strategy and design perspective are transaction costs, and commoditization. The two are inextricably linked in the sense that transaction costs depend on both market efficiency, as well as product efficiency. Together, these ideas shed some light on the opportunities that lie ahead.

Understanding Transaction Costs

- *Market Efficiency* - A characteristic addressed by the Digital Market.
- *Product Efficiency* - A characteristic addressed by SOA.
- *Sourcing* - Finding and comparing products and services.
- *Negotiating* - Specifying what is included in the transaction.
- *Monitoring* - Ensuring compliance with the specification.
- *Dispute Arbitration* - Resolving contract disputes.
- *Exit* - Absolution from obligations under the contract.

As discussed previously, the next seismic shift has been precipitated by the emergence of the digital market. The digital market represents a monumental leap forward in terms reducing transaction costs, i.e. market efficiency. The largest impact has been in the cost of sourcing and monitoring transactions. When we consider sourcing in the broad sense of not only finding but also comparing competing products and services, as well as the ability to track the status and delivery of these electronically, the impact of the digital market place on transaction costs becomes clearer.

The success of Amazon and E-bay, (and various other aggregators of market supply and demand) is in large part based on their ability to lower the cost of sourcing, monitoring, and to some extent negotiating the exchange of products and services. While one cannot argue with the success of these business models – at least in terms of the scale of their business, the scope of their business in terms of the products and services that are exchanged in many respects limited. The important realization here is that the digital market speaks only to market efficiency – it has nothing to say about product efficiency.

When I speak of product efficiency, what I am referring to is where the product or service rates on a commoditization scale. At one end of the scale the only appreciable difference between option A and option B is price, and the contractual obligation would terminate with the completion of the transaction. This would be a form of extreme commoditization. At the other end of the scale, a decision to purchase option A or option B from the market would require a great deal of time negotiating, articulating and understanding each. There would be significant risk inherent in the transaction, and therefore need for mechanisms for monitoring contractual compliance and dispute arbitration. In short, it takes both market efficiency and product efficiency to drive down transaction costs. The digital market addresses the former – SOA addresses the latter.

Service-Orientation Principles and Service Commoditization

Service-oriented architecture is an extraordinarily powerful concept from a business perspective. It represents the seismic shift in thinking necessary in terms of the next step in the continuous evolution towards zero-transaction costs

or the perfect market. Critical to getting it right though, is the understanding that SOA is about service commoditization.

Erl's principles of service-orientation [REF-4], contracts, coupling, abstraction, reuse, autonomy, statelessness, discoverability and composability, while written in the language of systems architecture and design, are from a business perspective about service commoditization. They speak to the design of commodity services that drive down transaction costs through improved product efficiency. The design principles from a business perspective are quite similar. I will describe these and allow the reader to draw the comparison.

Borrowing from an article by Thomas Davenport [REF-5] from a business perspective, there are three fundamental elements that affect service commoditization (we can substitute the notion of service for process). The first of these is service standards. Service standardization drives down transaction costs associated with sourcing (again broadly speaking this would include the notion of comparability), negotiating, monitoring, dispute resolution and exit.

Service standardization is being achieved through the development of business reference models, which capture and articulate the various facets of an optimized collection of business processes. Most business reference model generally standardize the inputs, processing and outputs of a service which addresses in large part many of the design principles identified for SOA. Davenport goes on however to argue that two additional standards are necessary – performance and maturity.

Performance and maturity standards address the inherent risk of business decisions. Firstly, performance standards provide for comparability, compliance monitoring and dispute arbitration resulting in lower transaction costs. Maturity standards speak to the quality of a service offering, in terms of its longer-term dependability and compliance to performance standards. In short, they address the degree of risk inherent in creating business dependencies on it. While service standardization is necessary, it is not sufficient to achieve service commoditization. In addition, performance and maturity standards are necessary, as they provide the necessary business context to address the inherent risk of business transactions generally.

Conclusion

We are approaching a new turning point precipitated by the arrival of the digital market. This milestone is marked by a shift in mindset and focus from processes to services, from organizational efficiencies to market efficiencies. It represents a transition to a disruptive period that will level the current business landscape and create new markets and market opportunities. SOA is an incredibly important landmark in this emerging landscape. The digital market speaks only to market efficiency – it does not address product efficiency. The principles of SOA design target product efficiency by driving product commoditization. They alone are not enough however. The SOA world must also create the necessary business context to be successful.

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