

Aligning Business and Technology Strategies

A Comparison of established and start-up business contexts

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Abstract—Traditional assumptions in defining business strategy have changed, leading to a need for more dynamic planning. With the role of technology varying from ‘enabler’ to ‘driver’ of the business strategy, business and technology strategies need be in close alignment. Both established and start-up companies need to adapt to this change in the planning paradigm.

I. INTRODUCTION

Traditional approaches for developing technology strategies tend to assume that business strategy is well-defined and key imperatives agreed. The stability and predictability of the business plan is assumed over a multi year period, and technology imperatives and investment decisions are derived from it. Once the technology strategy is defined and agreed, the focus is on execution, and there is limited need for revising the strategy over the planning horizon.

Such an approach is valid under two broad assumptions. Firstly, the business strategy and plans should be stable over the planning horizon. Secondly, technology maturity cycles should not be shorter than the planning horizon, i.e. all available and potential technology choices available over the planning horizon can be anticipated and accounted for in the technology strategy planning process.

The experience of corporate companies in recent years suggests that neither assumption is true. The age of five-year business plans is dead. Across most industries, businesses are pursuing shorter strategic planning and execution cycles, requiring technology to deliver solutions within dramatically compressed timeframes. Often, multiple strategic options are pursued simultaneously, and business plans halted if they do not demonstrate promise. Rapid and unforeseen changes to the business environment, e.g. competitive price cuts, mergers etc, often force unplanned responses. Businesses are also more “connected” than before – with alliance partners, vendors, customers, other stakeholders – implying the need for more open and flexible approaches to technology planning. Business initiatives pursue more demanding tactical objectives, e.g. shorter time to market and customer intimacy, placing unprecedented demands on technology.

New technology is rapidly becoming cheaper, faster and more sophisticated (Moore’s Law/Gilder’s Law). A multi year technology “grand plan” is likely to become obsolete rapidly, if it does not include mechanisms for anticipating

and adopting new technologies. In many industries, the role of technology has changed from an “enabler” to a “driver” of business strategy. For example, banks and financial services companies have harnessed the rapid maturity of online technologies to offer innovative e-banking products and channel extensions to existing products.

Our work, with several established and startup businesses, suggests that the traditional approach for defining technology strategies has run its course. Rapidly changing and flexible business strategies are a fact of life. As the business strategy starts to diverge from initial assumptions, the gap with technology starts widening – technology can no longer keep pace. The CIO/CTO is forced to focus more on day-to-day firefighting in “catch up mode”, rather than invest time and funds in identifying and assimilating new technologies. This is an untenable proposition as a long-term strategy.

This paper proposes an approach for ensuring the link between business and technology strategies by drawing upon the contrasting experiences of an established business and an entrepreneurial start-up company.

We would like to draw the attention of the reader to the limitations of this paper. Our described approach is not intended to be a comprehensive strategic planning methodology for business and technology. We have captured our experience with established and start-up companies and conceptualized the experience, mainly with a view to managing discontinuities.

We have not dealt with the impact of more evolutionary and predictable changes faced by businesses. We have incorporated the elements essential for achieving and maintaining alignment between business and technology strategies, but would like to emphasise the need for constant monitoring of the business environment and technology developments in order to manage them proactively rather than reactively.

II. OVERVIEW OF THE CASE STUDIES

In this section, we first establish the two contexts, examine the differences and identify the discontinuities experienced by the two businesses.

A. European Utility Company (Company A)

Company A is an incumbent gas and electricity supply company in Europe. Traditionally Company A has operated

in a highly regulated environment with a captive customer base and no incentive to innovate or cut costs. The European Union directive on liberalization of energy markets requires each EU member state to open up progressively their domestic markets to competition. This implies that energy consumers would no longer be tied to their incumbent supplier but would be free to choose any supplier

Rapid market liberalization resulted in intense price competition both in wholesale and retail segments, entry of new non-traditional competitors and rapid erosion of the captive market share of the incumbents

This discontinuity forced Company A to rethink every aspect of its business – become more customer focused, dramatically reduce its cost to serve, face significant margin erosion due to intense price competition. This also forced a fundamental re-evaluation of the role of information technology within the company. In the days as a regulated utility with an assured market, IT had always played a reactive role - new IT solutions were added ad hoc, there was no transparency into costs and benefits, several IT initiatives were duplicated across the company. With IT always in catch-up mode, projects were habitually delivered late and over-budget.

The challenge going forward for IT was clear – be more closely aligned to business strategic imperatives

B. The entrepreneurial start-up business (Company B)

Company B was started by an entrepreneurial couple while at university and was aimed to serve the process automation needs of local and regional government organizations. The university, that helped incubate the company, is also amongst its first few customers.

Realizing quickly the potential of the product, the entrepreneurs decided to take the company on a path of expansion. At this stage, they sought new investment in the form of equity capital as well as the expansion of the board of directors, with non-executives. The new board now includes an independent local entrepreneur, a representative of the venture capitalist and the technology strategist in the company. The geographical focus of the company was expanded to Europe but kept within the government sector.

The company also brought in a new chief executive, who led the company into a few key alliances and set up an independent advisory board comprising technology industry specialists. Along with an alliance partner, the company participated in a high profile central government tender but did not win it. This loss however catapulted the company into visibility. This encouraged a large utilities player to approach the company to adopt this start-up's product for internal use as well as for creating a new business unit.

At this stage, the company faced several tough business and technology decisions such as whether utilities would be an additional market focus or the only new market focus for the company, whether the intellectual property and product strategy would have to be changed to accommodate this market focus or would two separate product road maps will have to be maintained, how to create the required domain knowledge in-house or else how to balance intellectual property considerations with domain knowledge supplied by the alliance partner namely the utilities company.

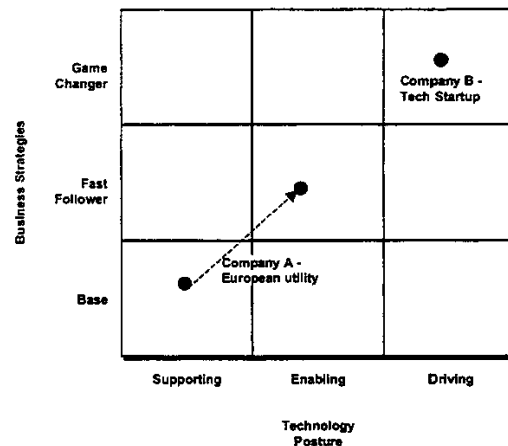


Fig. 1. Business Strategy/ Technology Posture Matrix

III. BUSINESS/ TECHNOLOGY STRATEGY ALIGNMENT FRAMEWORK

In an ideal scenario, a company would begin by defining strategic imperatives and the tradeoffs required in order to meet strategic objectives. This provides the framework for making the technology choices and technology sourcing decisions.

Drawing upon our experiences with Company A and Company B, our approach to business/technology alignment is expressed as a continuous cycle comprising four steps, depicted in Figure 2. The objective is to mitigate the traditional problem of technology being out of step with business strategy and to ensure that the business impact of technology decisions is clearly understood and vice versa.

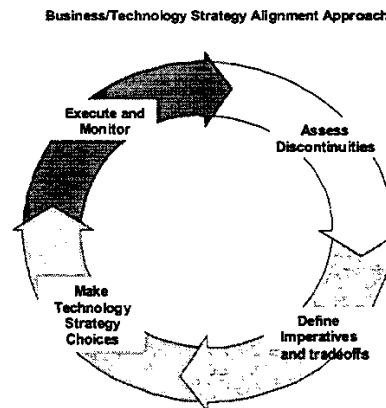


Fig. 2. Business/ Technology Strategy Alignment

The above approach is not intended to be a comprehensive strategic planning methodology. It incorporates the elements essential for achieving and maintaining alignment between business and technology strategies.

We describe each of the steps in this approach below in brief.

A. Assess Discontinuities

We define a “discontinuity” as rapid internal or external change, which serves as the stimulus forcing change in the business or technology strategy. The nature of discontinuity drives the imperatives to be satisfied by the business/technology strategy. We shall discuss three types of discontinuities through the case studies. **Business discontinuities** represent rapid changes in market, product competitive, regulatory or operational strategies. **Technology discontinuities** are typically disruptive technology innovations, rapid technology maturity and decline or inability of existing technologies to meet business requirements. **Stakeholder discontinuities** are brought about through changes in stakeholders (internal or external) or stakeholder expectations – for example, changes in ownership structure.

B. Define Objectives and Imperatives

The business objectives are typically specified for the near and medium terms. These typically include a dashboard of financial measures (e.g. revenue, profitability, market share) as well as non-financial ones. In the case of Company B the near term objective was survival and remaining in business. A set of business and technology imperatives form the foundation of the alignment of business and technology strategies. These are the outcomes, which must be achieved, in order to meet the strategic objectives. Examples of business imperatives include cost leadership, new business capabilities, shorter time to market etc. Examples of technology imperatives include improved scalability, availability, greater ease of information sharing etc. Although a distinction is being made here between business and technology imperatives, their development is likely to be iterative rather than sequential in practice.

C. Make Technology Choices

The process of strategy development involves making choices on business levers (such as product, pricing, markets, positioning etc) as well as technologies (such as applications, infrastructure, architecture, communication, security etc). This paper focuses on technology choices for enabling the strategic imperatives. The right technology choices should achieve the optimum balance between cost, functionality and performance in order to deliver the business imperatives. The “optimum” balance amongst the three could potentially be different across different areas of a company’s business, or change over time. This step must evaluate current as well as emerging technology options.

D. Execute and Monitor

The alignment process must aim to map the technology strategy implementation programme against critical business milestones and decision points. A clear execution plan with clear goals, mechanisms for monitoring and remedying and quality assurance is essential to translate the strategic vision into reality. An important element of this step is the incorporation of a “strategic watch” function. The purpose of such a function is to identify and to plan proactively for future discontinuities, and develop appropriate strategic responses.

Effective organization and governance mechanisms need to be put in place for maintaining ongoing alignment between business and technology strategy.

IV. CASE ANALYSIS

We now compare the two companies vis-à-vis the Business/ Technology Strategy Alignment framework, to identify the commonalities and differences between the two cases.

A. Assess Discontinuities

The main driver of discontinuity facing **Company A** was the fierce competition within the traditional energy market. Rapid deregulation created a land grab where other incumbent utility companies tried to defend and increase their market share through aggressive price competition and innovative offerings. New nontraditional competitors entered the market and grabbed market share from incumbents. The industry regulator then expedited the timetable for market opening to ensure that benefits of liberalization are rapidly passed on to the consumer.

The effect of the above business discontinuity was a significant erosion of both margin as well as market share of **Company A**. Its operational costs were too high and it was unable to sustain the monopoly prices it was used to charging from its traditional captive customer base. It could not bring innovative products and services rapidly to market unlike its competitors.

The business discontinuity also triggered a serious technology discontinuity – **Company A**’s I/T infrastructure and capabilities were too expensive yet inadequate to respond to rapid changes in the marketplace. For example, the core customer information and billing systems were different by product and did not allow a single view of a customer who bought multiple products from **Company A**.

In the medium term, potential stakeholder discontinuities also threatened **Company A**. The European utilities market was undergoing consolidation, as mega utilities conglomerates in France and Germany were steadily extending their geographical footprint and product portfolio through multiple acquisitions.

In order to fund its growth plan, **Company B** chose to bring in external capital and expanded its board of directors, with all directors being non-executives. With this change, a different perspective was needed on shareholder value creation and managing shareholder expectations. This impacted the business strategy going forward, such as geographical focus, market focus and profitability targets.

With the company gaining visibility through a high profile loss of bid in the government sector, a global utilities player approached them with an objective to create a new corporate venture. With a different industry segment focus, this had an immediate impact on the technology strategy of the company vis-à-vis the product road map, the requirements of scalability, performance and security in the product, the need for flexibility and modularity in the product architecture. This also impacted the business model, changing the domain focus, sales methodologies and margin assumptions, and created the need for new imperatives in the business.

In essence, **Company B** experienced a stakeholder discontinuity that created new business imperatives. The pursuits of these imperatives created new business discontinuities, leading to further technology discontinuities. Though the high flux context means that **Company B** has to deal with change constantly, it is clear in both cases that one

discontinuity causes an imbalance that needs be balanced by the other two factors adapting suitably and rapidly.

B. Define Objectives and Imperatives

Faced with the prospect of rapid erosion in business performance, senior management of **Company A** was forced to rethink all aspects of its strategy, operations and technology.

Two main strategic objectives were agreed for the near term. Firstly, **Company A** aimed to reduce its operating costs by 25-30% within twelve to eighteen months in order to avoid further erosion in operating margin. Secondly, **Company A** aimed to increase revenues per customer while preserving its customer base.

Company A's medium term strategy centred on a multi utility approach, i.e. extending its product portfolio beyond core energy products by introducing new offerings such as home services, insurance, telecoms. The objective was to grow its customer base by 20% in 5 years, increase revenues per customer and also improve customer retention. Its vision was to evolve from an energy supplier to a lifestyle and comfort provider, aiming for a much larger share of the customer's wallet.

The fundamental imperative in the near term was to simplify operations, remove redundancies, consolidate infrastructure in order to reduce operating costs. The other major near term imperative was to reorient operations from a product/commodity focus to customer focus. **Company A** needed to understand its customer base and the needs of each customer segment.

In the medium term, **Company A's** business imperative was to implement the changes required to support the multi utility strategy. **Company A** needed capabilities for rapidly designing and delivering innovative new customer value propositions combining multiple products and services. Customer care and billing functions needed to integrate across multiple products and channels. A key imperative was also the ability to partner rapidly with leading providers of other services – for example, insurance companies, banks, telcos – as **Company A** recognized that it will not have the required scale and expertise to deliver all the new services effectively and efficiently by itself.

The technology imperatives in the medium term were to develop new IT solutions and applications required to enable the multi utility capabilities. The IT infrastructure also needed to become highly available and scalable so as to support expected growth in customer volumes and multi channel access. Another key imperative was to be able to interchange information seamlessly with external partners.

The discontinuities faced by **Company B** created the need for redefining the business imperatives. The first major change experienced was in the nature of the alliance with the global utilities company and the need to understand the return on investment expectations of the partner. This effectively forced the company to metamorphose from being a product company, generating revenues from product licensing, professional services and training, into a pure product company with a dramatically different domain focus. This dramatically changed the business risk faced by the company as well.

This also meant a review of product and technology strategy choices, to serve the emerging needs of modularity and scalability as well as customization and integration

requirements. With **Company B** taking on a few information assets of the utilities company, management of intellectual property also became more complex. In real terms, this needed a new set of capabilities and a drastic overhaul of allocation and management of existing resources, in technology development as well as in sales and business development.

While technology is an enabler for the business of **Company A**, technology is a core element of the business of **Company B**. This makes the business imperatives inseparable from technology imperatives and the right choices define the difference between survival and death for the company.

C. Make Technology Choices

Company A's technology choices were dictated by the strategic imperatives for the near and medium term. In the near term, **Company A** avoided large new IT investments in order to keep costs down. Additional investments were made only on IT solutions, which helped reduce business process costs. Delivery of new solutions and functionality was deferred unless there was a compelling near term business case.

The emphasis was on rationalization and consolidation of the IT architecture and infrastructure, thereby reducing IT operational costs. Existing solutions were retained and scaled up, and redundant solutions eliminated. Thus the driving factor for near term technology choice was lowest cost of ownership, while ensuring that minimum standards were delivered on performance and functionality.

The medium term technology requirements were more sophisticated. Substantial new investments were required for delivering multi utility business capabilities such as multi product Customer Relationship Management (CRM) convergent billing, greater customer behaviour insights, sophisticated market and pricing modeling etc. **Company A** adopted a best of breed approach to its applications portfolio, selecting and integrating the most effective solutions for each functional area.

The medium term technology choices had to plan for future connectivity requirements with external alliance partners. This drove the choice for a highly modular and flexible IT architecture based on open standards, ease of integration and connectivity based on XML and web services. Future products and services based on home automation, energy management, remote metering etc were anticipated. Since the technology standards and protocols for these services had not been defined yet, the challenge for **Company A** was to plan an IT architecture that was sufficiently flexible to incorporate these services in the future.

Company A had to ensure that its core IT infrastructure was more robust and resilient in the medium term. Significant investments had to be planned for increasing the scalability, availability and performance of its network and data center infrastructures. Thus the medium term technology choices for **Company A** were driven more by imperatives of functionality and performance. Cost was still an important consideration but a conscious cost tradeoff was made in order to achieve the superior levels of functionality and performance required to support the multi utility strategy.

In its original avatar as a product company, **Company B** was in a high margin business, focused on the government sector with cost not being a major concern in product development. The sector focus determined the performance and functionality needs as well as service level expectations. The underlying assumptions included a relatively small number of concurrent users hence limited need for scalability, manageable uptime expectations and clearly defined functionality needs.

The alliance with the global utilities company changed the assumptions used by **Company B**. It is obvious from the circumstances in our other case study, that the utilities market place is more dynamic and competitive, hence very different from the government sector. The utilities company being a global player has several partners and customers. This meant that **Company B** had to learn to deal with very high scalability, service level and uptime requirements, a very high focus on functionality and a very tight control on costs.

There was also a new need to create domain knowledge and build it into the product. **Company B** made the choice to leverage the alliance with the utilities company to plug this gap. There was an increased need to build in higher level of security in the product for which **Company B** chose third party expertise to source, license and integrate into its product.

Technology choices therefore emerge as a set of tradeoffs amongst cost, functionality and performance. We depict this simply in Fig 3.

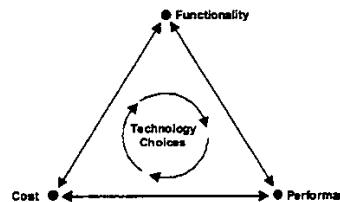


Fig. 3. Technology Strategy as a set of tradeoffs amongst three imperatives

D. Execute and Monitor

Company A recognized that business and technology change would be an inherent part of its existence going forward, and it would be critical to maintain alignment between business and technology strategies. It developed a new function for Business and Technology Alignment, which was headed by a senior business manager. This function was responsible for identifying business opportunities, which could be exploited through the use of technology, defining and delivering the required IT solutions and ensuring that business benefits were captured to the bottom line.

Another key role was technology visioning – scanning and monitoring emerging technologies, laying appropriate bets, piloting selected technologies and assimilating them into the business when their value was established.

The Business and Technology Alignment function thus became accountable for business demand management and value delivery from the technology portfolio, while the IT function's role evolved to becoming a service supplier and

ensuring that required cost and service levels are delivered to the business.

Faced with the changes brought upon it with the alliance, **Company B** had a key challenge in resource allocation and management. With its role in creation and management of intellectual property, demanding needs in implementation and maintenance services, expectations of service levels and the overall importance for **Company A**, the new alliance required effective relationship management. Due to the high technical content of these needs, inadvertently this role has come to the CTO of the company. However in a strategic and operational review, it was clear that this was unsustainable in the interest of continuing need for leadership in product development and technology innovation. The role was then split between the CTO and the CEO, which is also not a long-term solution.

New resources were also needed for implementation and customization, training and maintenance needs of the utility company. Some key issues with regard to the information assets of the utilities company, not discovered in the pre-agreement due diligence, were also emerging, creating governance concerns and the need for laying down clear and practicable ground rules for the relationship.

The pressure on resources was enormous and now requires another injection of equity capital, creating further dilution pressures and stakeholder concern. However with little input from the members of the board, all of whom are non-executive directors, prior to the alliance, there are also concerns relating to corporate governance and performance measures for the board.

At the same time, with technology at the centre of its existence, **Company A** cannot afford to lose focus of technology innovation, whether in enabling technologies such as security and support for wireless access to be built into its product, or in re-architecting the product to become capable of handling emergent business models such as web services. To a large extent, the advisory board of the company, set up last year by the CEO, advises and guides the CEO in this task of strategic watch and continuing leadership. The advisors are increasingly playing the role that non-executive directors should have played in the company, raising further concerns about productivity and performance of the board.

It is evident that for **Company A**, another set of stakeholder and business discontinuities has already arisen, while it is still grappling to manage the outcomes of the initial business and ensuing technology discontinuities.

However, both companies have faced a few common challenges while executing the technology strategy. The key amongst those is the need for a new focus and a new perspective on resource allocation, role definition and resource management.

V. CONCLUSIONS/GUIDING PRINCIPLES

Both **Company A** and **Company B** have a common need – the need for ensuring constant alignment of business strategy and technology strategy. This will require close monitoring of the changes in business assumptions and of new developments in technology. Depending upon the business strategy adopted and the technology posture of the company in question, the approach to alignment could be different.

These changes may be unforeseen or unpredictable, a 'discontinuity', or they may be foreseeable or predictable, describable as 'evolutionary'. We have already seen several examples of 'discontinuities' that Company A and Company B faced. 'Evolutionary' changes include those such as steady growth of market share or customer base, technology replacement brought on by inevitable maturity and decline of an existing one and an initial public offer of equity in a stable business.

These changes may originate from various sources, some of which we have identified as stakeholders, market and regulatory context and technology.

These changes may necessitate questioning the fundamental business imperatives that the business plans may be based on and may fundamentally alter the planning premises and horizons. Whether technology is core to a business or is the enabler of the key processes in a business, any changes in business imperatives will force a re-look at the technology imperatives as well.

Redefined imperatives may require dramatically different or indeed entirely new set of capabilities and resources. Driven by three strategic objectives – cost efficiency, product leadership and customer intimacy – these new needs may alter the technology choices, both in terms of the components of the technology strategy or the 'what' element and the methodologies or the 'how' element.

The 'what' element includes architecture and design principles, ease of implementation and maintenance and performance, and is driven by customer needs for functionality and performance. The 'how' element covers the technology sourcing strategies, and is determined by the need for faster time to market on balance with the associated costs and risks. The executive has a choice to build, buy, lease or ally to serve the technology needs of the business, keeping the driving factors in mind.

Executives however are advised to be wary of what Robert Sutton and Jeffrey Pfeffer refer to as the 'knowing-doing gap'. A clear execution plan, with clear objectives, well-defined metrics for measuring progress on those objectives and quality assurance is essential so that technology can deliver the expected business value.

Aligning business and technology strategies is not a one-off exercise led by management consultants. Effective governance and monitoring mechanisms are essential to maintain ongoing alignment and to ensure that technology spending is concentrated on opportunities of highest business value. A proactive monitoring mechanism also ensures that emerging discontinuities are identified early and effective strategic responses – both business and technology – are formulated in time.

Overall, we expect that companies will approach the alignment of business and technology strategies fundamentally differently and we recommend that companies, wishing to lead in their markets, also consider the following principles to determine their strategies going forward:

Firstly, smart companies will plan their technology strategy as an integral part of business planning, rather than with a time lag. This is essential to ensure alignment between the two in an environment where business strategic plans need to be flexible and responsive and technology is evolving rapidly. Nearly all strategic business decisions

today, e.g. new product, acquisition etc, need to address explicitly the technology issues and changes required.

Secondly, new technology visioning and innovation will become an essential mainstream discipline. Most traditional companies play around with new technologies in the form of "skunk works" inside the I/T department, through clandestinely funded pet projects of technology zealots. This needs to change to a proactive approach to monitoring future and emerging technologies, laying appropriate technology bets, adopting technologies when they create competitive advantage, and managing a pipeline of innovation options.

Finally, closer alignment will create greater pressure for discipline on technology investments to demonstrate clearly the business value added. This can be achieved through clear separation of responsibilities for managing demand and supply of technology and services. The business must assume responsibility for delivering value from technology investments, with the aim of seamlessly incorporating technology into business strategy.