

## Bridging Transformation Enterprise - Wide



CITIE  
Cambridge Technology Enterprises

## Innovation and Collaboration

**Innovation and Collaboration are essential endeavors for any organization that seeks to remain competitive in a progressive marketplace.**

Enterprises often find it difficult to develop and deploy strategic solutions that improve bottom line results. With Cambridge Technology Enterprises as a partner, Fortune 1000 companies are devising solutions that align business strategies and advanced technologies with corporate goals and market opportunities.

As technological and process-based advancements are made and adopted by rivals, a static organization loses its competitive advantage. Indeed, as new processes, products, and technologies are introduced over time, the organization faces the potential of assuming both an aura and reality of obsolescence.

It is often the cautionary advice of good managers, necessary for the short-term security of the modern organization, which can lead an organization into ineffectuality via attempts at "safe" reinforcement of past successes. Progressive leadership is requisite to its continued growth and viability in a world of constant structural and technological changes.

In an example that typifies neo-organizational attempts at change, sectors of the US Government responsible for defense are currently implementing a radical collaboration framework to safeguard its citizens from terrorist attacks. The "Protect America" effort is designed to overcome organizational and structural impedances through the use of innovative technology and processes.

This paper discusses issues surrounding obsolescence and progressive change, including the need for innovation and growth, and proposes framework-based solutions by which organizations can effect this change and maintain or increase competitive advantage, most notably the Donovan Left-Hand/Right-Hand Model and the CTE Collaboration Framework.

### **Business Innovation Services,**

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## Innovation Drives Future Organizational Growth

That currently successful organizations will grow as time passes is not axiomatic. A brief survey of past Dow Jones members - the benchmark organizations by which industries are judged - quickly reveals many companies which are neither extant nor powerful any longer. Few alive in 2003, other than market historians, can claim even the barest knowledge of Distilling & Cattle Feeding, National Lead, or Laclede Gas. It is no coincidence that the only corporation from the original 1896 list that still exists is General Electric. Indeed, the subtitle on one of their primary Webpages is, "GE is Innovation." While a blatant hyperbole, there is more than a modicum of truth and an important lesson in such a claim. That the corporation still exists after 100+ years is a testament to its commitment to change.

Innovative advances and efforts yield competitive advantages for the organizations that successfully implement them, and technological improvements crossed with proficiency have a direct, positive impact upon productivity. Combined, these factors are main drivers of organizational growth.

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### Competitive Advantage

Loosely defined, competitive advantage is the ability of a company to produce and sell a good more cost-effectively than its rivals. This can take one of two forms-cost leadership or differentiation.<sup>1</sup> The former is manifested among nearly identical goods, and is comprised of lower production costs and pricing. The latter is effected by the production of a good that is altered in such a manner as to make it more desirable to consumers than its rivals. Cost leadership is a more direct form of competition than differentiation, and is based primarily on production and distribution capabilities and efficiency. Differentiation can be effectively used for competitive advantage even in the absence of superior production/distribution capabilities-that is, until competitors decide to mimic the differentiated good.

### Jovanovic-Nyarko Bayesian Model of Learning by Doing

The Jovanovic-Nyarko Model demonstrates that long-run productivity growth associated with technology can only be achieved by adopting more and more advanced technologies over time.<sup>2</sup> Productivity growth associated with increasing expertise on a given technology is bounded, such that regardless of the user's speed and adroitness he will eventually be constrained by the speed and ability limits of the technology. If an entire industry is standardized on a given technology, then productivity and, therefore, competitive advantage will be determined solely by the human capital of each company's employees.

If a company eventually implements newer and "better" technologies, though, then it would have the productivity potential to surpass its competitors and gain a competitive advantage.<sup>3</sup> It is therefore in the best interest of every company to upgrade to more advanced technologies over time.

## Frameworks of Innovation

While it is intellectually clear that the adoption of new technologies (including processes) is requisite to growth and the maintenance of a competitive advantage, it is often very difficult as a practical matter to enact the necessary transformations. Many intra-organizational barriers to change typically exist and must be surmounted. To do so, solid roadmaps to success are needed. Two constructs for understanding, implementing and realizing innovation that can help any organization effect change are the Left-Hand/Right-Hand Model and the Collaboration Framework.

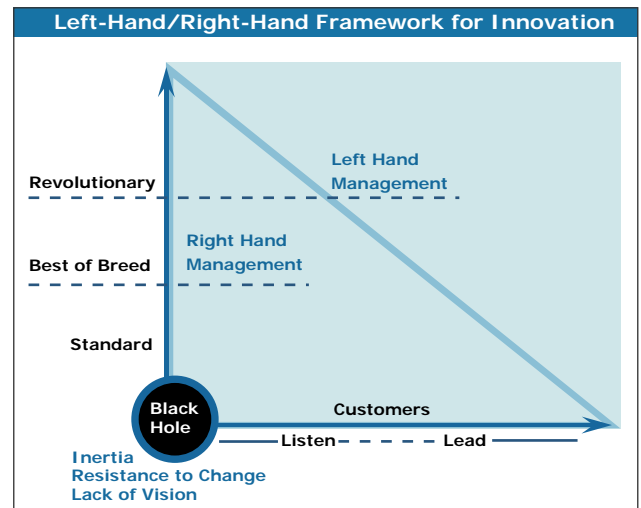
## Left-Hand/Right-Hand Model

The Left-Hand/Right-Hand model is the brainchild of Professor John Donovan of MIT. Its main tenet is that all organizational functions can be divided into two categories-the standard quotidian efforts at status quo maintenance and risk minimization, and the riskier ventures into new fields or endeavors. The former is labeled the right-hand, while the latter is the left-hand.

It is within this Left-Hand sector that innovation occurs, through the dual paths of employing revolutionary processes and leading customers. To delve into new territory, the organization must lead its customers, rather than solely listening and responding to their wants and concerns. This is a crucial point: customers tend to make consumption choices based upon a review of existing options, thereby limiting growth and change to those options. Strong leadership allows an organization to experiment with innovative ideas and reinvent itself.

The introduction of revolutionary technologies and processes leads to competitive advantage, enabling an organization to separate itself from its rivals through either differentiation or cost-leadership. Advances in technology will, at minimum, yield cost-reductions with respect to both opportunity cost and production efficiency; advances in technology that create a competitive advantage increase revenue as well.

By definition, these endeavors must eventually be brought into the Right-Hand for implementation, as that is the area in which daily business is transacted. However, there are many individuals within any organization - Donovan terms them "crabs" - who are change-averse and must be bypassed or appeased for any effort to succeed.<sup>4</sup> A solid business model must be adopted and implemented to achieve this end.



## Collaboration Framework

The function of a crab, however, does not have to be performed by a human. Indeed, structural impediments at the intra- or inter-organizational level are often the cause of the difficulties in overcoming idea inertia. Ironically, it is often the very technology that has previously been implemented to achieve competitive advantage that acts as an obstacle to change.

As process engineering and computing sciences are dynamic and growing fields, technologies are de facto introduced in a step-wise format. For instance, it is difficult to find a single blue-chip company over forty years old that lacks mainframe computers, a technology that has not been cutting-edge since the introduction of the PC in the 1980s.

1 Porter, Michael E. *Competitive Advantage*, New York: The Free Press, 1985, p. 3.

2 Jovanovic, Boyan and Yaw Nyarko. *The Bayesian Foundations of Learning by Doing*, Cambridge: National Bureau of Economic Research, 1994, p. 1.

3 The Jovanovic-Nyarko Model implies an initial drop in human capital proportional to the jump in technology (to account for the retraining learning curve), though this will still lead to higher productivity in the long-run.

Data, though, tends to be the biggest obstacle to change for organizations. Siloed within specific departments, databases and applications are often introduced to satisfy immediate, local needs without thought for global access or utility. As technology advances with time, programs introduced in one department may not be able to interact with older programs in another department. This accentuates the silo-like structure of organizational data, reducing efficiency and increasing the opportunity costs associated with many tasks. It is necessary to overcome such structural impedances to collaboration in order to optimize organizational capabilities and gain the greatest competitive advantage. Cambridge Technology Enterprises (CTE) utilizes the Collaboration Framework, a multi-step process for synthesizing the inputs of disparate sources and data.



The chief assumption of the framework is that the necessary data for optimization exists, but is simply not being shared in a timely or efficient manner, if at all. Divided into five stages - Collect, Filter, Analyze, Disseminate, and Decide/Act - this process enables innovation by uniting disparate and compartmentalized business units into a cohesive, pan-organizational actor.

After collecting all pertinent information and filtering it along some applicable metrics, analysis is performed to determine the importance of the data, at which point notifications are sent to relevant individuals within the organization, and decisions are made regarding the appropriate actions to take. Assuming that this process is automated, the conveyance of data from one stage to the next can be made via XML transfer.

The primary advantage of the Collaboration Framework is that it enables competitive advantage growth through the implementation of innovative new technologies and processes. The framework allows an organization to rapidly mobilize its resources and share information necessary to strategic decision-making.

Equally as important, it removes impediments to the implementation of innovative new technologies by undoing the siloed nature of extant programs and data. If a new application cannot access data from existing sources, then it hampers efficiency by creating yet another silo.

**Case Study**

Unarguably, the United States of America has the strongest military in the world, possibly the most hegemonic of any in history. Yet on September 11, 2001, this force was unable to stop a band of men armed with only knives from claiming the lives of thousands of the citizens it was created to protect. Since then, several countries have fallen to our advancing forces and the lives of Americans have been drawn into a color-coded world of fear, suspicion, and near-Orwellian eternal war. The most unfortunate detail about this pivotal day was that it could have easily been prevented had the information been made available to the right people at the right time.

**Proprietary data leads to terrorist threats**

Hammed Atta, one of the hijackers who flew American Airlines Flight 11 into the World Trade Center, was on an FBI-CIA-INS watch list. He used his own name to book the plane ticket. Ahmed Alghamdi, a hijacker on AA Flight 175 was also being tracked by the FBI. Additionally, two of the men who crashed American Airlines Flight 77 into the Pentagon were on the FBI's watch list. Had even one of these men been stopped, perhaps the entire disaster could have been averted. Two fighter jets from Hanscomb Air Force Base in Massachusetts were only two minutes away from the second WTC-bound jet when it crashed. Had the Air Force been notified moments earlier of the potential for disaster, the event could have been averted.

Four of the September 11<sup>th</sup> hijackers were on government watch lists. Had the information been made available sooner, the entire disaster could have been avoided.

**Revolutionary collaboration minimizes risks**

In September 2002, the US Government sent members representatives from the CIA, FBI, DoD, and Department of Homeland Security to Cambridge for a workshop with Professor Donovan and CTE. The goal of this workshop was to plug the pervasive security holes still extant despite the passing of over a year. The primary constraints were Constitutional-the DoD cannot interact in the civilian sphere and a central database would be viewed as a gross invasion of privacy.

CTE enabled the participants to establish a subscription-based internet engine utilizing XML data transfer that would collect limited data from department-owned and operated databases on a need-to-know basis, with each department controlling the amount of information that would be shared. The first instance of this application was rolled out in Spring 2003 for the DoD in the Washington, D.C. area. It relies heavily upon the Collaboration Framework to collect diverse event data (such as a white van being turned away from a military installation), correlate the events and score them according to importance. Once the score reaches a critical, user-defined threshold level (e.g., the same white van being turned away from three bases within a day could push it over critical), alerts are sent to the appropriate authorities to take action on the situation. If the Transportation Safety Administration had this device in September 2001, none of the terrorists on the watch lists would have been able to get on their flights and perhaps the 3,019 lives lost that day could have been saved.

This entire system is based upon the ability of the US Government to overcome intra-organizational impediments to change. Though not a civilian company, the Government is continually competing against rivals on a global scale, and technology must always be improved to increase the competitive advantage in safety and protection that it now enjoys. The application of CTE's think-tank environment and collaboration processes enabled the organization to implement an innovative approach to security maintenance.

**Conclusion**

Competitive advantage is essential to organizational survival. Technology-based human capital is bounded on any given technology, requiring jumps to more and more advanced technologies to surpass market rivals.

Innovation enables organizations to continue to grow and change in an increasingly competitive direction.

The Donovan Left-Hand/Right-Hand Model provides the construct in which organizational change can occur, highlighting the need for innovative "left-hand" ideas for long-term growth. Many impediments to change exist inter- and intra-organizationally, including "crabs," structural obstacles, and technological silos.

The CTE Collaboration Framework enables organizations to overcome these barriers and implement competitively advantageous innovations.

4 These individuals are typically rational economic actors (i.e., utility maximizers) who seek to secure their status quo positions of power. For a full discussion on crabs, see *Ambidextrous Management - Optimizing current business while preparing for the future* by Professor Donovan and Dr Ari Salonen.