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Need to Know
Integrating e-Learning
with High Velocity
Value Chains

“Ultimately, becoming a learning organization requires first becoming a teaching organization.”

Dr. Peter Drucker

>The Race Against Time

Commerce in the 21st century is a race against time. Getting to market first is necessary but not sufficient for sustaining competitive advantage. New sources of revenues must be generated rapidly enough to maintain a positive return on investments in innovation and product development. Moreover, the product release process must be stable throughout the volatility of economic cycles, where market demands change faster than the seasons. As a result, the ability to rapidly impart contextually-rich information to the extended enterprise is no longer a competitive advantage, but an imperative to business viability in the chaotic race of 21st century commerce. Here is where the greatest payback from e-Learning technology can be found – by accelerating the transfer rate of critical knowledge to constituents up and down the value chain.

In many ways time is the fundamental value proposition of e-Learning.

As value chains continue to increase in their complexity and their interaction with each other, chaos and unpredictability will create greater value of time as organizations attempt to coordinate an ever increasing volume of opportunity with ever decreasing duration of opportunity.

It is a basic precept that although business opportunities in today's economy increase by orders of magnitude, the duration of any specific opportunity to match a time-based service with a time-based demand gets that much shorter. In this market space, market cycles are measured in intervals of days rather than months and years.

Consider your last great idea for innovating within your organization. What was the greatest challenge to mobilizing the organization to take action? Was it the lack of a fax machine or FedEx services, or even the time to create a Web page? The answer, more than likely, was that speed of delivery was incidental. The real challenge probably came from the time

► Need to Know Integrating e-Learning with High Velocity Value Chains

Two hundred years in the making, Industrialism has been turned on its ear. Concepts that were central to the formation of organizations, employment, and work itself are being challenged by the velocity of today's economy making possible unparalleled advances in our ability to innovate, compete and connect with partners, employees and customers. Similarly, education, based on Industrial Age precepts, is also changing radically in the Information/Internet Age.

Definition: E-Learning is just-in-time education integrated with high velocity value chains.

During the entirety of the industrial era, our focus has been on moving work to the workers. From supply chain to assembly line, and transportation systems to information systems, we have built enormously complex infrastructures to ensure that work and work products arrive at the right time at the right place. But what of the tools and the knowledge needed to do the work?

The principle behind e-Learning is that the tools and knowledge needed to perform work are moved to the workers – wherever and whoever they are. Simply put, e-Learning revolves around people. This is in stark contrast to the way learning has typically involved people flocking around the learning – ie. a typical academic environment.

This is not a revolutionary concept when applied on a small scale. When considered in the context of today's internet-based instant economy, however, it directly challenges what is perhaps the most important advancement of modern society and the cornerstone of academic learning: the growth of the centralized institution of education in which students came to learn in a specific time and place.

Simply put, e-Learning revolves around the individual – in stark contrast to the way training has typically involved individuals flocking around institutions of learning.

Since the time of Aristotle's Academy, students have trooped off to schools, universities, all manner of brick, mortar, and ivy clad buildings of learning. The idea of the university – often an empire unto itself – looms large in the collective consciousness of industrial man. This was a large part of the industrial ethos that led to the sort of work and worker that was captured perfectly in the 1936 film *Modern Times*. Who can forget the image of the hapless Charlie

Chaplin tightening bolts on a large flywheel? Chaplin, along with his fellow workers had been minted in lots by the educational factories as yet another cog in the machine.

The modern value chain is still very much like those flywheel cogs, discriminating between people, steps, and procedures. Specialization and highly distributed operations have created monstrously complex interactions between business partners.

E-Learning is just-in-time education integrated with high velocity value chains. E-Learning is not merely an alternative means of training, but a profound shift in the manner by which organizations are supporting these complex, volatile, high velocity value chains.

E-Learning had its origins in computer-based training (CBT), an attempt to automate education, replace a paid instructor, and develop self-paced learning. But e-Learning should not be confused with traditional forms of CBT, which is nothing more than recorded education. With current attention focused on issues such as B2B, on-line exchanges, full employment economies, and demand-chain optimization, e-Learning has attained a far more important role than its robot-like predecessor. It is also a subject that needs to be separated from the legacy of academic learning that has so clearly defined our notions of education.

E-Learning should not be confused with traditional forms of computer-based training (CBT), which is nothing more than recorded education.

In the mid-twentieth century, workers spent the first twenty years of their lives training to work the next forty. As technology entered the office and factory floor, individuals found themselves spending a greater amount of their working lives learning such things as the use of PCs, new software applications, business processes and so forth, instead of actually contributing to core business objectives. Yet, the rate of change and innovation across all industries increases, while at the same time the volume of information grows. We have reached a state of gridlock where most of us spend too much time jumping from subject to subject struggling to keep pace. We have become a society of thrashers, with ever increasingly smaller and smaller intervals of time to dedicate to any one task – the proverbial jacks of all trades, experts of none.

needed to assemble the idea into a format that provided sufficient context. You may have written a memo or built a PowerPoint presentation; however, the value available from these static media is only as great as your ability to fully convey the complete context of the idea. Chances are you had to follow-up in person or by phone, in either case further delaying the knowledge transfer process.

As value chains continue to increase in their complexity and their interaction with each other, chaos and unpredictability will create greater value of time as organizations attempt to coordinate an ever increasing volume of opportunity with ever decreasing duration of opportunity.

With every timely idea, the clock is ticking from the moment of conception. All content follows a utility curve where the value erodes as time progresses. The inherent latency in the process of creating complex communications, or having to follow-up to add further information, destroys the value of time sensitive content.

It is here that e-Learning provides its greatest payback; by creating time in the way an organization traverses the essential stages of bringing a new product or service to the market, what we will call the learning life-cycle.

***e-Learning:
just-in-time education
integrated with high
velocity value chains.***

Today, in the wake of the ERP debacles of the 1990's, organizations realize just how ill-equipped they are to deal with major changes in technology and processes, and how quickly these technologies and the processes they support change.

The conclusion is obvious. Given that knowledge is our stock in trade, we need to constantly find new ways to synchronize the workers' knowledge with their work environment. Having the appropriate intellectual horsepower in place is more important than possessing the latest in bleeding-edge technology, processes and products. We are already seeing that one profound effect of e-business is its immediate and wholesale destruction of the walls between the working parts of the extended enterprise – its customers, its suppliers, its partners, its people.

The entire scope of relationships in vital value chains is being re-thought and realigned by new e-business relationships. And, as that occurs, it is evident that anyone involved in these processes – anyone with a need to know – must be trained, educated, or re-educated in order to effectively perform their work. This wholesale, ongoing education up and down the value chain, is the primary role of e-Learning.

Bridging Knowledge Asymmetry

It comes as no surprise that intellectual property and human capital have become the most important resources in the 21st century. This is a mantra that is now common in the hallways of every organization. Maximizing the utility of these assets and competing in the new economy require that skills and knowledge become as much a part of the supply chain as office supplies, inventory, and computers: all need to be available instantly at appropriate times and in the proper quantities for each task and worker. This just-in-time aspect of business in the new economy is the essence of e-Learning.

It is essential to understand that the differences between training and e-Learning are not just semantic. There are eight distinct ways in which training of any sort, be it classroom or computer-based, and e-Learning differ.

- Delivery
- Responsiveness
- Access
- Symmetry
- Modality
- Authority
- Personalization
- Adaptivity

	Training	e-Learning
Delivery	Push – Instructor Determines agenda	Pull – Student determines agenda
Responsiveness	Anticipatory – Assumes to know the problem	Reactionary – Responds to problem at hand
Access	Linear – Has defined progression of knowledge	Non-linear – Allows direct access to knowledge in whatever sequence makes sense to the situation at hand
Symmetry	Asymmetric – Training occurs as a separate activity	Symmetric – Learning occurs as an integrated activity
Modality	Discrete – Training takes place in dedicated chunks with defined starts and stops	Continuous – Learning runs in parallel and never stops
Authority	Centralized – Content is selected from a library of materials developed by the educators	Distributed – Content comes from the interaction of the participants as well as the educators
Personalization	Mass produced – Content must satisfy the needs of many	Personalized – Content is determined by the individual users need to know in order to satisfy the needs of one.
Adaptivity	Static – Content and organization/taxonomy remains in their original authored form without regard to environmental changes	Dynamic – Content changes constantly through user input, experiences, new practices, business rules and heuristics.

>The e-Learning Framework

Two fundamental benefits of e-Learning are the elimination of the barriers of time and distance, and personalization of the user's experience. A simple illustration of these two dimensions helps to better understand how e-Learning differs from other forms of education, such as academic education, computer-based training, and distance learning.

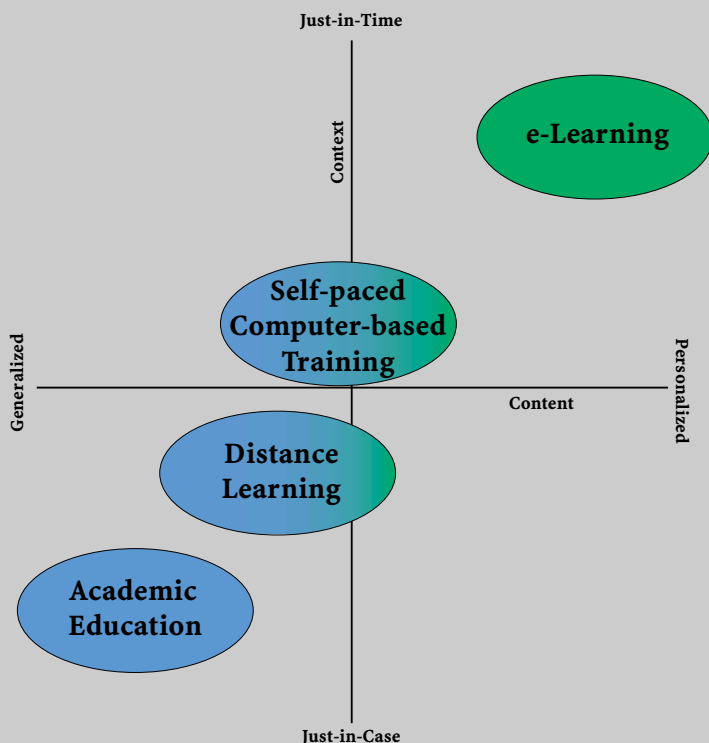
The traditional academic education is not only limited to a certain location but also confined to a set curriculum where one-size-fits-all. Clearly things such as class size and the instructor's style may aid in personalizing the content (or may detract from it), but the student will not drive the personalization nor will the need to know be synchronized by the student.

E-Learning removes the barriers of time and place and provides high levels of personalization to both the user and the task.

Distance learning can help to alleviate some of the personalization and timing issues by providing a richer experience supported by multi-media streams, asynchronous interaction with the instructor, and minimal customization within a broader curriculum rather than the specific course (i.e. the student can pick and choose from a wider array of classes/instructors/institutions). However, much of this is not far removed from the constraints of the classroom since offerings, content, and course are established for a general audience.

Self-paced CBT removes most of the limitations of location and time since the material is now portable (CD ROM or web-based) and the user chooses the class time. However, here too, the material is fairly well established (although typically interactive) and not well integrated with the task at hand. CBT is still an activity that is distinct and apart from the work – not an integrated part of the value chain.

E-Learning removes the barriers of time and place and provides high levels of personalization to both the user and the task. By being integrated into the value chain activity, e-Learning delivers the most timely form of knowledge. By providing the tools by which a user can fully personalize the experience based on their skills and tasks, e-Learning creates a much more intimate and memorable (i.e. effective) learning experience.



We have to accept that learning is no longer simply a matter of continuous improvement but rather a fundamental part of corporate strategy.

As organizations grow more complicated, it is not just information that becomes more difficult to capture but also the information about the information – that is, the knowledge of when the information is useful, what to do with the information, and how to reuse it in support of enterprise processes, partners and customers. However, as each of these three constituencies moves at ever increasing velocity, knowledge is lost by miscommunication, time-lags, and staff turnover. The result is an enormous asymmetry in the underlying knowledge needed to support each aspect of the value chain. E-Learning prevents, or at least mitigates, these asymmetries and strengthens the glue that holds organizations and value chains together.

The power of e-Learning rests in its ability to deliver both the richness and reach needed to maximize the effectiveness of the learning process. Richness in presentation is provided by multimedia technologies, allowing both a live classroom experiences, as well as asynchronous modes which include audio and video. Content richness is provided by blending off-the-shelf learning materials with custom materials and internal knowledge. Equally important, richness is provided by integrating content in context, making it timely and relevant to business operations. E-Learning's reach is provided by its flexibility, distance learning capabilities, and collaborative technologies.

An ancient Chinese proverb goes, "Give me a fish and I eat today: teach me to fish and I eat for a lifetime." We have to accept that learning is no longer simply a matter of continuous improvement but rather a fundamental part of corporate strategy; our people must all become anglers of, by, and for e-Learning. In fact, as competitive pressures escalate, companies will grow less tolerant of the critical skill gap that exists between the abilities of the average workers and peak performers. As the demand for skilled workers naturally increases, this gap will grow larger. E-Learning is a crucial weapon in conquering this competitive disadvantage.

▶ Redefining Learning

There will always be a need for training, but its role has shifted to one primarily remedial in nature. Society has, for the most part, accepted the notion of lifelong learning for all. E-Learning encompasses both, but adds knowledge management as a value to organizations. The blistering proliferation of technologies, business models, products, services and marketplaces over the past decade has exceeded our capability to absorb and retain the knowledge necessary to stay on top of the skills needed to succeed by using traditional corporate training paradigms. Unfortunately, there has been little improvement in the traditional methods used by most organizations to communicate changes and updates to employees, suppliers, partners and customers. This lack of progress has created a widening rift with the potential to create a break in the growth of any organization, and may well represent the greatest threat to the global economic expansion experienced over the past decade.

Low unemployment and a dearth of available skilled workers have moved talent acquisition and retention to the top of every organization's list of critical success factors. The next logical step in mitigating the current circumstances is to maximize the utility of existing human capital. This involves educating the work force in a manner that tailors the methods and content to current needs while accurately anticipating future requirements.

Consider the volume of knowledge you have personally gained over the past year. How much was learned in a classroom or other formal training scenario?

As the individual worker becomes more valuable and more transitory, these problems increase. Retention issues and internal reward systems are only part of the solution. In a free-agent economy, the onus will increasingly be on the employer to ensure the necessary tools and incentives are in place to remain competitive. Ideas, talent, products, and opportunities become lost or abandoned without proper infrastructure to deliver appropriately filtered knowledge to those who need it. A brilliant idea may occur in an instant but mobilizing an uninitiated work force can take months or years.

The rapidity with which required skill sets change and time-to-market cycles shrink has begun to shift the

notion of corporate education in the 21st century from the realm of classroom training to continuous education. Consider the volume of knowledge you have personally gained over the past year. How much was learned in a classroom or other formal training scenario. Chances are the answer is "very little" in each case. This is not a new phenomenon; however, the systems that traditionally support on-the-job learning, such as apprenticeship and mentoring, have been decimated by the discontinuity of today's workplace.

This realization has led to a new corporate imperative to align the dissemination of knowledge with the underlying corporate mission. The increased complexity of operations and opportunities obsolesces the traditional approach of prescriptive education where workers are expected to learn in advance the bulk of what is required to fulfill their jobs.

Yet simply relying on heuristics and random knowledge exchange offers little means of keeping pace with rapidly evolving skill requirements. In today's hyper-competitive market, the proverbial water cooler is an insufficient replacement for the formal classroom. The void left between formalized training and serendipitous discovery underscores the need for a "just-in-time" e-Learning environment, where knowledge is dispensed as-needed rather than on a prescriptive basis.

▶ The e-Learning Life-cycle

When used correctly, e-Learning accelerates an organization's ability to bring new ideas to market and to then support them, traversing the distance from concept to cash, in ever faster intervals. This process is what we call the learning life-cycle – effectively the speed of translating ideas into value. As the pace of innovation, mergers and partnerships, and obsolescence increases, the speed of your company's learning life-cycle becomes a benchmark challenge for e-Learning and leveraging its intellectual capital into success.

All ideas have a learning life-cycle – some very long and some very short. Take a moment and consider that learning is like a radioactive isotope – it decays at various rates based on its composition. Some learning life-cycles have a half-life of days, while others will endure for millennia. For example, the learning life-cycle of popular fashion is clearly short lived. We all laugh at how silly we look in

the clothes we thought so stylish in pictures taken just ten years ago.

On the other hand, the value gained from the great democratic experiments of ancient Athens still applies in our modern day forms of government. Our notion of democracy has a long learning life-cycle. It has changed and will continue to change, but it is still based upon and relevant to tenets that emanated from minds many centuries ago.

The focus of e-Learning is not on the long term value systems that provide the framework for an organization but rather the constantly volatile center of the whirlpool we referred to earlier, where innovation must constantly be recirculated.

Success depends less on the amount of information you have than on the number of connections you can form and reform to link information and people.

As difficult as it is for those of us who have grown up in the information age to accept, success depends less on the amount of information you have than on the number of connections you can form and reform to link information and people. The dynamic linking aspect of an enterprise or value chain is a critical factor in today's economy. It is the navigation of these linkages that is most facilitated by e-Learning and that ultimately constitutes competitive advantage.

Competitive advantage is not only the sum of the intellectual parts of a value chain, it is the speed of summation. One way to look at this is by using the framework of the learning life-cycle, which provides a measure of an organization's or a value chain's competitive advantage through the application of e-Learning.

There are four steps in the learning life-cycle that determine competitive advantage. These four steps are:

- Supply Chain Awareness
- Supply Chain Responsiveness
- Demand Chain Responsiveness
- Demand Chain Awareness

E-Learning can accelerate each of these stages by providing the infrastructure and methods for substantial-

ly increasing an organization's and value chain's awareness and responsiveness.

Supply Chain Awareness

In its simplest terms, supply chain awareness is the ability of an organization and a supply chain to quickly assess its inventory of skills and core competencies. This appears to be a simple task, yet few organizations have mastered it. Consider, for example, what the core competency of your organization is. Ask yourself, "Why are we successful?" Savvy organizations will not respond with a product name, recognizing that this is not a competency but a temporary market advantage or commodity.

This is where e-Learning can have a profound impact on an organization's ability to recognize new opportunities by quickly rallying its people around a new idea. In today's market, products must be continuously reinvented, with an ever-decreasing product life-cycle, presenting an enormous challenge to organizations as they try to continuously ramp up human resources on the latest trend, technology, or product. It is what Peter Drucker refers to as organized abandonment, the ability to literally cannibalize your greatest successes in order to deliver the next successful product before your competitors (see Drucker interview later in this report).

Organizations without strong e-Learning program in place are unlikely to be able to practice organized abandonment and instead are likely to drive the organization to extreme frustration as they constantly change the rules of the game.

Supply Chain Responsiveness

Here e-Learning is used as a vehicle for creating alignment between partners, sales people, HR, etc., by providing a shared set of experiences and tools for collaboration. This could be as simple as a role based module that instantly allows any member of the supply chain to access the expertise needed to answer a question about a process by finding someone else in the supply chain whose profile implies that expertise. Role-based e-Learning is much more powerful than classroom training solutions that require full-time educators since roles can be shared by many people, creating a far more flexible solution. More complex solutions may involve sharing of best practices through video captured as part of the execution of a task by other partners.

Demand Chain Responsiveness

Here e-Learning can be exceptionally valuable as a competitive tool to mobilize market demand by laying the foundation for appreciation of the product's new features and benefits. Examples include web-based e-Learning tools with interactive video, sharing questions and answers with other users (since in every market some users end up being far more adept at realizing the benefits of a new technology or product), even the use of community programs that provide venues for users and potential users to participate in an educational experience on-line. These may involve a blended environment. For example, Sony's new AIBO robot includes sophisticated animation on its web site to demonstrate the robot's complex movements and responses to stimuli, while an invitation to an education session at retailers selling the robot provides a real-time experience with the product.

E-Learning can be exceptionally valuable as a competitive tool to mobilize market demand by laying the foundation for the markets appreciation of the product's new features and benefits.

Demand Chain Awareness

This is where e-Learning will have its greatest impact. We often regard learning as a one way street where educators teach the uneducated. However, the twist in fast moving markets is that learning flows rapidly in both directions. Markets often do not know what to ask for, being limited by their experiences. Markets may not understand the nuances of new products or services, and may require significant e-Learning to get to a point of critical mass in their demand for a service. However, markets provide a rich and fertile source of information once they are exposed to a new idea.

In many ways markets behave as an enormous laboratory experiment. Imagine a market as a test tube filled with a complex set of chemicals and a new product or service as being a new, also unknown, chemical that is added to the mixture. Will the result be explosive, neutral or reactive? Without e-Learning an enterprise might only get one shot at the answer – one shot at the market. However with an e-Learning system in place, the market has the opportunity to teach the supply chain what it needs to do to quickly adjust its skills, mobilize its deployment of a new version, and redeploy the product to the market – effectively cycling it back through the learning life-cycle once again.

One of the most illuminating thinkers in the e-Learning arena is famed management guru Dr. Peter Drucker. In an interview with Delphi President, Tom Koulopoulos, Dr. Drucker shared some of his views on the topics of education, learning organizations and knowledge workers.

TK: Do you think the speed of innovation is due to technology?

DRUCKER: I think you underrate the change in the work force. I don't know which is chicken which is egg. If you look at what came first. The change in the work force came first with the GI Bill of Rights. You know Harry Truman was ready to go to college when his father went bankrupt in 1911 – Harry had to take over the farm. All of his life he was disappointed [because] he could not go to college. Yet when the Bill of Rights came up the august president of Harvard University, his education advisor, came back and said, "You don't have to worry no one will take advantage of the GI bill." Sixty percent [of those eligible] did.

TK: You write in your books that this was one of the turning points for the knowledge age.

DRUCKER: Yes. And this came before the technological revolution.

TK: How does education change with knowledge work?

DRUCKER: Previously, knowledge was an ornament. Even up to World War II, almost all work was manual or skilled labor. What we did in WWII, out of necessity, was through management and training we learned to enable many people to do what in the past only a few people had been able to do – produce high quality optics, make machine parts, build complex machines. We did this through discipline, through study and conscientious attention to process. These efforts had enormous success, resulting in an improvement in productivity of about three and a half per cent, which is a 50-fold increase over a century.

However, all manual and skilled work is programmed by the task. How should the task itself be done? But that may not be the right question. In contrast, knowledge work is not programmed by the task. Knowledge work is driven by the results. The first question must be: "What is the task?"

TK: How does this change the way knowledge workers work?

DRUCKER: Every knowledge worker must first be a teacher, creating a wider understanding of his or her knowledge. It is their job to describe to the organization the power and limitations of their area

of expertise. The knowledge worker must be clear about what people should know about their area, especially what they can and cannot produce. Ultimately, becoming a learning organization requires first becoming a teaching organization.

Unlike manual or skilled laborers, knowledge workers are paid to know something we don't. You have the knowledge, we don't. In the old labor and skill model in organizations, managers had held most of the jobs of the people they supervised. They came up the ladder, jobs changed slowly, the people at the top knew every job in the plant. They were in a position, through their experiences to specify the information and knowledge needs for employees.

Today no two career paths are the same; no two experience profiles are the same. Knowledge workers cannot assume their managers know what they do. Thus, it is imperative that the knowledge worker educates his associates as to what his job and knowledge are.

Lastly, the knowledge worker must define his or her information needs. In the past this was a management task, because information was scarce. Today, information is becoming a commodity, and the knowledge worker will have to learn and answer the question "What information do you need to do your job?"

TK: How do you handle change in the fast pace of knowledge work?

DRUCKER: The nature of knowledge is that it makes itself obsolete. On the other hand, skills change very slowly. A stone cutter from the middle ages would recognize and be able to use the tools used today. Under these conditions, it was reasonable to believe that when an apprentice finished training at the age of 16 or 18, he had learned most of what he needed to know about his skill for the rest of his life.

How do you manage change in knowledge work? By organized abandonment – by getting rid of yesterday. Managers must plan for organized abandonment, and manage change. Get rid of yesterday; move onto the new. The new always requires able people, who take change for granted and see it as an opportunity.

Organizations that succeed in today's economy, on the other hand, are "wired" with high levels of continuous awareness and responsiveness, due to their relentless ability to reinvent themselves – in no small part through strong education initiatives.

How Organizations Navigate the Learning Life-cycle

In order to make the learning life-cycle clearer, let's examine how different organizations behave in the various stages. Our illustration below shows the learning life-cycle as a matrix of four cells, corresponding to the process of innovation.

In organizations that properly apply e-Learning, all four cells of the learning life-cycle are traversed faster and each becomes permeable, allowing fast partnering and the immediate transfer of competencies, knowledge, and services among partners in and between the cells.

Organizations that leverage e-Learning have characteristics in the cells that look like this:

	Supply Chain	Demand Chain
Awareness	Always collectively aware of strengths and weaknesses across the constituents of a supply chain or industry and able to instantly adjust and compensate for these. E-Learning increases supply chain awareness by quickly remapping competencies to new products and services.	Able to create a rapid and iterative dialog with customers by proactively addressing any impediments to the use and application of a product or service. With an e-Learning system in place, the market has the opportunity to teach the supply chain what it needs to do to quickly adjust its skills, and mobilize its deployment of a new version.
Responsiveness	Able to instantly develop required skills and partnerships based on market needs. E-Learning increases supply chain responsiveness by creating alignment between partners by providing a shared set of experiences and tools for collaboration.	Able to quickly deliver new products and services to the market and ramp up distribution channels and customers on the value and nuance of these. E-Learning can be exceptionally valuable as a competitive tool to mobilize market demand by clearing the way for the markets appreciation of the product's new features and benefits.

▶ The Next Frontier: E-Learning Anytime, Anyplace, Any Device

The most profound effect of the Internet has been the thrashing that results from our inability to manage the multitude of information and resources to which we suddenly have access.

Along with the all too familiar glut of information we need to manage and sift through, each of us is constantly juggling a multiplicity of priorities and tasks. The result is a persistent bouncing from project to project, application to application, or information source to information source.

The result has been the advent of what can only be termed a global attention deficit disorder. It could well be claimed that attention has now become the single most valuable and contested asset of the economy.

As organizations grow increasingly complex and mobile, the need to untether employees is leading to the pervasive incorporation of wireless devices in the e-Learning framework. The added power and flexibility of cellular phones, pagers, and personal digital assistants offers businesses new possibilities that take users beyond basic communications and administrative functions. Given the shift to single point access in today's corporate computing environment, e-Learning will surely follow suit. Where this has the greatest impact is in the use of e-Learning as an integrated, rather than as a separate, discipline. That e-Learning solutions can be tightly integrated into a process rather than one more process competing for users' attention is key to its success.

Today's "classroom" could be an executive conference room, an oil field, or a cramped coach airplane seat. E-Learning needs to be able to dynamically alter both content and delivery to the student, the student's circumstance, and desired objectives.

Wireless also increases the potential size of the audience for e-Learning technologies by many orders of magnitude. Not only can a roving salesperson or consultant access targeted, personalized content, but front line employees who traditionally have little reason to make

personal computers part of their work environment can now realize significant benefits of e-Learning.

The ability of e-Learning solutions to be tightly integrated into a process rather than being yet one more process that competes for users' attention is key to its successful implementation.

From harried sales executives trying to learn competitive intelligence during the cab ride to a client site, to a military equipment technician trying to repair a tank on the battlefield, the requirements of users can expand dramatically. The need for e-Learning for hazardous waste treatment personnel or emergency medical technicians takes on entirely different meaning. Not only will content affect life-and-death situations, but such tools can cross the realm of learning media and enter into mission critical information delivery. In these scenarios, it becomes clear that the focus of the users must remain on the task at hand rather than the learning, highlighting the importance of integrated e-Learning as opposed to computer-based training.

With time-to-market pressures increasing, product life cycles shortening, and human capital restrictions increasing, organizations are desperately searching for ways to expand bandwidth. As the economy becomes increasingly dependent on technology, the demand for skilled workers will consistently outstrip the supply. There will continue to be more good ideas than there are resources to execute business plans.

As organizations continue to be restricted by the number of competent individuals who can be mobilized, they will seek, in frustration, outside assistance to solve their knowledge and human capital woes. Using consultants, service providers, and freelancers only externalizes the problem. Third-party organizations experience the same talent shortage and infoglut that their customers do. The real message is that all individuals in the extended enterprise must have access to customized learning content in a concise format.

As time is compressed in the Internet economy, the period allowed for conceptualizing and bringing ideas to fruition is attenuated. Effectively, this means that by

using conventional training methods, computer-based or not, the time and money spent on training will become an increasingly larger component of development expenses and operational costs. Moreover, as long as the resulting bottleneck remains fixed due to use of archaic, just-in-case learning paradigms, training will become an increasingly more onerous hindrance to corporate growth.

By having a flexible, yet comprehensive e-Learning infrastructure in place, organizations can maximize the utility of their most valuable resources – human capital and intellectual property. People, ideas, and opportunity are ephemeral. Using e-Learning to capture and share ideas and market opportunities while they exist is critical to your company's success.

e-Learning Technologies

There are nearly 400 e-Learning vendors supplying various forms of e-Learning solutions. Here is a brief sampling of those vendors. (added details on these and other vendors can be found in Delphi e-Learning Insight report.)

Caliber Learning Network

www.caliberlearning.com
Ticker: CLBR

Address:
Caliber Learning Network, Inc.
509 South Exeter Street
Baltimore, MD 21202
800-580-9385

Company Overview:
Caliber provides a comprehensive e-learning solution that includes e-learning infrastructure, content, and consulting.

Products
Caliber inClass, liveCast, onDemand

Centra
www.centra.com
Ticker: CTRA

Address:
Centra Software, Inc.
430 Bedford Street
Lexington, MA 02420
781-861-7000

Company Overview:
Centra is a major player in the area of time-critical collaborative e-learning. Centra also offers an end-to-end ASP/BSP (business service provider) solution, CentraNow, for hosting virtual events and meetings.

Products:
Centra Symposium 4.0,
Centra Conference 3.0,
Centra eMeeting, CentraNow
eMeeting

click2learn
www.click2learn.com
Ticker: CLKS

Address:
110-110th Avenue N.E.,
Suite 700
Bellevue, WA 98004
425-462-0501

Company Overview:
Click2learn was founded in 1985 by Paul Allen, the cofounder of Microsoft. The firm has traditionally focused on the tools to author, implement, and manage e-learning solutions.

Products:
ToolBook II Instructor and
Assistant, Ingenium

DigitalThink
www.DigitalThink.com
Ticker: DTHK

Address:
DigitalThink, Inc
1098 Harrison Street
San Francisco, CA 94103
415-625-4000

Company Overview:
DigitalThink develops online courseware for IT professionals as well as other industry specific content for the finan-

cial services, health care, and consulting. The positioning of the firm is to provide its customers' employees with content aligned with business objectives.

Products:
Employee, Sales
Force/Channel, and
Customer e-learning solutions

Docent
www.docent.com
Ticker: DCNT

Address:
2444 Charleston Road
Mountain View, CA 94043
650-934-9500

Company Overview
Docent, Inc. provides products and services that bring together large enterprises, content providers and professional communities. The company attempts to get beyond basic content delivery by creating a knowledge exchange with value added features.

Products:
Docent™ Enterprise 4.7
(Docent™ Learning
Management Server,
Docent™ Content Delivery
Server, Docent™ Mobile,
Docent™ Desktop for
Developers)

gForce Systems
www.gforce.com
Ticker: private

Address:
1601 S. De Anza Blvd.,
Suite #111
Cupertino, CA 95014
408-873-3644

Company Overview:
gForce is primarily focused on asynchronous tools used to enhance sales force effectiveness and reduce the latency between product development and customer facing operations.

Products:
gForce Central (Author,
Studio, Publisher, Portal

Server, Exchange, Manager,
Administrator)

Interwise
www.interwise.com
Ticker: Private

Address:
2334 Walsh Avenue
Santa Clara, CA 95051
408-748-7800 phone
408-748-7801 fax

Company Overview:
InterWise enables live e-Learning over the Internet, allowing students to leverage the power of a social, interactive classroom experience while remaining in the work environment. InterWise's flagship product, Millennium, is used for a broad range of solutions in the extended enterprise. It's a way to extend the reach of learning programs for employees, customers and partners.

Products:
InterWise Millennium

Learn2.com
www.learn2.com
Ticker: LTWO

Address:
One American Way
Pryor, OK 74361
918-825-6700

Corporate Overview:
Learn2.com offers an extensive collection of online courseware for corporation, government, and individuals. The selection of 1,600 titles range from how to tie a tie to C++ programming.

Products:
Learn2 University, Learn2
SmartCard,
PerformanceMotivator

Learnframe, Inc
www.learnframe.com
Ticker: None

Address:
12637 South 265 West #300
Draper UT 84020-1409
801-523-8000

e-Learning Technologies (cont.)

Company Overview:
Learnframe is a learning management system (LMS) vendor who offers connectors to various e-learning content and infrastructure developers. Learnframe's flagship product, Pinnacle Learning Manager, offers the ability to launch, track, and retrieve test results from over sixty e-learning vendors.

Products:
Pinnacle Learning Manager, AdminSTAR, Learnframe e-Learning Portal, Learning Center

Lotus/IBM Mindspand

www.lotus.com
Ticker: IBM

Address:
55 Cambridge Parkway
Cambridge, MA 02142
617-577-8500

Company Overview:
IBM Mindspand solutions offers a combination of e-learning software and services, which include custom design, content creation, and implementation. Lotus LearnSpace, their primary product, is a suite of tools that offers both self-directed, asynchronous e-Learning and live collaboration.

Products:
LearningSpace 4.0

Mentergy

www.mentergy.com
Ticker: GICOF (from Gilat)

Address:
1651 Old Meadow Road
McLean, VA 22102
703-749-1600

Corporate Overview
Mentergy was created by the partnership of Gilat Communications, LearnLinc, and Allen Communications. The company focuses on providing a blended e-learning solution where e-learning is provided through a variety of means: over the Web, via satellite communication, or offline on CD ROM.

Products:
Quest, Designer's Edge, Manager's Edge, Net Synergy, Advisor, Xcelerators, LearnLinc 4.5

Ninth House Network

www.ninthhouse.com
Ticker: private

Address:
One Beach Street
San Francisco, CA 94133-1218
415-277-8200

Company Overview:
Ninth House Network combines streaming media, storytelling, and multimedia to provide a rich learning experience. Ninth House has relationships with high profile content providers such as Steven Covey and Tom Peters that focus on developing the employee.

Products:
eSeries, Network Control, NetCD

Pensare

www.pensare.com
Ticker: None

Address:
1322 Orleans Drive
Sunnyvale CA 94089
408-542-8800

Corporate Overview:
Pensare has partnered with leading universities such as Duke University, University of Pennsylvania, and Stanford University. Working with Pensare, Duke University's Fuqua School of Business was the first top-ranked program to offer an accredited MBA over the Internet.

Products:
Pensare Knowledge Community

Saba

www.saba.com
Ticker: Saba

Address:
Saba 2400 Bridge Parkway
Redwood Shores, CA 94065-1166 USA
650-696-3840

Company Overview:
Heavily focused on its learning management system, Saba offers in its Learning Enterprise goal setting, skill gap analysis, competency and certification man-

agement, mechanisms for continual feedback, simple browser-based user access, and connections to human resources systems.

Products:

Saba Learning Enterprise, Saba Learning Network, Saba Performance Management

Unext

www.unext.com
www.cardean.com
Ticker: Private

Address:
500 Lake Cook Road, Suite 150
Deerfield, IL 60015
847-405-5000

Company Overview:
Unext has partnered with leading academic institutions such as Stanford University, University of Chicago, and the London School of Economics to create an online learning community called Cardean University, which offers business schools classes and accredited MBA program. With the objective of democratizing access to education throughout the world, Unext was founded by Andrew Rosenfeld and Gary Becker, who won the Nobel Prize in Economics for his research in human capital.

Products:
Cardean University

VuePoint

www.vuepoint.com
Ticker: Private

Address:
4 Expressway Plaza, Suite 200
Roslyn Heights NY 11577
888-883-7646

Company Overview:
Vuepoint develops software for enterprise e-learning and knowledge sharing. The VuePoint Learning System offers the ability to monitor knowledge throughout the enterprise. Functionality also includes an assessment manager so that an organization can evaluate and track skills of its constituents. Recently, Vuepoint has partnered with Carlson Marketing to provide a built-in merit system for learners by rewarding

successful course completion with gift certificates and frequent flyer miles.

Products:

VuePoint Learning System VLS (Enterprise Learning Server, Assessment Manager, Enterprise Forum, Voyager, Content Composer, Virtual Reference Hall, Enterprise Executive), Learning Emporium

To purchase Delphi's report on e-Learning, go to: www.delphigroup.com/pubs

The Delphi Group e-Learning white paper represents the first release in Delphi Group's new research program focusing on the issues and implementations of e-Learning.

Delphi e-Learning research will probe the transition of the learning process from the classroom to the electronic workspace. As the velocity of business accelerates to the speed of the Net, demand chains and supply chains begin to thaw and reform in new configurations based on unprecedented e-business intimacy throughout the commerce system.

As the scope of relationships in these vital value chains realigns, it is evident that anyone involved in these processes must be trained, educated, or re-educated in order to effectively perform their work. In-process, just-in-time, context-sensitive education up and down the value chain - this is the new mandate for e-Learning.

Delphi Group research will track the markets, the applications, and the technologies for these dramatic new developments: follow it at: <http://www.delphigroup.com>



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