

# **Developing an International Learning Object Economy**

*A New Industry Model for the E-Learning Market*

By

Patrick McElroy, Founder

Barry Beckerman, Chief Technology Officer

Learning Content eXchange, Inc.

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Learning  
Content  
eXchange

*The proprietary vertical solutions that characterize the e-learning industry today will be unable to satisfy a projected 40% annual growth in demand for Web-based learning content, products and services by educational institutions, corporations and government agencies. The current state of the industry can be compared to that of thousands of PC's attached to an advanced fiber optic network, but without the language protocols necessary to communicate. Similarly, the e-learning industry lacks "economic protocols" in the form of a value network of financial incentives that would facilitate the effective and efficient exploitation of the Internet for wide-scale utilization of Web-based learning content, products and services.*

*The e-learning industry is on the verge of experiencing a movement from its current vertical alignment to a horizontal market structure. Andrew Grove, Chairman of Intel Corporation, identified and documented a similar shift in the structure of the computer industry in the 1980's and its dramatic impact on all market participants. The shift in the computer industry portends the profound impact of a similar shift in the e-learning industry, and an opportunity for those that anticipate and facilitate this change.*

*The ingredients necessary to facilitate the flow of e-learning resources in a horizontal marketplace include an economic exo-system that rewards owners and protects their intellectual property rights. Concurrently, consumers must be provided with a standards-based, technology-neutral and publisher-neutral marketplace from which they can evaluate and securely purchase e-learning content, products & services.*

# **Developing an International Learning Object Economy**

## *A New Industry Model for the E-Learning Market*

### **I. SYNOPSIS: In Search of a Coherent Internet Based E-Learning Environment**

Our newest and most highly touted industry, e-learning on the Internet, has been unable to realize its potential to meet the challenge to enhance our nation's education and training infrastructure. Despite advances in technologies, adoption of digital content standards, and the enthusiastic goals of a wide variety of stakeholders, the e-learning industry has failed to achieve the promise that innovative instructors and institutions, corporations, and government agencies had envisioned.

The proprietary vertical solutions, which characterize the current e-learning industry, have been expensive and inhibiting to the growth and maturation of Internet-based learning and have failed to provide market participants with an effective return on their investment. They have also prevented instructors and their institutions from locating, evaluating, selecting, acquiring and aggregating Web-based learning objects. These granular re-usable chunks of digital information are the building blocks of e-learning content that learners access to achieve the promise of "anytime, anyplace, at any pace," learning.

The dependence of the knowledge economy on human capital places an enormous burden on our nation's education and training infrastructure. The ability of the U.S. to dominate a rapidly growing worldwide e-learning market would be significantly enhanced by a technology-neutral, standards-based industry that provides an effective and efficient Internet-based solution for the \$450 billion private and public sector investment in e-learning projected for over the next decade.

A marketplace is required where instructors and institutions can evaluate, buy or sell digital learning content, products and services with ease and security. And, where commercial publishers can sell their content and avoid the cost of direct contractual relationships with each buyer but with assurances that their proprietary content will be securely distributed.

## **II. Introduction**

Advances in microcomputer-based multimedia technology have encouraged the development of interactive learning materials. Advances in networking infrastructures, Web communications tools, and e-learning software standards has made it possible to provide learners with technology-enabled learning models for “anytime, anywhere, at any pace” study. Collaborative efforts between government, educational and commercial enterprises to specify and adopt e-learning content metadata and interoperability standards (IMS<sup>1</sup> IEEE,<sup>2</sup> Dublin Core<sup>3</sup>, and SCORM<sup>4</sup>), and initiatives by the media and technology industries for specifying digital rights management standards (XMCL<sup>5</sup>), are receiving industry-wide acceptance.

Despite these successes, however, the e-learning industry remains ineffective because these technologies alone have not made it possible to achieve the promise that innovative instructors and institutions, corporations, and government agencies had envisioned. An environment does not yet exist in which instructors can develop courses utilizing a rich collection of Web-based learning objects, the granular, re-usable chunks of digital information that are the building blocks of e-learning content.

Dr. William Graves characterized the success of the e-learning market as follows:

*“Not only is there not much evidence of a national or global “educational object economy” on the Internet, but only a few institutions can claim to have created a coherent institutional environment for instruction on the Internet.”<sup>6</sup>*

Despite the maturation of the technologies and the enthusiastic goals of the wide variety of stakeholders, the e-learning industry’s business models prevent e-market participants from effectively maximizing their return on investment or achieving educational value in several ways:

- The current e-learning market consists of a growing array of proprietary vertical solutions that are expensive and inhibiting to the growth and maturation of Internet-based learning.
- Digital content consumers – instructors and learners – require access to a wide array of e-learning content, but currently they cannot easily locate, evaluate, select, acquire or aggregate Web-based content from multiple proprietary sources.

A more efficient and effective industry “ecosystem” is needed to connect consumers and suppliers and stimulates the rapid growth and interchange of digital learning materials and related technology components. This new market model can maximize our nation’s benefit from a projected \$450 billion<sup>7</sup> private and public sector investment in e-learning over the next decade. Our nation’s ability to dominate a rapidly growing worldwide e-learning market would be significantly enhanced by a new industry model that provides effective and efficient distribution of e-learning content and technologies.

### **III. Background**

Early private sector participants in the e-learning industry sought to meet the needs of institutions and companies with stand-alone proprietary solutions. These solutions were developed without the benefit of well-formed standards, independent of robust bandwidth considerations, and absent effective middleware that provided for interoperability between different vendor systems. Over 100 of these proprietary vertical solutions – each with its own content repository, proprietary authoring tools, and proprietary learning management system have been developed for the corporate and education markets.

The proprietary vertical nature of today's e-learning solutions requires each vendor to invest in expensive direct selling channels. Expensive product development plus high marketing costs have resulted in high prices for corporate and institutional e-learning customers, as vendors attempt to deliver a reasonable rate of return for their investors. Very few e-learning vendors are currently achieving a rate of return that would motivate other investors to support the current e-learning market model.

Traditional higher education textbook publishers as well as newer direct-to-digital publishers have faced similar challenges in this market environment. With no “supermarket” in which to peddle their wares, each publisher has set up their own shop on the Web, hoping that faculty, corporate trainers and learners will flock to their site and purchase their content. Purchasers and influencers have demonstrated their lack of interest in this inefficient market model by staying away in droves.

Faculty authors are increasingly inspired by new technologies, and by their students, to create and publish learning materials in digital form. For the most part, however, faculty and their higher education learning institutions often find it difficult to set aside resources or rationalize a self-sustaining program for the distribution of innovative Web-based learning content beyond their immediate student community, even when there may be commercial value in doing so.

The e-learning industry exhibits all of the characteristics of a vertical market environment about to experience a movement to a horizontal structure. Andrew Grove, Chairman of Intel Corporation, identified and analyzed a similar shift in the computer market in the 1980's in his book *Only the Paranoid Survive*.<sup>8</sup> The profound impact of this shift on the computer industry portends the dramatic impact of a similar shift in the e-learning industry, and the opportunity for those that anticipate this change.

#### **IV. The Problem**

The key challenges facing the e-learning industry are that existing proprietary, vertical-solution business models are not financially viable for either the consumer or the vendor, and current digital content distribution models fail to meet the needs of e-learning consumers.

From a consumer's perspective, most organizations' educational and training requirements are not satisfied by a single proprietary solution. Institutions or companies asked to make a commitment to a single vendor are faced with limited functionality and restrictive co-dependent relationships. Supporting multiple proprietary environments, however, is usually not financially feasible or manageable.

From the producer/publisher perspective, current distribution models are not meeting revenue expectations. Proprietary vertical solutions require investment in developing and supporting multiple functions (content development, tools development, management systems, infrastructure support, distribution, and ongoing customer support) that dilutes focus on core competencies and impedes the ability to provide investors with a suitable return on their investment.

The current sales channels for digital content distribution were designed for either physical distribution of content, via bookstores, for example, or internet-based storefronts, and fail to meet the needs of digital learning content consumers. Producer-centric Internet distribution generally prevents access to digital content at granular levels (i.e. by the "lesson" or learning objective), and precludes convenient comparison of competing content. Non-traditional content producers (such as self-publishing faculty or their institutions), have no viable means to publish to a broad market without forming a costly web-based publishing mechanism or developing a distribution relationship with a single publisher and their proprietary distribution channel. These current models are both ineffective and inefficient.

The failure of the nascent e-learning industry to address these challenges is already having and will continue to have a significant negative impact on the growth and effectiveness of the Web-based e-learning market. The value received for the growing institutional, government and corporate investment in e-learning products and services will be increasingly depressed by these inefficiencies until the underlying problems are addressed with a new industry model.

## **V. A New Industry – A New Vision**

A new Internet-based e-learning industry exosystem is required to help the education and training communities achieve the potential that Web-based e-learning promises. The new industry model will support a marketplace of services designed to provide effective and efficient distribution of a wide array of standards-based digital learning objects, authoring tools, middleware to connect various systems components, and content management systems that can be integrated with a variety of standards-based learner management systems.

In this new e-learning resources marketplace, multiple vendors can compete profitably because they can exploit opportunities to significantly reduce distribution costs and focus their resources on their core competencies. In this new marketplace, consumers can evaluate, select and develop innovative e-learning courseware from a variety of Web-based digital content.

The core value proposition of this new e-learning industry model is the notion that significant efficiencies are realized in a market that provides complex services through a simple transactional business model. The long distance telephone industry provides a relevant metaphor for the potential of significant cost reduction and efficiency of a bundled product /service model<sup>9</sup>. If the e-learning industry can successfully provide consumers with a transaction based service, costs for consumers would be reduced, the range and quality of services would be enhanced, and vendors would be more likely to achieve reasonable returns on their investments – everyone wins.

This new e-learning resources distribution model would have a profound impact on the effectiveness of Internet-based e-learning, and play a seminal role in the creation of a new breed of e-learning ventures. Andrew Grove defined these key industry shifts as *strategic inflection points*<sup>10</sup>. Those companies that are market players before the shift, the *first derivative*<sup>11</sup> business models, will need to refocus on core competencies to capture a share of the new horizontal value net. A new breed of market participants, the *second derivative*<sup>12</sup>, will rise to compete in narrow, yet valuable slices of the rapidly growing use-based revenue stream. Both demand and supply sides of the market will benefit from the efficiencies that result from this market shift. While this market model offers great promise for the e-learning industry, the micro-impact of a more productive e-learning industry would pale in comparison to the macro-impact of a low cost, high value knowledge transfer industry on the productivity of the industries it serves.

## **VI. Key Functional Requirements for the Web-based E-learning Distribution Model**

The foundation for the development of an effective e-learning distribution model will be realized by the development of resources and services to meet three key functional requirements:

Enabling consumer-centric distribution by providing an efficient and effective mechanism for content consumers – learners, institutions, and corporations - to locate, evaluate, select, acquire and aggregate digital content from the full range of publishing sources.

Empowering consumers to create solutions by providing e-learning instructors and learners with tools to assemble real-time customized solutions (and/or the opportunity to buy pre-configured packages from aggregators) comprised of virtually unlimited combinations of content, enabling software and services in a single consumer-side financial transaction.

Efficiently and effectively monetizing the interchange of proprietary digital components and protecting intellectual property rights by providing a non-intrusive mechanism, (for example, one that does not require each consumer to negotiate digital rights management contracts with each content owner), for the purchase e-learning services by consumers from multiple vendors while maintaining persistent protection of intellectual property rights.

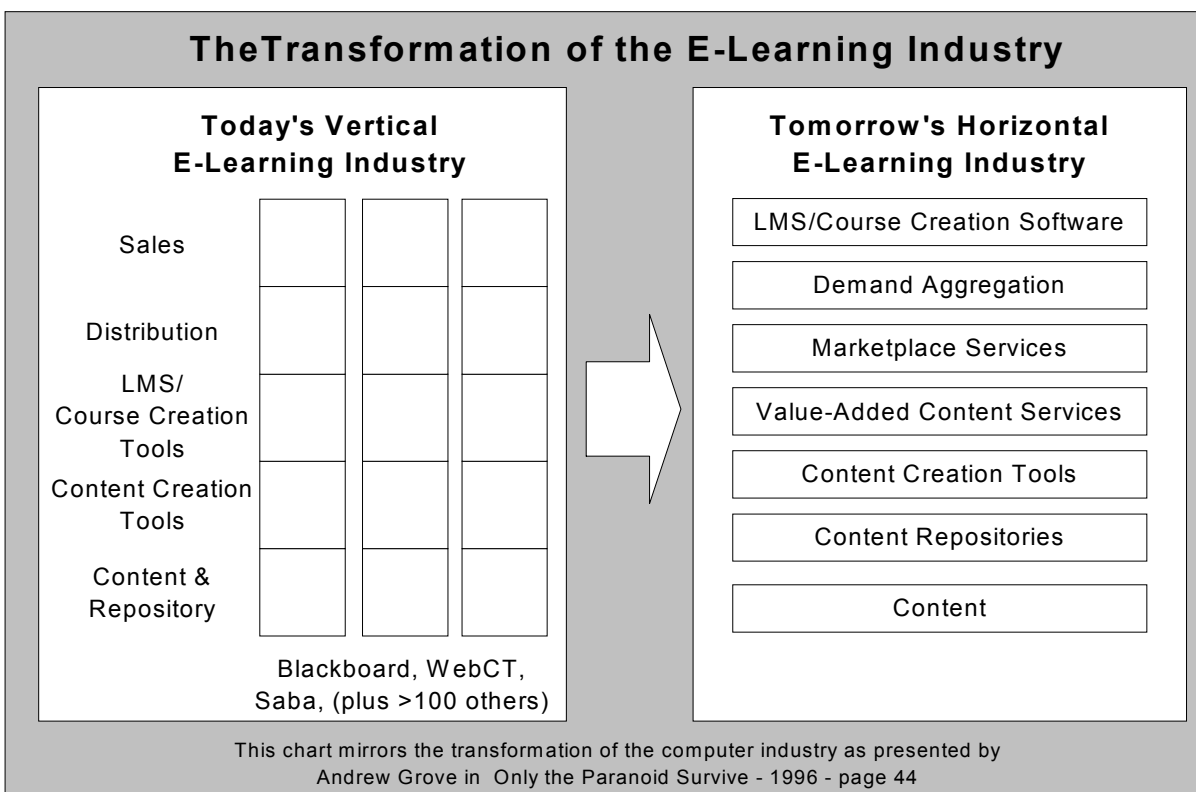
This new e-learning industry would exhibit a new exo-system that would enable effective and efficient distribution of Web-based e-learning content and services. This new industry model would enhance value and stimulate growth in the e-learning industry for both producers and consumers. Achieving this new industry model will require the creation and acceptance of three key components: of a horizontal market model, a value network that proscribes how market participants will share in the resultant revenue streams, and a public/private partnership to encourage market transformation.

**A Horizontal Market for E-Learning Components** – The fundamental characteristic of the new industry model is the shift from vertical business structures to a horizontal market model. Introduction of the proposed distribution model would have an impact analogous to the shift in the computer industry in the 1980's<sup>13</sup> when that industry was dramatically and permanently changed for all market participants. In the e-learning market, this shift will be from one in which content and solution providers are compelled to develop expensive proprietary vertical distribution and solutions to one that enables horizontal standards-based market participation. This new horizontal market model would provide value for market participants by:

- Enabling each stakeholder to focus on their core competencies and reduce their investment in non-essential components that can be more efficiently supplied by other market participants.

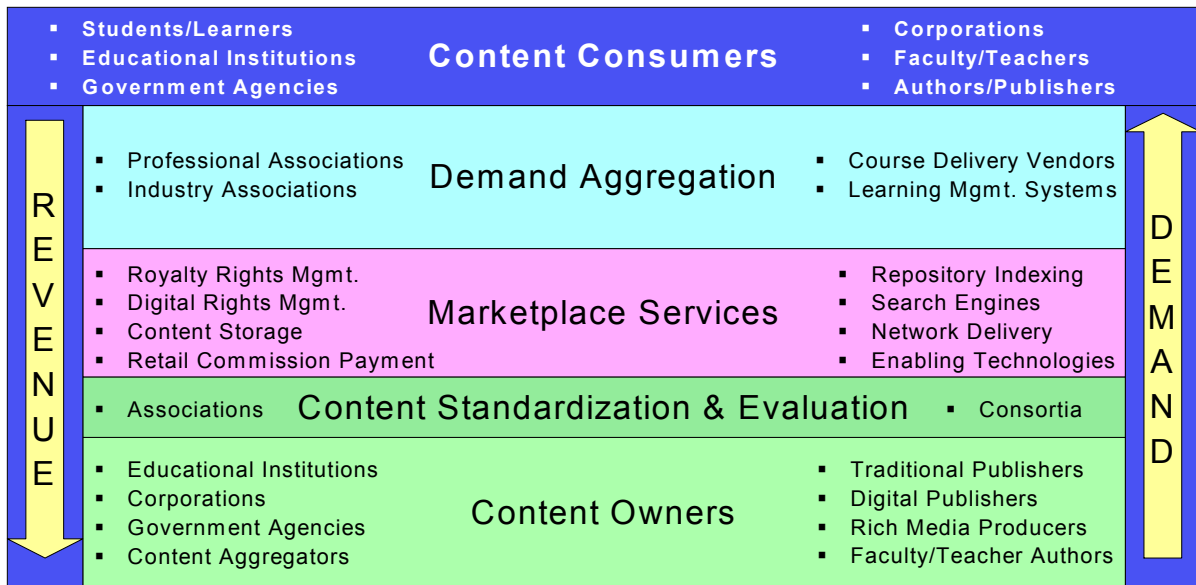


- Allowing each vendor to maximize their market opportunity within a growing worldwide market and more readily achieve the critical mass needed for reaching ROI objectives.
- Optimizing the effectiveness of instructors and learners by providing them with access to the broadest array of network-based e-learning materials, with the ability to evaluate, select, integrate and easily purchase content via a single payment transaction.
- Transitioning components that are now capital purchases in the creation of e-learning environments (e.g. authoring and object creation tools) to participate in the transactional stream eliminating the need for these vendors to compete for scarce capital resources.



**A Value Network for All Market Participants** – Moving to a horizontal market for network-based digital “good” requires the development and acceptance of a value network that provides all participants with the incentive and the opportunity to capture a share of a transaction-based revenue stream. This value net will evolve over time to reflect evolving market forces such as vendors exploiting opportunities to achieve economies of scale in their core competency areas.

## Horizontal E-Learning Market Value Network



The diagram above suggests an initial market value network that has three basic layers:

Content & Content Standardization and Evaluation – The content layer includes digital content (text files, images, rich media, tutorials, simulations, testing modules, etc.) and services (content review, content creation technologies, content aggregation services). The early stage market model targets half (50%) of the transaction price to those that participate in the content segment of the value network, which is similar to the content portion of analogous markets<sup>14</sup>. Over time, the content component should increase to 60% of the transaction as marketplace services reach critical mass and economies of scale are achieved.

Marketplace Services – The marketplace layer includes services that connect the content owners and those that bring consumers to the exchange – the demand aggregators. This layer is anticipated to initially absorb about 25% of each transaction and shrink to less than 15% as the market achieves critical mass and economies of scale are realized. Marketplace services include:

Content Repository, Indexing and Network Services – Value is recognized by vendors providing reliable, secure and scalable technology infrastructure including network connectivity and content storage and content access services (indexing capability, search engines). By creating a critical mass of demand and rapidly scaling environment, e-learning consumers and e-learning service providers are also provided with an outsourcing alternative to internal infrastructure development, support, and operation.

Exchange Services – The marketplace would allow all interested parties to offer products and services within the market, and competitively price their products. Exchange services include the following:

- Transaction management - A single point of purchase by consumers and consumer account management, where royalties are collected and paid to owners, and affinity fees (commissions) are paid to demand creation participants in the value net. The system would also support negotiated interrelationships between specific sub-groups of buyers and sellers, or between publishers/aggregators and specific customer groups.
- Authentication and authorization services – Management of persistent, controlled access to content and related technologies based on intellectual property use rights granted by the owner and purchased by the consumer.
- Provision for common market services - Standardized digital content indexing by discipline, with content evaluation annotations for the various markets (e.g. undergraduate education, corporate training) and subject specific (e.g. medical) sub-markets.

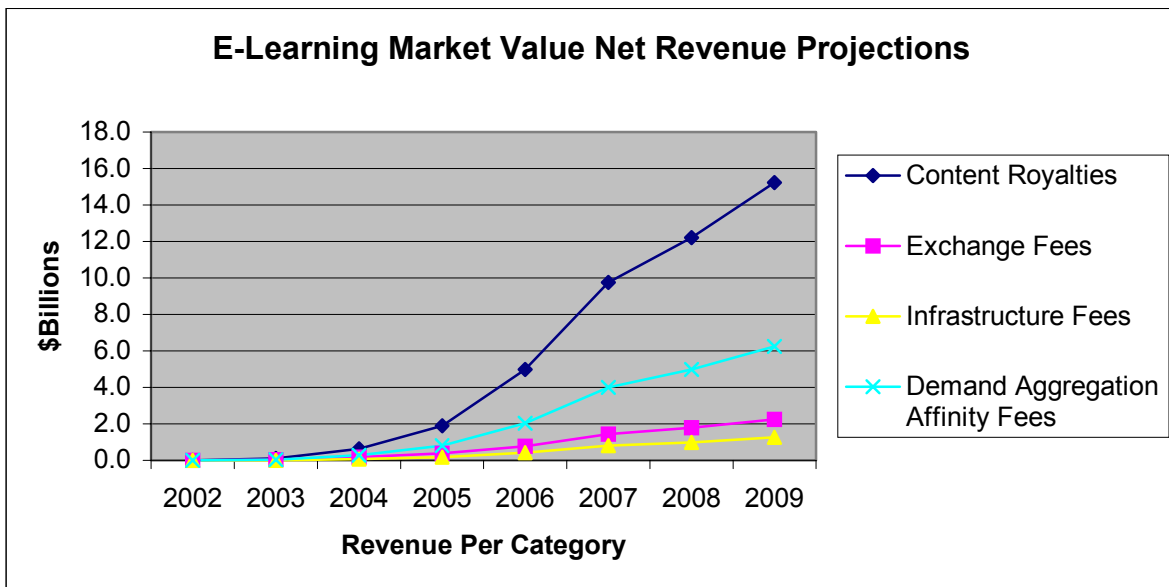
Demand Aggregation Value – In any marketplace, those that connect products and services to the ultimate consumer capture a significant portion of transactional purchases. For example, college bookstores connect students and publishers, capturing about 25% of each textbook transaction. Given the range of e-learning consumers (learners, institutions, companies, agencies) and the diversity of sub-markets, it is anticipated that a wide variety of for-profit and not-for-profit entities (associations, professional associations and consortia) will aggregate their customers or members to participate in the marketplace.

**A Broad Public/Private Industry Initiative** - The last, and perhaps most important characteristic critical to the formation of this new industry model is the development of a broad-based public/private initiative to encourage market transformation. Private sector partnerships would target a wide range of technology companies, content companies, and e-learning companies. Public/non-profit participation would target professional and industry associations, consortia and standards bodies.

A key component needed to develop this new industry will be to identify appropriate public sector resources to help “jumpstart” the market transition. Given the challenging private venture capital environment, particularly towards e-learning because of its dearth of successful, profitable first generation ventures, it will be necessary to identify resources that will catalyze the transformation process and complement private sector investment.

**VII. The Scope & Impact of the New Industry Model on the E-learning Market**

The domestic e-learning market is estimated to grow at a 42% CAGR<sup>15</sup> from 2000 to 2005 from a base of \$7.1 billion in 2000<sup>16</sup>. Assuming a conservative 20% rate of growth from 2006, the domestic e-learning market would exceed \$100 billion by the end of the decade. Content expenditures are estimated to be about half (54%) of the e-learning expenditures in the corporate training sector<sup>17</sup>, and are assumed to absorb a similar percentage of the e-learning expenditure in other segments. Cumulative e-learning market expenditures are anticipated to reach nearly \$500 billion by the end of the decade.



The new industry models proposed herein are anticipated to have more immediate and more pervasive effects on the higher education, K-12 and government markets than on the corporate market. Segments with broader demand for more generalized content (such as higher education) will be more likely to evolve to the new market models more quickly. It is anticipated that the corporate market’s tendency to focus on narrow areas of content (company-specific or industry-specific) will support the viability of vertical solutions for some time to come. The market potential for each segment of the horizontal industry value net detailed above assumes the new market models show a consistent growth pattern resulting in capturing 50% of the e-learning content expenditure by 2007.

The potential exists for the new industry model to be as successful in the international markets as they are in the domestic markets. Revenues flowing through the marketplace from non-domestic sources could equal or exceed domestic market revenues to the significant benefit of our domestic economy.

### **VIII. Economic Value**

The knowledge economy impacts global business and government in virtually every sector. An efficient and effective e-learning market would positively impact our national economy in four ways:

- Vendor/provider opportunity – Those companies and organizations that participate in a horizontal e-learning marketplace will benefit from their ability to provide a more focused set of products or services to a larger market base than possible for current vertical solutions companies. This specialization will allow higher investment productivity, foster increased competition, permit lower per-user pricing, and allow individual vendors and the industry as a whole to more readily achieve critical mass and profitability. This shift to industry viability will be essential to increasing ongoing private sector investment in the e-learning space.
- Consumer community benefits – The “10X” impact<sup>18</sup> of this dramatic market shift from vertical to horizontal will have a positive impact on the e-learning consumer community. Vastly expanded content resource and greater competition are anticipated to result in a dramatic shift in content pricing – from the \$100 textbooks of today to a micro-transaction environment where learners and their instructors can assemble meaningful, powerful learning experiences from a wide range of affordable content.
- Impact on the domestic economy – Increased market efficiency will certainly have a positive effect on those participating in the e-learning market as vendors and investors. A vastly greater impact is anticipated to be realized as the increasing (40% CAGR)<sup>19</sup> investment by the public and private sector in e-learning services results in a greater value per investment dollar; that is, each dollar of purchased services will buy a greater quantity and quality of e-learning services.
- Opportunity in international markets for domestic companies and organizations - The U.S. has long been a major player in the worldwide education and training markets. This new market structure can provide a powerful platform to assist domestic companies and organizations in reaching out and capturing a dominant share of the worldwide digital content market. The same reasons that suggest a broad content resource is valuable within the various domestic sub-markets indicate that much of the world community will want access to this growing content pool, and will desire to have local and regional content available within a compatible, integrated environment.

- About Learning Content eXchange, Inc. -

Learning Content eXchange, Inc. (LCX) is catalyzing a variety of partners towards the establishment of a prototype implementation of a horizontal e-learning market model. Initial focus is in the higher education market where LCX has extensive experience and relationships. LCX has developed a number of key technology, content and higher education organization partners that share its vision of a new learning object economy. LCX has focused efforts on relationships that will aggregate a significant pool of demand for digital content and related services within this new market with the belief that “demand will drive supply”. Learn more about Learning Content eXchange at [www.lcxcorp.com](http://www.lcxcorp.com) or [www.learningcontentexchange.com](http://www.learningcontentexchange.com).

ENDNOTES

<sup>1</sup> Instructional Management Systems initiative – an international effort dedicated to defining and distributing metadata tagging and interoperability standards for e-learning products [www.imsproject.org](http://www.imsproject.org)

<sup>2</sup> Institute of Electrical Engineers – a standards body that validates and adopts evolving standards in a wide variety of fields. Standards developed by IMS are then reviewed and adopted as more global standards by IEEE

<sup>3</sup> The “Dublin Core” is a group of metadata fields that were developed by an international consortium out of Ireland. This group of first generation metadata fields are used to describe learning objects, and have been adopted by a range of early learning object initiatives.

<sup>4</sup> The Shareable Courseware Object Reference Model (SCORM) is a Department of Defense (DOD) project focused on defining an interoperability standard to support the DOD’s extensive investment in digital content. This standard is being explored and adopted by a range of interested groups outside of the DOD.

<sup>5</sup> The Extensible Media Commerce Language (XMCL) initiative is focused on developing industry-wide standards for Internet media commerce.

<sup>6</sup> *Educom Review*, Nov/Dec 99

<sup>7</sup> See chart on page 9 detailing projections in the market over the next ten years.

<sup>8</sup> Only the Paranoid Survive; Andrew S. Grove (1996) Chapter 3 – pages 39-52

<sup>9</sup> The low cost of telephone service is enabled by the bundling of a wide range of products, services and functions by the long distance provider using a common technology infrastructure for a simple monthly or per-minute fee.

<sup>10</sup> Ibid.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

<sup>13</sup> Ibid. pages 30-35

<sup>14</sup> In the textbook market, “content” (the book) is about 60% of the cost to the consumer – distribution is about 40% (when a distributor is used). In the long distance market, the call is the content - absorbing about 50% of the transaction - the other half is marketing and billing expense.

<sup>15</sup> E-Learning: Power for the Knowledge Economy, Credit Suisse First Boston, March 10, 2000 page 8

<sup>16</sup> Ibid.

<sup>17</sup> Ibid. Page 134

<sup>18</sup> Only the Paranoid Survive; Andrew S. Grove (1996) Chapter 3 – pages 30-35

<sup>19</sup> E-Learning: Power for the Knowledge Economy, Credit Suisse First Boston, March 10, 2000 page 8