A GENERATIONAL OPPORTUNITY:

A 21ST CENTURY LEARNING CONTENT DELIVERY SYSTEM

Prepared at the request of the
Advisory Committee on Student Financial Assistance

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PREFACE

The high cost of textbooks has become a visible and highly charged topic over the past two years, generating scores of state legislative measures and hundreds of institutional initiatives focused on tactical responses to textbook affordability, such as used textbook availability. The spiraling cost of textbooks, however, is only a symptom of a larger concern:

> **How can the higher education community, and the publishing industry that serves it be more responsive to and embracing of the inexorable changes and profound opportunities that the digital age offers to change the way learning information is delivered to students?**

One need only look to the music industry and how their business model changed from only selling songs as packaged albums to selling individual song tracks over the Internet to better understand how the rapidly changing landscape of the educational learning materials market has impacted the academic publishing industry and its ability to respond.

The Advisory Committee on Student Financial Assistance (ACSFA) has requested that the authors prepare a paper as a resource for the committee's impending report to Congress on textbook costs. This request was based in part on the authors' previous publications, presentations and thought leadership related to the changing forms and distribution models for higher education learning and reference content in the digital age.[1]

The Committee requested the authors to respond to the following questions:

1. What is wrong with the current system of creating and delivering instructional content to undergraduate college students?
2. What would an ideal future system -- using 21st century technology -- look like: structure, functions, benefits etc.?
3. How would a collaborative effort -- led by the higher education community -- to move toward that system be structured?
4. What are the major technological, legal, economic (market) and other challenges that such an effort would have to overcome?
5. How might the federal government encourage the creation and ultimate success of such an effort?

A chapter is devoted to each of the first four questions. The fifth question is addressed in the conclusion.

Key Definitions – Several common definitions are referred to throughout the paper:

- The **textbook** is defined as the traditional, mass produced, hardbound comprehensive text and bundled learning materials that is sold to the student through traditional and online physical distribution channels.
- The **textbook publishing industry** refers to the 4,000-8,000 publishers[2] identified by the Association of American Publishers (AAP) that produce more than 250,000 publications for the higher education community[3]. A Government Accounting Office (GAO) 2005 report noted that 80% of all textbooks come from five large publishing houses.[4] This term also reflects the industry's collective representation by the AAP.
- The term **instructor** refers collectively to traditional tenured faculty, tenure-track teaching faculty, graduate students teaching undergraduate courses (teaching assistants, or T.A.'s), and adjunct instructors.

- **Students** are defined as the diverse[5] population of 16 million undergraduate students.
- The **higher education community** is defined for the purposes of this paper as the 4355 higher education institutions and their students, instructors and staff. This constituency also includes the hundreds of associations, consortia and collaboratives that represent the interests of various faculty, staff, and administrative groups. Higher education institutions are divided for the purposes of this paper into five **segments**; research universities, community colleges, state university systems, private four year colleges, and for profit institutions, which are also represented by various associations.
- This paper describes a collaboratively developed, open marketplace for network-based learning and research content for the higher education community, which is referred to herein as the **Marketplace**.

We appreciate the opportunity to contribute to the dialogue on this important issue.

Patrick McElroy, Barry Beckerman and Joan Leonard
Learning Content Exchange, Inc.
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About Learning Content Exchange, Inc.

Learning Content Exchange was founded in 2000 with a vision of creating an environment where instructors and students could discover, evaluate, select, purchase and use network-based digital learning resources from hundreds of publishers. Over the past six and a half years we have shared our vision with the higher education community and found many individuals, institutions and organizations that share our recognition of the need for such a resource. We also discovered along the way that creation of such a resource is well beyond the scope of a small company with big ideas.

The textbook cost issue has served as a "call to action" for many who see the need for higher education to embrace the digital age and all that it implies. When provided with the opportunity to author a paper that contributed to this on-going dialogue, we accepted without reservation knowing that we would be passing along our vision to the broader higher education community.

We hope our thoughts and experience serve to stimulate a dialogue and action plan that results in an environment where today's students and instructors will be able to access quality learning materials that meet their learning and teaching styles at an affordable cost reflective of the efficiencies of digital age production and distribution.

We also hope this new environment stimulates the troubled textbook industry to establish a viable digital age value proposition in a community that has gained much from their contributions.

EXECUTIVE SUMMARY

Once every generation or so, the opportunity to transform American society presents itself. In the mid-19th century, a diverse group of visionaries stimulated the development of the transcontinental railroad which fundamentally changed our country in ways these leaders could not have imagined. The building of this railroad required new technologies and significant government support to overcome tremendous obstacles. America's payback was immense and profound.

We are now facing a conundrum similar to that of an earlier generation of Americans who realized America couldn't grow if divided by thousands of miles of wilderness. Our learning content industry is essentially unchanged since the 15th century. Publishers still print comprehensive textbooks for the masses, and no matter how much the book is 'dressed up' with supplemental materials, it's still a textbook -- with all its inherent costs and limitations.

Intuitively, we all know we can't rely on the textbook as the primary 'container' for delivery of learning content for 'digital age' students. Many of today's students learn differently from previous generations, and not necessarily from textbooks and lectures. Yes, some still value the textbook and the 'sage on the stage', but 'one size' or format no longer fits all in a digital world that offers a host of alternatives.

The publishing industry is trapped in a business model that served its customers very well when the teacher-lecture classroom instruction was the norm. Unfortunately, those days are falling by the wayside. Some would argue that the publisher's business model is no longer relevant and that today's students and educational institutions should not have to pay for that which may no longer be a sustainable business in the age of the Internet and ubiquitous digital technology.

Institutions of higher learning, faculty, students, their parents and legislators expect publishers to somehow resolve the textbook cost problem. They imagine that publishers can decrease the number of revised editions released to the market, sell fewer books because of the emerging, vibrant used book market, while lowering the cost of new textbooks. At the same time, however, many faculty and their students are relying less on the textbook. Over time, the trend of decreasing demand for [new] textbooks, coupled with escalating costs will ravage the textbook industry. What will remain of the textbook market if, in fact, this scenario becomes reality? Fewer textbook choices and a cottage industry of content producers attempting to fill the gap.

What is needed in the digital age is an enabling infrastructure for a digital marketplace - a 'transcontinental railroad' for the learning content industry. The marketplace would establish a new way for publishers of all types to produce and deliver their products to their customers, and for consumers to acquire learning materials in a form and format that meets their needs. We could expect many benefits from such a system; for students, instructors, institutions and publishers. In an open marketplace model, consumers could expect greater choice, and more value for less cost.

Technologies exist today to create such a system. Models exist that can provide a starting point. A growing number of instructors and students would be eager to use such a system. The challenges, however, are many. Creation of the marketplace would require a broad collaborative effort among and between higher education institutions and the publishing and technology industries. Funding to stimulate market growth would also be required.

America has a unique window of opportunity, a 'generational opportunity', to lay the tracks for a digital age distribution system for learning content whose impact on our educational systems will be every bit as profound as the transcontinental railroad was for the 20th century. We cannot predict what innovations in learning a Marketplace will stimulate. We can be assured, however, that our higher education community and our publishing industry will be empowered to respond effectively to digital age students and their technology-savvy instructors. We can also look forward to leveraging this investment to create successful digital marketplaces for K-12, workforce development and government training.

Chapter 1:
Challenges to the Current Learning Content Delivery System

Introduction – A 30,000 Foot View of the Current Learning Materials Problem

The ACSFA charter to study textbook affordability should be viewed by the Committee from a broader perspective than the current dialogue suggests. Much of the current discourse has focused on tactical efforts to make textbooks affordable. These campaigns have included making used books more readily available, establishing rental programs, and providing e-books as an alternative to print-based books. These actions will not provide a satisfactory outcome for either the students or the learning content industry. Nor will they provide longer term relief for stakeholders because they fail to address the underlying issues that are eroding a troubled industry.

The Internet age has created new opportunities for creating and delivering information. Therefore, the higher education community dialogue should focus on how to provide students and their instructors with the best available learning content and resource materials, regardless of format, at costs reflective of the efficiencies inherent in digital publishing and distribution.

At a higher level, this challenge is a *knowledge management* issue…

The concept of *knowledge management* is an appropriate framework for a discussion of the publishers' role in higher education. Knowledge management has been defined as *"The practice of nurturing, collecting, managing and updating...knowledge resources..."*[6]

The first step to understanding knowledge management is to differentiate knowledge from information. This concept is immediately evident when your Google search delivers thousands of Web pages of information but often very little pertinent material in the context you are seeking. A general definition of knowledge is *information obtained in a relevant context to what you are seeking, and from a trusted source*.[7] In a discussion of learning content, knowledge can be more specifically defined as *information created by those with discipline expertise that is provided to students in a meaningful context, to assist them in their mastery of the subject matter*.

Publishers produce *knowledge resources* by adding value to information through discipline expertise, editorial management and peer review processes. In the context of higher education learning content, publishers have been the exclusive providers of this knowledge management function since the 15th century when the Gutenberg bible became the textbook for the first higher education institution – the seminary.

Ownership of this knowledge management process in higher education has historically provided textbook publishers with de-facto control over discipline-specific knowledge for instructional use. This is not to say that publishers assumed control of this process without the implicit approval of the higher education community. To the contrary, higher education has looked to the publishing industry to 'own' this process and provide instructors and students with a comprehensive learning solution in the form of textbooks and supplemental materials.

In addition to controlling the content itself, publishers have also historically controlled the 'channel' through which the content is provided to students in the form of the textbook. Publishers have effectively extended their 'channel control' beyond the textbook by providing supplemental materials, most recently in the form of online and CD-ROM resources. Today, publishers' promote this bundling strategy as a "complete learning system".[8]

Publishers face three key problems:

- Expensive, 'old school' processes - Publishers' current knowledge management processes and procedures produce a product that requires a textbook-like price to support their expensive comprehensive solution and high direct marketing costs.
- Bundled solutions in a granular world - It is clear that many instructors would prefer alternatives to the 'bundled' textbook such as options that allow them to choose from a wide variety of more 'granular' resources.[9] One need look no further than the music industry to see how new technologies have stimulated demand for more granular resources (i.e. the song track instead of the album), and how granularity, enabled by the Internet, can influence consumer demand and impact traditional publishing businesses. For example, access to more granular content allows instructors to design courses that allow students to acquire several chapters in digital form from multiple publications (and publishers) rather than purchasing a textbook. In addition, the course can be supplemented by audio and visual tutorials with simulations and animations from a variety of digital publishers, and then packaged, distributed, utilized and managed within an interactive and collaborative learning environment.
- Emerging competition - The digital age has enabled the development of alternative knowledge resource channels that now compete with the traditional vertically integrated publishing industry. This emerging democratization of content development has begun to challenge the traditional publishers' historical monopoly on knowledge resource creation for higher education. Examples include the Open Education Resources movement and Wikipedia.

Despite these realities, publishers continue to address the market in a manner that suggests that only their development, their peer review and their editorial methodologies can produce quality learning content, and that the comprehensive textbook bundled with their supplemental materials is the best form of delivery for that content.

New content development models are emerging that can create and deliver quality knowledge content at lower costs than can be produced and delivered by traditional textbook publishers operating under the burden of their existing business models. These alternative knowledge factories[10] will produce and distribute this content in more granular forms to satisfy the requirements of today's students and instructors.

This paper explores how available technologies and standards can facilitate a new knowledge creation industry for higher education learning content that engages all stakeholders in new ways. It is timely for the higher education community to address some fundamental questions about the future of learning content in the digital age:

- To what extent do students, instructors and their institutions want or need traditional publishers to continue to exclusively control the channel for discipline-specific knowledge resources in the form of textbooks and bundled supplemental materials?
- Is this the right time to begin a transition from bundled publisher solutions to a neutral marketplace that provides a more level playing field for all producers and consumers?
- Is the higher education community willing and able to make the necessary organizational leadership commitments and infrastructure investments to effect this transition?

Given our observations as detailed in the body of this paper, we believe that the institutions, their faculty and students are open to these changes, and that the time to act is now.

A Digital Age Thesis:

Transformational changes in higher education, many of which are the result of the influence of technology on learning, have impacted the traditional textbook publishing business to the extent that their existing business models are being challenged. Textbooks as we know them today will continue to play an important, but less central role in higher education in the future. This much is clear: In the years ahead, the textbook's days as the dominant form of content delivery are numbered.

The textbook publishing industry, like the music industry, must adapt and provide new and more granular forms of their products. The publishing industry must leverage the strengths of digital information technologies to provide our educational institutions, instructors and students with learning materials responsive to their digital age learning styles and environments, and at a cost that reflects the efficiencies of digital production and distribution.

Ubiquitous technology and desktop computing has enabled a new industry of content creators who utilize digital authoring and could utilize a Marketplace distribution resource to introduce business models appropriate to the digital age. These 'new model' content providers may, in fact, be more responsive than traditional textbook publishers to the learning requirements of today's diverse students, instructors and institutions.

The enabling infrastructure can and should be built and deployed now. All requisite technologies, digital content standards, referential business models, and intellectual property protection solutions have matured to the extent that an open standards-based, technology-neutral, Marketplace for higher education can become a reality. Over the next decade, this Marketplace will absorb a significant portion of current textbook revenues because it will provide students and instructors with viable alternatives to the traditional print-based bundled textbook. It will also present the traditional publishers with the opportunity to incrementally transform their business models and provide their goods and services in new forms and formats as demanded by their customers in the digital age.

Leadership is required of all stakeholders to enable this transformation. Higher education institutions, the publishing industry, digital content creators, and government agencies that are responsible for the quality of education for their local, state-wide or federal constituencies must all play a role in making this transformation possible. Public and private financial and human capital resources will be required to nurture this 21st century knowledge industry from concept to a critical mass of institution, instructor, student and publisher participation.

The Marketplace developed and deployed for the higher education industry will also facilitate the transformation of other critical learning and training markets essential to maintaining America's competitiveness in a global economy. The learning content needs of the K-12 sector, workforce development sector and corporate/government training sectors all will benefit from a Marketplace infrastructure that is responsive to each sector's unique business model and distribution requirements.

The Textbook:
A Successful Model of the Past must be Reinvented for the Digital Age

The history and future of higher education content delivery—in a nutshell!

Until very recently, it has been said that higher education is like a medieval institution - the only place where someone from the medieval period could walk into a lecture hall and feel as though little has changed. The rich history of knowledge content distribution in higher education began in Western European universities in the late 11th century based on an oral mode of knowledge content distribution. The emergence of printing press technology (1450-1500) shattered the oral method of knowledge transfer, replacing it with the book. And now, the digital and networking technologies germinated in American universities over the last 30 years are poised to displace the textbook and become a viable alternative or "container" for knowledge content distribution.

The textbook model worked…for higher education and for publishers…

The college textbook publishing industry has been a cornerstone in the success of U.S. higher education. Publishers have played a critical role in higher education, equipping generations of students with high quality, comprehensive textbooks and the ancillary materials that have supported and enabled teaching and learning in traditional classroom environments.

For the past 100 years or more, American higher education has relied upon the textbook publishing industry for quality learning materials in dozens of disciplines. Publishers' extensive peer review processes have long assured that textbooks are accurate and reflective of the latest discipline knowledge. Long before the Internet and CD-ROM, publishers provided instructors with hundreds of pages of no-cost ancillary materials[11] and staff development sessions that saved instructors time and contributed significantly to the success of the learning process.

Back in the day, virtually all instructors relied heavily on textbooks as the core instructional component. Students bought books and often kept them as reference not only for future studies but as career support resources. Publishers could rely on robust, ongoing book sales to amortize their large, increasingly high-risk investments in developing new textbooks.

'College travelers' (as textbook salespersons were once called) wandered the halls of academe, waiting for Professor Smith to flip through the three or four chapters in the textbooks that mattered most to her; providing that personal touch in the selling process.

Clearly, the relationship between higher education and the textbook publishing industry before the digital age was a win-win-win for all stakeholders.

But…Students have changed! Instructors are changing! Technology is ubiquitous!

Internet and Web-based technologies have influenced how, when and where students learn. Students are no longer solely the linear learners of the boomer generation; they are very often tech-savvy, multi-tasking, self-directed experiential learners. Post-WW2 era instructors are retiring in droves, replaced by younger, more tech-savvy faculty who are comfortable with and embrace new learning methods and delivery formats.

Despite the demands of the new generation of students and instructors, virtually nothing substantially has changed with textbooks—print publishers still control the knowledge creation industry; the transformation to an Internet-based knowledge industry is isolated and incremental.

The Textbook Industry – Between a Rock and a Hard Place

The textbook publishing industry is facing immense, interrelated pressures in the digital age. The realities detailed below are symptomatic of larger underlying problems.

- Complaints about high textbook costs - The GAO Report[12] found that textbook prices have increased at twice the rate of inflation over the past few decades, and there have been significant complaints about the issuance of new editions which are viewed as unnecessary and produced solely for the purpose of eliminating the used book market for older editions. As indicated by the 100+ state legislative textbook initiatives[13] and the dozens of institutional textbook cost control programs, textbooks have become a lightning rod for public debate and a publishing industry public relations nightmare.

- Students do not value textbooks - By and large, students do not retain textbooks as reference resources as was the case with previous generations. There are certain disciplines (e.g., Mathematics) where students may find it of value to retain a textbook, but in general today's students find comparable resources in more current forms on the Internet and from other sources. This is particularly true for low and middle income students who cannot afford to keep a textbook, even if it might hold value for them in the future.

- Textbook re-importation - Also known as the 'gray market', re-importation has been enabled by Internet commerce and is a growing cause of degradation of the textbook publishers' business model. Textbooks developed by publishers for the U.S. market are often sold for less money in international markets and are often sold without the bundled supplemental materials which drives up the domestic retail price.

- More efficient used book markets - New distribution methods have flooded the market with used textbooks, which, in turn, has significantly reduced publisher sales of new textbooks. Used book purchases now account for one third of college bookstore textbook sales.[14] New technology-based alternative distribution channels for used textbooks have emerged (e.g. Amazon.com; Half.com) which further disintermediates the bookstore-based used textbook business. Student buyers may now purchase their used books directly from student sellers, and continue to seek ways to avoid paying a middleman in the sales transaction. These student buying behaviors, coupled with other alternative textbook business models (e.g. rental programs) will continue to erode publishers' new textbook sales revenue streams.

- Once bitten, twice shy – Publishers are very well aware of both the threat and the opportunity the digital age portends for their business. Most have made one or more forays into new digital distribution models, making large investments in Web sites and custom print capabilities to sell their knowledge content in proprietary digital and print formats. A number of publishers' first generation digital format ventures were not successful in part because only the publisher's own content was available, in a proprietary format, and usually at price points that continued to subsidize their textbook business model. The exception was the custom publishing ventures which have been successful for many publishers. Second generation digital ventures have been developed or are being explored by publishers, but are still largely within the context of their existing business model—selling albums (the textbook) in different ways, rather than song tracks (chapters or tutorials) to borrow the example from the music industry. Publishers will continue to seek ways to transform their proprietary businesses in the digital age, albeit with the hope that their existing textbook-based business structure can be preserved.

- Consumer needs are not being met – A growing cadre of instructors value technology-based learning resources as an important part of their students' learning experience, and are increasingly vocal about the need for a variety of learning materials in a range of formats. They, like their students, are comfortable in a virtual world where experiential learning is valued. Many do not like textbook publisher's 'one size fits all' bundled solutions. Rather, instructors prefer, as they have done historically, to select materials from many resources for their students. In part, this practice explains the high cost of textbook acquisition since many instructors may require two or more textbooks or supplemental publications for each of their courses -- the more books that are assigned, the less likely each book is used in its entirety. Publishers are feeling more pressure to deliver both alternate forms (print or digital) and learning formats (e.g., audio, simulations) that are more appropriate for today's learners.

Let's Ask the Right Questions

The AAP responded to the widespread criticism of publishers' practices by engaging Zogby International to conduct a voluntary response survey using AAP email lists.[15] The survey asked a series of questions that assume the textbook/bundle is the way learning content should be provided to students and instructors. Likewise, the PIRG surveys focused on specific textbook-related questions from the student perspective. None of the surveys or studies to date have sought to determine what delivery forms or formats instructors and students really want, nor have they validated that the current textbook/bundle meets these objectives.

The Zogby press release for the AAP study led with the following: "Eight in ten college professors say it is important that materials in their text(book)s…be as current as possible". It seems quite obvious, without a supporting survey, to conclude that instructors want current information to teach their students. Perhaps an equally important question is: In the digital age, can the textbook ever reflect the most current information given the length of time it takes a textbook to be produced and distributed, and the length of time it is in circulation between new editions?

Of interest are the Zogby survey results that were not promoted by the AAP. Among them:

- Forty percent (40%) of instructors surveyed do not use bundled supplemental materials
- Twenty-four percent (24%) indicated the textbook is mainly a reference for students.

There is a compelling need to ask questions that lead to uncovering the true desires of instructors and students as they relate to their learning materials. In the context of the Zogby survey, a couple of additional questions that might be asked:

- Do the 55% of instructors who told Zogby they used the supplemental materials really want one publisher to assemble a complete package of supplemental materials for them, or would they prefer the freedom to choose from a wider variety of sources?
- Given that only about half of instructors want or use the bundled materials, why do publishers persist in this practice? As a competitive necessity?

Given the choice, it is clear that at least 40% of instructors would prefer to select supplemental materials from a wider array of options. It is also reasonable to extrapolate that a significant percentage of instructors would choose to forgo assigning a single textbook if a wide range of more granular, high quality, relevant and more current learning resources were readily available and affordably priced to address the diverse learning styles of their students.

Let's ask the right questions, and determine the match between instructor and student desires and the products and services offered by the textbook companies. We believe the results will demonstrate a considerable disconnect.

Higher Education – A Learning Institution in Transition

There are five interrelated structural transformations impacting higher education today that underlie the tactical problems facing publishers. While these realities threaten the future of textbook publishing as we know it today, they also support a fundamental transformation of the content market/model that is responsive to the evolving higher education learning environment.

Transformation #1
Digital resources are supplementing and/or replacing textbooks

Textbooks no longer provide students and instructors with the same level of value as they did in the day when traditional teacher/lecture classroom learning was the dominant instructional delivery model. This decrease in value means that publishers must reduce costs or spread their high marketing and physical distribution costs across fewer customers.

Today's rapid pace of change feeds students' perception of diminished textbook values. In a number of disciplines (i.e. allied health, geography, computer science, and information technology) the textbook may be out-of-date before it leaves the printer. Yet today's students expect to have up-to-the-minute information, right now. For many students today, the textbook is strictly a means to an end - necessary to pass the class before it is resold at the end of the semester.

Over the past generation, the textbook has transitioned from a valued durable good to the equivalent of a consumable good like a magazine or newspaper. Students don't value the textbook as a persistent reference resource because they perceive the information as already outdated and not worthy of a longer term investment. Students view the cost of content as the difference between what they pay for the book and what they can sell the book for in the used market. It is easy to understand why a student would be frustrated by paying more than $100 for a book that is only partially consumed or read, and then can be worth less than $20 in today's used book market.[16]

Transformation #2
Technology has changed the consumers of instructional materials

> *"Our students have changed radically. Today's students are no longer the people our educational system was designed to teach."* Mark Prensky - 2001

Marc Prensky first coined the term "digital native" in a 2001 article "Digital Natives, Digital Immigrants" [17]. He noted that "today's students are the first generations to grow up immersed in the new technologies; computers, videogames, digital music players…all the toys and tools of the digital age." He further noted that "Today's average college grads have spent less than 5,000 hours of their lives reading, but over 10,000 hours playing video games (not to mention 20,000 hours watching TV)." He concludes that "today's students *think and process information fundamentally differently* from their predecessors"[18].

A key characteristic of digital native learners is that many are more experiential and intuitive learners compared to the linear learning behavior of older "digital immigrants".[19] Digital natives do not read the directions for a new program or game; they jump in and click through the options until they figure out how to make the program function or the game work. Prensky noted "They have little patience for lectures, step-by-step logic, and "tell-test" instruction." [20]

This is not to suggest that all students today are digital natives. Rather, they exhibit a continuum of technology skill acquisition and comfort levels with technology based on their life experiences. The 'digital divide' is also an issue for many low income students; not all have access to current computing technology and high bandwidth network access. The 2006 ECAR study Students and Information Technology noted "The Net Gen characterization of technophile students born in the Internet era applies to a substantial minority of undergraduates, but not to the whole group. In fact, an important minority of undergraduates do not appear enamored with (information technology), and some even appear to avoid it." [21]

We cannot, therefore, assume that we are serving a homogeneous digital native population. We can, however, conclude that increasing numbers of students are not yesterday's linear learners, and are receptive to and demanding of technology-based learning. The ECAR Study found that about two-thirds of their undergraduate respondents found that information technology is improving their learning.[22] The authors further noted "It seems to us that the interesting question is no longer can (information technology) contribute to learning, but how do we activate interest and skill in (information technology) in more of our students and their instructors?" [23]

It is safe to say that the 'one size fits all' textbook is increasingly irrelevant as the core delivery mechanism for learning content for a student population that is progressively more disposed to using technology in learning.

The instructor, the other consumer of instructional materials, has changed as well. Younger instructors are becoming the majority. In the past ten years, 58% of the largest state university system's instructors have retired, and another 13% will retire in the next five years; a 71% turnover in 15 years.[24] These younger 'new school' instructors are tech savvy, and use multiple sources of information, in multiple learning formats when constructing their courses, often with less emphasis on the textbook.

Both old and new school instructors gather a variety of learning resources for their students, as would be expected. Like their old school predecessors, today's instructors assume their role is at the center of their students' instructional process. Whereas old school instructors tended to use the textbook as the course foundation supplemented with other materials, many of today's new school instructors do not. In fact, many of these instructors would welcome an environment in which they could more easily find and assemble a variety of quality learning content from a wide range of resources to deliver to their students. What they are presented with today is dominated by bundled solutions from the "Big 5" publishers.

Transformation #3
An inexorable shift from print to digital forms of learning, research and reference materials is underway

Digital technologies have enabled students and instructors to easily and quickly access information that once required going to the library to peruse the card catalogue and shelves of reference materials. The nascent phase of this print-to-digital transformation has been a highly disconcerting process for both publishers and higher education institutions. Publishers, as would be expected, have attempted to carry forth their print-based business models into the digital age[25]. Publishers would very much like to conduct business as usual, continue to promote their current business models, and rely upon the protection for their intellectual property that is provided by print materials. [26]

G-DAY - On December 14, 2004, Google announced the Google Scholar program, a partnership with leading universities to digitalize library books no longer covered by copyright. This could be construed as the 'beginning of the end' for a publishing business based on printed materials. From the publishers' perspective, the Google Scholar program signaled a fundamental threat to their print-based business models, and an impending end of reliance on rights protections provided by materials in print form.

There can be no doubt that the move to digitalize universities' rare print materials will move beyond expired copyright-protected materials to older out-of-print copyrighted materials, and ultimately to include commercially viable materials currently available in print-only forms. The issue of access to copyrighted materials in digital form is a major issue for both publishers and the education community, and one that will require significant focus and resources to successfully address.[27]

From a market perspective, the Google announcement signaled what Andrew Grove, former chairman of Intel, called a *strategic inflection point*; that point; "when the balance of forces shifts from the old structure…to the new."[28] Grove noted that such a fundamental change in a market is reflected in "10X" changes in the market", and "all bets are off" [29] for those doing business the old way.

What is clear is that mass digitalization of print materials is both an industry and an infrastructure challenge.

It is an industry challenge because any solution must address the underlying problems at an industry level (e.g. across both education and trade publishing). Individual publishers will ultimately fail if they attempt to address these issues on their own; one need only look as far as the music industry to see the impact of a publisher-by-publisher approach to this challenge.

It is an infrastructure challenge because the answer lies in how available technologies can be used to create a rational market model that empowers consumers to find and use content in digital forms while protecting the rights of and appropriately rewarding publishers and authors. The technologies exist to effectively manage intellectual property issues for digital materials at least as well as these issues are addressed in current print-based content distribution models.[30]

The shift from print to digital formats is a profound transformation, and one that publishers are struggling to comprehend and then develop effective strategies to address. Pandora's Box has been opened and there is no turning back!

Transformation #4
The Internet has changed how instructional materials are discovered and acquired

Before the print-to-digital transformation began in earnest, the Internet transformed how books and other content in physical forms (CD-ROM, DVD) were distributed, with an equally profound impact on the publishing industry.

Textbooks - Not so long ago, students bought their textbooks exclusively from the college bookstore, or perhaps from the independent college bookstore near the campus. If a student didn't want to keep the book, s/he could sell it back to the bookstore if the same book/edition was listed as a selected book for a course the next term. If not, s/he was out of luck.

With the introduction of Internet commerce, students could acquire textbooks from many sources online such as Amazon.com and Varsitybooks.com and a variety of others, including "gray" market online retailers that sell new and used international editions[31].

These alternative channels have impacted both publisher and bookstore viability. The impact on publishers (as discussed previously) has been to dramatically lower the demand for new textbooks. The impact on the traditional bookstore retailer has been twofold: pricing pressure from more efficient distribution channels; and increased complexity of inventory management.

Supplemental Materials – Instructors have often supplemented the textbook with additional readings. Before the advent of inexpensive copying, supplemental materials were purchased by the library at the behest of the instructor and placed on reserve for student use, a method that is still in use today in many institutions. Students can usually make legal copies of these materials under educational 'fair use' and library exemption provisions of the U.S. Copyright Act.[32]

With the introduction of Xerographic photocopy machines in the 1960's, instructors began creating print 'course packs' from materials gathered from their research. They took their carefully selected materials down to the local copy shop and had copies printed for each student, for which the student would pay the cost of the copying. When instructors began assigning copy centers to do the printing and sell the packets to students, publishers successfully sued[33] the copy industry for "non-educational and commercial"[34] use of their content. This stimulated the development of companies[35] that obtain fair use permissions and low cost fee-based access to copyrighted materials, and produced legal print-based course packs for students.

Today, many articles and readings valued by instructors as supplemental materials are available online at no cost, and are as far away as a Google search. But a number of the more recent materials are both copyright protected and not readily available for fair use or require a nominal royalty payment for educational use in their online versions. Publishers are rightfully nervous that exposing digital versions of valued copyright protected commercial materials for educational fair use will expose their materials to theft for commercial purposes.

In sum, the Internet provides an overwhelming amount of information that can, under the right context, be extremely valuable to instructors and students alike. These readily available materials significantly lessen the value of the textbook as a persistent reference source.

A technology-enabled, online marketplace would allow instructors and students to enjoy both appropriate on-line fair use and low/subsidized cost royalty-based access to copyrighted materials within a secure environment that protects and respects publishers' and authors' copyrights, and allows for payment of royalties when appropriate.

Transformation #5
E-learning – Its not just about learning at a distance anymore

E-learning is generally defined as using technology to enhance the learning process. Early e-learning focused on providing instruction at a distance through online courses. Today, 20% of all college students take at least one online course.[36, 37]

The true transformation in e-learning is the use of technology to support, enhance and facilitate what were traditionally teacher/lecture classroom-based learning models. These blended learning environments are also called hybrids because they merge the best of both worlds (virtual and classroom-based) with the use of and support from instructional technologies. Hybrid learn-

ing environments range from traditional teacher/lecture formats supported by course management systems (i.e. course syllabi, assignment drop boxes), to classes that blend lecture with online tutorials with collaborative environments where students and instructors interact online. These hybrid learning environments are becoming the rule rather than the exception, fueled in part by the changing face of college instructors and the demands from students for more anytime/anywhere learning opportunities and experiences. An added benefit of E-learning for some colleges is that it can serve to alleviate facilities overcrowding[38] and to improve the cost effectiveness of instructional delivery.[39]

To support these hybrid learning environments, new types of instructional resources (e.g. simulations, interactive learning objects) are being developed by a range of traditional and non-traditional publishers. These materials meet today's students' need for experiential learning, and can provide immediate and contextual feedback.

E-learning and the Internet has transformed how students and instructors interact - chat and collaboration technologies enable new forms of student/student and student/instructor communications and interactive learning that extends beyond the classroom.

E-learning has evolved from a peripheral activity for distance learning to a mainstream component of higher education instructional programs. The continued success of the e-learning transformation will further diminish the value and relevancy of the print-based textbook.

Today's Learning Content Creation and Distribution System: Conclusions

- The textbook publishing business as we know it today is not viable in the long term. Declining demand for textbooks that are not valued by students as a durable reference and an increasing efficient used textbook market are combining to reduce publishers' return on investment in developing new print-based textbooks. Fewer new textbook investments will result in reduced choice and higher costs. Many of the current textbook cost control initiatives serve to hasten the erosion of the traditional textbook publishing model.
- The high cost of today's textbook marketing and distribution models are difficult to justify in the digital age. The pricing of a textbook includes costs such as a publisher's expense to deploy textbook salespeople, a practice that is unnecessary in an age where all the needed information could be provided in a common textbook information service. It is also very expensive to ship books back and forth each term so that bookstores can better maintain their inventory turns. In their defense, publishers did not choose to conduct business this way; much of their current marketing and distribution models were developed specifically in response to the evolving needs and demands of higher education. However, market forces are now calling for improved efficiencies, greater cost containment, a common digital age method for publishers to promote their products to instructors, and a way to deliver their products to students without the overhead of expensive physical distribution costs that are factored into the price of the book.
- Textbook publishers are selling a product that is not as highly valued in today's learning environment. Today's students learn in very different ways than past generations, and the textbook in its current form is less relevant than in past generations. Many instructors find textbooks less important as a learning tool in a digital age where rich resources in a variety of alternative formats are available to help students learn in their own way.
- The digital age is diminishing textbook publishers' now-dominant role as developers and marketers of learning content for college students. – This change is difficult for publishers who have provided a valuable, needed service for generations to accept. However, it is time for publishers to embrace the digital age and re-establish their value proposition in a more democratized content development and dissemination environment.
- Publishers' commitment to flexibility generally does not violate the exclusivity of their brand and maintenance of their textbook-like price point. The major textbook publishers are trapped in this 'bundled' business model, and may have little flexibility to move to more granular versions of their product if there is not sufficient demand for such repackaging, particularly if based on a single publisher's materials offered on branded single-publisher website.

In sum, we do not believe the central issue is to lower the cost of textbooks. Rather, the real challenge is:

> *How do we leverage 21st century technologies, new Internet economy models and learning content distribution capabilities to provide the next generation of instructors, their digital native students and their educational institutions with quality, learning-style appropriate instructional materials in a variety of forms and at an affordable cost?*

What is needed is a digital marketplace that provides a 'level playing field' for all types of publishers to promote and distribute their own brand of instructional resources to instructors, students and their institutions. This new distribution model can, over the next decade, transform higher education and the publishing industry.

Dispelling the Myths

Before presenting a vision of the future of learning content in the digital age, the authors wish to dispel several 'myths' emanating from the current tension surrounding textbook costs.

Myth 1: It is possible (or even desirable) to mandate a rapid, 'forced' transition to alternative learning materials and digital distribution models

Response: Changing behaviors takes time. The culture of higher education has granted professors with enormous power over the instructional process. While this varies somewhat by segment, instructors, either individually or collectively by department, have virtually complete control over which learning materials will be assigned to students.

Another fundamental reality in higher education is that it is difficult, if not impossible, to change faculty behavior by mandate[40]. Nor can we 'wish' that more instructors would use materials that are more suited to their students' learning styles.

The only way to effect this desirable transformation is to provide an environment that enables those instructors who are predisposed to use alternative learning materials to do so.

Myth 2: Print-based instructional materials will disappear

Response: Not true! There will always be some intrinsic value to print materials. There will continue to be a significant role for textbooks as we know them in disciplines where the information is stable and/or their value as a reference persists.

While digital native students may embrace computers and hand-held devices and are comfortable with utilizing technology to access information, many students still prefer print versions of digital text and graphical materials. Existing custom publishing services produced in the bookstore or by a local provider, or direct shipment of print-based materials to students can fill this need. What will change is that instructors will be able to select only those materials that are relevant, and students will pay only for those materials that will be used. Print versions and even audio versions of materials should be a choice available to students[41].

Myth 3: 'Free' content is the solution to the problem

Response: There is no such thing as high quality 'free' content. Someone must produce the content, someone must maintain the content, someone must update the content, and someone must market/distribute the content. And especially in the higher education academic publishing environment, someone will want to 'own' the content or at least expect attribution for its use.

No less a 'free' content advocate than Lawrence Lessig addressed the paradox of 'free' content in his seminal book The Future of Ideas[42]:

> I am not arguing that there is such a thing as a "free lunch"….resources cost money to produce. They must be paid for if they are to be produced. But how a resource is *produced* says nothing about how *access* to that resource is granted.

The 'free' content we see today is more accurately described as *subsidized* content made available at no charge to students and institutions. Virtually all 'free' content repositories that exist today identify sustainability as a key near term objective with the exception of those subsidized by endowment-rich research universities.

Subsidization comes in many forms, including financial support in the form of government grants (e.g. NIH; NSF), institutional budgets (e.g. MIT; California State University's funding of MERLOT) and private foundation funding (i.e. Pew; Bill & Melinda Gates). None of these funding sources expect to provide permanent financing for maintaining and updating this 'free' content. Most all require some form of distribution to, and sharing with a subset of institutional members or partners. New models are needed to support making these materials available at no or low cost to the higher education community at large.

Myth 4: The higher education content problem is limited to instructional materials students buy for their classes

Response: The primary focus of this analysis has been on instructional materials purchased by students for their classes. It would be a mistake, however, to limit the dialogue to one component of the overall picture.

Equally significant in higher education is the billions of dollars of content purchased each year by libraries, which is increasingly purchased in digital forms. Institutions themselves buy billions of dollars of digital content and software to support instructional programs most of which is provided to students at no cost beyond tuition and fees, or perhaps a nominal technology or materials fee.

To complicate the issues even more, institutions large and small, rich and poor, must effectively manage the secure distribution of all this copyrighted, licensed content in digital formats, or face significant legal liability for improper distribution of those materials. The range of content institutions must manage includes 'no charge' content, to content sustained through micro payments, to content at fair market value from a wide variety of commercial publishers. It must manage content required by instructors and purchased by students though the campus network,[43] to content purchased or accessed directly by students, to content purchased by the institution for instructional support, to content purchased for the library.

Chapter 2:
The Future of Learning Content Development and Delivery

The opportunity exists today to begin a transformation of higher education learning content from the print era to the digital age; from a closed, publisher-dominated development and delivery system based on the textbook to an open marketplace model that empowers both consumers and producers. We refer to this model as a digital marketplace for higher education, which will be referred to hereafter as the Marketplace.

This transformation to a Marketplace will be driven by instructors seeking alternatives to publishers' bundled solutions, and by today's digital native students' needing and desiring innovative learning materials more appropriate for their experiential and intuitive learning styles.

This transformation will not be a rapid process; higher education moves at a pace uniquely its own. The best vehicle for fostering change in higher education is to provide a nurturing environment where instructor and student demand for alternative content delivery can be supported. The momentum of market forces outlined in Chapter 1 will result in the Marketplace, over time, reaching a "tipping point"[44] where it becomes the de facto method for finding, purchasing and delivering learning content to students, instructors, and their institutions.

This chapter will provide one perspective on the future of learning content development and delivery based on the authors' ruminations, hands-on experience and ongoing dialogue with the higher education community at large over the last 15 years. We will discuss our perceptions of:

- the basic functional requirements and scope of functionality for a Marketplace;
- the essential services the Marketplace should provide to the various participants;
- the market environment, standards and technologies enabling its development; and
- the benefits that such a Marketplace could provide to its constituencies.

Functional Recommendations for a Higher Education Marketplace

The following functional considerations are some of what the authors believe are the most important attributes for the successful creation of an effective and efficient Marketplace.

A neutral playing field - A Marketplace should allow all content producers, technology companies, course and learning management systems an equal opportunity to participate. The Marketplace should be equally accessible to all higher education institutions, their instructors and students. All content producers, including textbook publishers, computer-based learning developers, no-charge content owners and 'new model' content creators that meet learning industry standards should be encouraged to participate. Open architecture designs and technology standards should allow any interested standards-compliant technology company to provide enabling infrastructure components.

Consumer empowerment – Today's Big 5 publisher-dominated content industry offers limited consumer options and current distribution models minimize consumer influence over the market. The Marketplace should focus on empowering students, instructors and their institutions:

- Students should have multiple content format options (e.g. online or digital-to-print), multiple use rights options (e.g. single use, term use or permanent license) and access to instructional support resources and reference materials - all in a secure environment.

- Instructors should have a greater variety of fee-based and no charge content from which to choose, from scores of publishers, in a seamless, transparent market environment. These materials should be organized in the context of their course, by discipline or subject matter areas, and accessible for their review and evaluation at no cost.
- Institutions should be empowered to aggregate their purchasing power to control content costs and to collectively address shared digital content management requirements.

Fee-based and no-charge content – A Marketplace should give equal opportunity to all types of content business models, including innovative subsidized models for no-charge content.

Protect and enforce everyone's rights - A Marketplace must be able to enforce content owners' copyrights and use rights (how a licensee may use content; for how long; in what form). The continuum of rights management models ranges from digital rights-protected fee-based materials to materials available at no cost under a Creative Commons[45] license. No-charge content owners should be provided with persistent tracking of content use to establish the academic value of the content for professional recognition purposes.

A Marketplace should be designed to protect confidential student information. Students should not be sent to unknown, potentially unsecured Websites to purchase content, nor should they be subject to unwanted content providers' advertising, or the sale of their contact information.

A Marketplace should also be designed to protect education institutions from copyright violations such as improper distribution of copyrighted materials.

Standards-based systems components – Over the past decade, a number of standards have emerged that enable the establishment of an open Marketplace. These include content interoperability standards, metadata standards, digital rights standards, and federated user authentication standards. Other standardization mechanisms will be needed for the Marketplace, including standardized content licenses and rights expressions frameworks.

Encourage new content development models – The Marketplace should provide mechanisms to enable a full spectrum of content developers to participate and derive appropriate financial and/or academic compensation for their efforts. Discipline-based academic organizations and consortia should be enabled to create content development programs to compete with and/or complement commercial and no-charge, subsidized content producers.

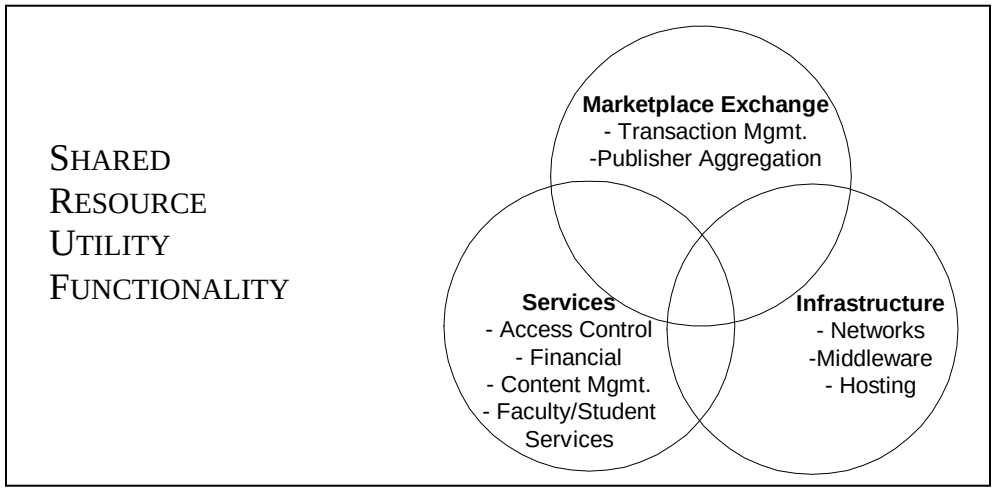
Centralized design/localized implementation – The Marketplace infrastructure must be designed, implemented and operated at a national level to meet publishers' need for a single aggregated market for their content, and to achieve economies of scale. However, the Web applications that are the 'face' of the system to its campus-based constituencies should be customizable to be responsive to local requirements and processes.

A comprehensive institutional approach to digital content management - A Marketplace should encompass all types of digital content resources used within, and purchased by the institution. This includes content purchased by students as directed by instructors, and/or of their own choosing for self-directed learning and research. Institutional content purchases include library materials (e.g. academic journals) in digital forms for use within the institutional constituencies, and instructional support software and learning materials purchased by the institution and made available to students and instructors in specific disciplines (e.g. mathematics or chem. lab simulation tools). Significant cost benefits could accrue to institutions from a comprehensive integrated approach to digital content acquisition and distribution.[46]

A Suggested Digital Marketplace Scope

These functional recommendations suggest a definition of a Marketplace that is broader than a simple 'exchange' website where anyone is free to register and post materials for sale, or to buy the materials (e.g. eBay, Amazon). An effective Marketplace should go beyond basic buy/sell functionality to include a range of services that integrate the Marketplace function into the technology systems and operating cultures of higher education institutions. Only by acknowledging and respecting the institutional culture and its existing processes can the Marketplace effectively transform higher education's approach to acquiring and distributing digital content.

In a 2003 paper Managing Digital Learning Content, McElroy & Beckerman proposed a Marketplace project scope and implementation model called a *shared resource utility* (SRU)[47]. The SRU concept expanded beyond the basic Marketplace model to consider other key functional requirements for integrating a Marketplace into an institution, and providing a way for institutions to proactively address the challenge of digital content acquisition, management and distribution.



Source: Managing Digital Learning Content in Higher Education Institutions – 2003

The white paper provided descriptions of each of these services and infrastructure requirements that would enable a shared resource, as well as one potential business model concept for how to implement such a shared resource. While this is only one potential functionality scope and business model, it does provide a viable framework for considering institutional requirements relative to the Marketplace and its integration into institutional systems.

The chart on the following page provides an overview of services that would be provided to the various market participants from a comprehensive SRU-type Marketplace system.

Higher Education Digital Marketplace

Web Application Functionality Overview

Faculty Instructor

- Search and discover digital content
- Browse and evaluate content
- Maintain content portfolio
- Package content for student use

Student

- Search and discover content
- Acquire content for course use or independent study
- Maintain content portfolio

Institutional Content Administrator

- Establish & maintain institutional content policies
- Manage institutional content acquisition, access & publishing

Institution Web Portal

Faculty/Institutional Publisher

- Publish content
- Register content to catalog
- Establish content distribution rights, fees and royalty payment rules
- Promote content

Commercial Publisher

Access & Authorization Control

Digital Marketplace Web Applications and Web Services

Hosted Content Repository

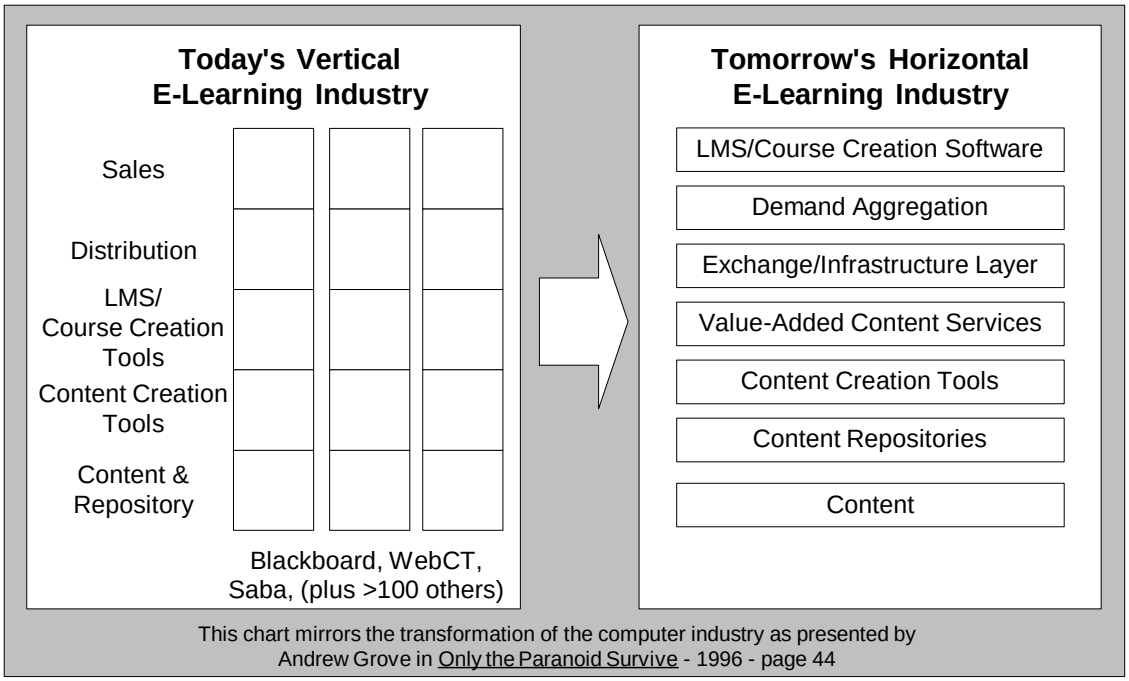
Via Internet

Provider-Controlled Content Repositories

A Conducive Environment for a Marketplace

Creation of an efficient, effective Marketplace is now possible because of both a recent transformation in the e-learning market and a financial market model known as a *value net*.

An E-learning market transformation - The key market transformation that enables the Marketplace is the shift of the E-learning market from a vertically integrated industry to a horizontal market structure.[48] In a January 2002 paper, Developing an International Learning Object Economy, McElroy & Beckerman discussed this imminent e-learning market shift (as illustrated in the chart below), which has played out, as predicted, over the past four years.[49]



Source: Developing An International Learning Object Economy - 2002

The nascent e-learning industry consisted of scores of vertically integrated, proprietary learning/course management systems. Each of these vendors developed a complete end-to-end solution using proprietary technologies and content formats which resulted in the content becoming "trapped" and unusable by other vendors' systems.

Andrew Grove noted the power of a vertical-to-horizontal market shift in the computing industry, and the 10X impact of the horizontal shift on price and capabilities of computing technologies.[50]

The rapidly evolving e-learning market is exhibiting many of the same horizontal market benefits. The industry has now effectively separated content from delivery systems, due to widely accepted content interoperability standards.[51] This portends significant benefits for both consumers and producers of digital content. Consumers will benefit from the exponentially growing numbers of digital resources made possible by interoperability standards and automated content repurposing capabilities from heretofore proprietary authoring formats. Producers will be able to sell their content in more forms to a growing number of markets.

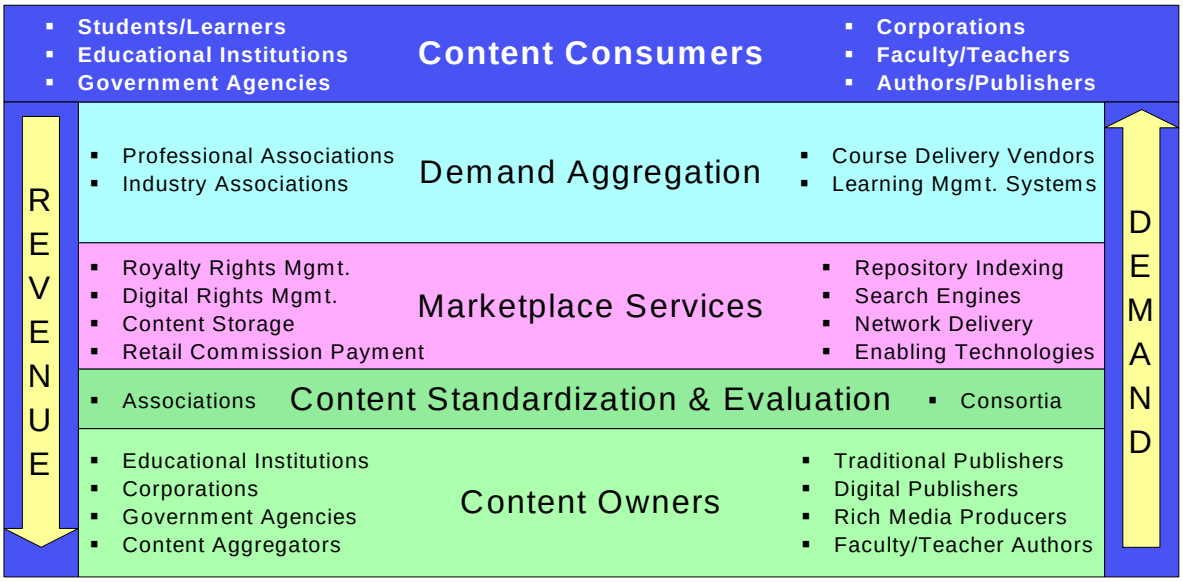
For the student, this transformation should result in significant cost reductions[52] – students will have access to a greater variety of content and formats for less money, because of lower distribution costs and increased competition among content providers.

A "value net" for the Marketplace - The shift from learning content in physical forms (i.e. textbooks, CD-ROMs, videotapes) to network-based digital forms can also enable a shift from a producer-driven *supply chain*[53] business model to a *value net.*[54] In a value net, many entities can provide value to the goods and services that flow through the market. Those that provide value along the way from producer to consumer can derive financial (or in some cases, academic) benefit from their participation in the value net.

Supply chains are static; value nets are dynamic -Supply chains are "push" marketing – driving one-size-fits-all products through the distribution chain to the consumer. Value nets are "pull" markets, shifting the locus of control from the seller (i.e. publisher) to the buyer or customer, and where demand is the key market driver. The Marketplace will succeed if sufficient demand is created for learning content in granular digital forms.

In a 2002 white paper Developing an International Learning Object Economy, McElroy & Beckerman described one perspective on what a value net would look like for a higher education Marketplace.[55] The graphic below is excerpted from their paper.

Horizontal E-Learning Market Value Network



Source: Developing an International Learning Object Economy - 2002

The paper suggested that such a value net would have three basic layers:

Content & Content Standardization and Evaluation – The content layer includes digital content (text files, images, rich media, audio/video tutorials, simulations, testing modules, etc.) and services (content review, content creation technologies, content aggregation services).

Marketplace Services – The Marketplace layer includes services that connect the content owners and those that bring consumers to the Marketplace – the demand aggregators.

Demand Aggregation – In any market, those that connect goods and services to consumers capture a portion of the purchase price, such as bookstores and online textbook retailers for textbooks. Those that bring customers to the Marketplace should share the revenues.

The value net is an important concept for considering how a Marketplace might be developed and implemented. Further value net analysis is available in the white paper.

Technologies & Common Policies that Enabling Marketplace Development

Technical Standards and Frameworks – can enable secure interoperability of systems and digital learning content in a Marketplace. Following is an overview of the established and maturing standards that have been developed by the technology industry to enable the creation of a digital marketplace and re-use of digital learning materials. These same, technologies would be used to design and develop an efficient and effective Marketplace for digital learning materials.

- Open Web service standards (i.e. XML,[56] and SOAP, [57]) enable Web applications to interact with other Web applications and traditional ERP[58] applications for the purposes of exchanging data, such as transaction data. XML has become an important standard for normalizing digital learning resource meta-data records from disparate sources into common structures and descriptions.
- Service Oriented Architecture (SOA) is a software architectural concept that enables systems to allow other systems to easily communicate with it in a standardized way. This is a complementary design feature to Web services as discussed above. SOA-designed systems make available standard communications interfaces that Web applications and other systems can access to minimize integration efforts.
- The Open Knowledge Initiative (O.K.I) develops and promotes specifications that describe how the components of a software environment communicate with each other and with other enterprise systems.
- Content metadata standards and structures have been specified by the IEEE Learning Technology Standards Committee for digital content labeling and storage.
- The IMS Global Learning Consortium develops and promotes the adoption of open technical specifications for enabling interoperable learning technologies. IMS specifications cover basic metadata standards and a number of areas critical to effective integration of learning content into the institutional environment, and 'course cartridge' standards for publisher content interoperability with course management systems.
- Open content interoperability standards - SCORM (the Sharable Content Object Reference Model)[59] standards provide rules that a Learning Management System (LMS) must follow in order to present a specific learning experience. SCORM was developed with the support the Department of Defense Advanced Development Laboratory. Among its many functions, SCORM effectively separates content from delivery system, and enables the distributed learning environment discussed in the following section.
- Federated authentication and access services - Shibboleth[60] is standards-based, open source middleware software developed by an Internet2 working group to enable local users to access resources across organizational boundaries without requiring additional access logon. This federated system, managed by the *InCommon Federation* enables learning materials to be shared among institutions without requiring individual users to manage access to multiple resource sites. It will allow Marketplace participants to make informed authorization decisions for access to protected online resources while preserving the privacy of the individual user.
- Digital library standards – A variety of standards have developed for the indexing and search capabilities for digital library materials including Metadata Encoding and Transmission Standards (METS),[61] a schema and standard for encoding metadata for objects within a digital library, and the National Information Standards Organization (NISO)[62] standards for retrieval, re-purposing, storage, metadata, and preservation of digital library resources.

Technologies

- E-commerce infrastructure – Technology infrastructures to manage the network-based fulfillment of e-commerce transactions such as those for the Marketplace are available from several major technology vendors.
- Digital Rights Management (DRM) systems – Most current DRM systems are proprietary, vertically integrated commercial systems. Two initiatives hold promise for providing a flexible, open standards architecture to address the diverse DRM requirements in higher education. The DReaM project of the Open Media Commons[63] is focused on developing royalty-free DRM solutions that would be appropriate for the Marketplace, including addressing fair use. The Open Digital Rights Language (ODRL) Initiative[64] is an international effort aimed at developing and promoting an open standard for rights expressions.
    - Open DRM systems can effectively separate rights management from the content protection system, which then would allow commercial publishers to choose any content protection 'wrapper' and have it enforced in the Marketplace.
    - Open DRM Systems can effectively separate user identity and authorization from the hardware device, which would allow today's highly mobile students and instructors to securely access the Marketplace from multiple devices at multiple locations.
- Hosted utility infrastructures – The availability of large, scalable computing and telecommunications infrastructures that are operated by specialized, highly competitive hosting vendors can dramatically lower the infrastructure costs for collaborative Marketplace implementations rather than each institution investing in its own local infrastructure which could be prohibitively expensive for resource-scarce institutions.
- Automated metadata generation – Content interoperability depends on accurate content metadata, and currently metadata is manually generated and manually updated. New technologies are emerging that will enable many of the metadata fields to be generated and updated automatically which will improve content quality and usability.
- Content repurposing technologies are emerging that will enable tech-literate instructors to convert and update older content that is 'locked' inside proprietary systems and publish the content in a SCORM-compliant repository. Publishers face an equally significant challenge in converting their content to be SCORM compliant, and then keeping the content current. These repurposing tools and automatic metadata generation tools will dramatically lower publisher costs associated with converting and maintaining interoperable content.
- A policy management application – would sit at the conceptual 'center' of the Marketplace infrastructure and provide the functionality to manage the policies and rights of the content provider's organization and the content consumer's organization; and provide the 'engine' that enables complex transaction fulfillment.
- Digital-to-print systems – The technologies for low cost digital-to-print services are improving as demand for these services grows. Educational institutions, specifically college bookstores, are equipped to provide at least basic custom publishing capabilities. Technologies are emerging to produce a more sophisticated custom publishing product (e.g. mixing black & white and color pages) and integrating content from various publishers. Custom publishing services (e.g. Lulu Press) also provide these services. The

technologies will continue to improve such that high quality, custom print packages will be readily available from a number of sources at affordable prices.

- Electronic paper – is an emerging technology that will likely replace custom publishing as a method of providing print-based materials to students. Electronic paper can be loaded with print content and accessed just like a book. Other improvements in display devices such as tablet computers and specialized handheld devices will also reduce demand for custom publishing in the future.

Common Policies

- Common digital content license agreements similar to the 'shrink wrap' licenses agreements used by software publishers would allow online content purchases by institutions and eliminate the current practice of institutional review and negotiation of each license agreement.
- Common digital content purchase agreements would provide common terms and conditions for content purchase and aggregated buying by institutions. These agreements would need to be adaptable to accommodate state and local procurement policies.
- Common use rights frameworks – would establish a set of parameters for content use and content pricing such that content producers could make their materials available in multiple forms and with unique pricing terms for each form.

Benefits of an Effective Higher Education Digital Marketplace

A persistent underlying theme of this paper is the correlation between potential benefits to be realized from the Marketplace and its scope and design. It has been noted that a simple Internet-based exchange would be insufficient to address the scope of digital content management issue. The importance of a customer-centric Marketplace is also a recurring theme.

It follows that a market controlled by any one publisher, group of publishers, or one learning technology provider such as a course management system vendor would have limited value to the higher education community because it would not be vendor neutral and hence not likely be customer centric.

Similarly, multiple markets developed by individual states or consortia would not be responsive to publishers needs because such a situation would deny publishers the benefit of lower costs. In fact, their investment costs would rise since publishers would need to be responsive to multiple business models, implementation standards and content rendering and tagging standards.

Therefore, any benefits to be derived from promoting multiple marketplaces would be limited at best .

The benefits detailed in this section are based on the assumption that the Marketplace is designed in a way that is responsive to the functional recommendations as articulated in Chapter 2. Many of these benefits are dependent upon the Marketplace reaching a critical mass of demand and a corresponding level of content supply.

Student Benefits

- Lower learning materials costs – could be realized because:
  - Students would buy only the materials they need, when they need them, in the form of their choice, from a variety of use rights options.
  - Instructors could assign only those materials to be used in the course and include a wider variety of learning resources than are available in a single textbook.
  - Object-level competition – Unlike music and movies, which are unique products (e.g. there is only one "Titanic" movie), digital learning modules that address the same topic or learning objective in basically the same way, with equal perceived quality, can be considered *substitutes in consumption*[65] which will create downward price pressure on the more expensive item of equal perceived quality. As the content choices increase to include lower cost materials from 'new model' publishers, this price pressure can be expected to lower overall content prices on a per-object basis.
- Purchase all content from a variety of sources for one or more classes in a single transaction and the clearinghouse function would handle all subsequent financial and rights-granting tasks.
- More learning resource options would be available to the student including tutorial services and fair use-approved research materials.
- More learning resources in a wider variety of formats would be available to meet today's digital native students' experiential and intuitive learning styles.
- Content quality indicators would be available for the students' consideration for content based on experiences and ratings by other students, instructors, professional associations and other peer review or quality standards organizations.
- Students would acquire content in a secure environment that protects their identities from unwarranted use and distribution. Instructors that now require students to purchase directly from producers' Websites expose the students to potential identity theft and undesired marketing from the vendors and others that might obtain personal contact information from the vendors.[66]
- Students could maintain a personalized content portfolio to keep licensed and other course content and content referential information (e.g. URL's) for future use.

Instructor Benefits

- A seamless, transparent environment to review content would enable instructors to view all available content in a structure that organizes the materials by the learning objectives for their class.
- The ability to select and bundle digital learning resources, both fee-based and no-charge, from a variety of publishers and other content sources, into a single class pack for student purchase.
- Content quality indicators would be available for content based on experiences and ratings by other instructors, professional organizations and students themselves.
- More content options to choose from to create adaptive learning environments with a broader set of materials for the class that provide alternative content formats for those

with different learning styles. Instructors could select larger publisher packaged content, if desired, or assemble a unique package of individual learning modules.

- Assign only the specific materials to be used in the class – with the option to differentiate between required and recommended items.
- Ability to self-publish digital material for class and/or shared use within the policies of the institution.
- Maintain a content portfolio that organizes their materials in a personalized manner, allows them to add their own content, and share their portfolio and class content lists with other instructors or to use a content portfolio as part of a Curriculum Vita[67].

Institutional Benefits

- Lower content costs would result from collective purchasing, group licensing and shared access across the distributed infrastructure of the Marketplace. This would enable institutions to get more "bang for their buck" in purchasing content in digital forms; for their current investment in content, institutions could provide a broader and deeper resource base for students and instructors.
- Lower administrative costs for acquiring content by eliminating manually processed purchasing and license contracts and contract review for each digital resource purchase.
- Controlled liability exposure for improper distribution through collective risk management programs encompassing all institutional Marketplace participants.
- 10X lower costs to manage and distribute digital resources could be realized through participation in a shared digital resource management capability such as a Shared Resource Utility.[68]
- Lower publishing costs would be realized because the Marketplace would provide institutions with a rights and royalty management service, and directly pay any royalties due to authors and other contributors.
- Stimulate faculty innovation by creating a dynamic environment for content development and repurposing, and enabling new forms of hybrid instructional programs.
- Enhance facilities utilization by enabling self-directed and collaborative learning experiences outside the classroom, reducing classroom time and maximizing use of limited facilities.
- Improve learner outcomes by assessing student success relative to the learning materials used for the class.
- Provide enhanced resources for smaller and under-funded institutions – Large, better funded institutions are more likely to staff and operate digital libraries and offer instructional support environments than smaller, less well funded institutions. A shared digital resource management capability would allow groups of institutions to create instructional and library environments that would allow the pooling and sharing of a wide range of materials while maintaining the ability to "brand" this library resource at the institution level.

Publisher Benefits

- Granular and package sales opportunities – Textbook publishers and other content producers will have an environment to sell both custom bundled solutions and granular components of their materials to better meet instructors' needs. For example, many instructors might choose an '80%' solution and enhance the core package with other materials of their own, and/or from the Marketplace. Publishers rightfully would charge a higher price point for an 80% solution. Conversely, granular sales will allow the publishers to 'value price' their materials. For example, certain chapters of a textbook may be more highly valued than others, and might be priced to reflect that value.
- Opportunities for new types of publishers and market participants – The horizontal market structure and value net creates opportunities for specialization in the content creation process. Today's publishers seek ways to leverage their core competencies into a broader market presence, which the Marketplace would enable. A variety of interesting content development models and partnerships will develop to the benefit of all stakeholders.
- Publishers will be presented with lower cost advertising and promotional opportunities in the Marketplace through *permission-based*[69] marketing. Instructors want to stay current with the available instructional materials, but don't always have time to sort through the stack of direct mail they receive from publishers, or to meet with textbook salespeople. The Marketplace would provide a mechanism for publishers and other content developers to promote their materials directly to instructors by target discipline and subject matter area; instructors would be able to access and evaluate these materials when it is convenient to them, or opt out of receiving promotional materials altogether.

Policy Benefits/Opportunities

- The Marketplace would become the learning innovation engine that would drive the growth and development of the "new pedagogies, curricula and technologies" cited by the Spelling Commission[70] as essential innovations.
- The Marketplace would provide an environment to discuss and implement what Fisher and McGeveren identify as possible remedies for removing the obstacles that prevent more widespread educational use of digital forms of copyrighted materials including:
    - "Greater reliance on technology to secure licenses for using content and to assist with such rights clearance where necessary"
    - "Agreements among educators…concerning standards and best practices for their use of content, their reliance on fair use, and their deployment of DRM"
    - "Increase in distribution of content under more open licensing models such as Creative Commons, thus enlarging the amount of content available for unencumbered education use." [71]
- The Marketplace could provide a mechanism for direct student assistance for purchasing learning materials for financial aid students including a complete audit trail.
- The Marketplace infrastructure's open architecture and flexible design would ensure its ability to handle different business models and could be readily adaptable to address other, new learning and training content markets critical to controlling the cost of education and to supporting our nation's competitiveness in the global marketplace.

- The K-12 market generally runs about five years behind higher education in the use of instructional technology.[72] Many of the issues in higher education are also evident in K-12. However, the business models will need to be quite different due to the unique funding and purchasing methodologies in K-12. A properly designed Marketplace would be adaptable to provide a digital age business and distribution model responsive to K-12's unique requirements as well as that of higher education.
- The diversity of workforce development, education and training initiatives (i.e. government supported job training, trade and professional certification) would benefit from the Marketplace. Industry standard training materials aligned with ever-changing job skill requirements could be used by institutions serving local employers by offering a potentially lower cost program delivery, improving access to a broader range of quality training programs and ensuring more highly skilled workers in the job market. A marketplace covering the breadth of workforce development would allow publishers to tailor their learning content so it is applicable to multiple markets, maximizing their market potential.
- Government agency training (federal, state and local) all share common needs for employee certification and skills upgrade training. A national digital marketplace encompassing these shared objectives using e-learning would significantly lower the cost of providing these essential training services to government employees. In fact, there are a number of agency-funded e-learning initiatives in place today, although they are stand-alone, agency-specific programs.

Chapter 3:
A Collaborative Approach to Marketplace Deployment

Chapter 1 reviewed the untenable state of the textbook market for both the publishing industry and the consumer. The disconnect between the textbook (as sold today) and the needs of tech savvy instructors and the growing digital native learner population for appropriate learning materials contribute to the pain in the learning content market. Our conclusion: A marketplace must enable the development of a greater variety of more granular learning materials and to make them readily available in multiple forms and formats.

Chapter 2 defined key functional recommendations for the marketplace, discussed the available enabling technologies and standards, and detailed a wide range of benefits such a marketplace might accrue for its stakeholders. This open marketplace for higher education learning content is referred to in this paper hereafter as the Marketplace.

Our attentions now turn to how a collaborative effort could be established to create a Marketplace. Our discussion will focus in five areas:

1. Quantifying the need for, and potential use of a Marketplace by instructors and students;
2. Identifying the stakeholders and their potential interests in the Marketplace;
3. Identifying guidelines for development of a management model, organizational framework and governance model for a Marketplace;
4. Reviewing existing initiatives and models that provide a foundation upon which to build a Marketplace; and
5. Suggesting a potential timeline for Marketplace implementation.

Before delving into these topics, it is appropriate to review several previously discussed functional recommendations in the context of moving the Marketplace from concept to reality.

- The Marketplace plan and dialogue should focus on reinforcing existing faculty, student and institutional behaviors that would encourage the growing demand for learning content in new forms and formats to meet the needs of today's digital native students and the next generation of instructors that seek to use technology-based learning resources for their classes.
- The Marketplace management model must be neutral to all stakeholders, including institutions, publishers, technology providers and higher education organizations.
- The Marketplace must be demand-driven and customer-centric. This means the first priority should be meeting the needs and requirements of students, instructors and their institutions, in that order. Nurturing these new demands will result in a larger market opportunity for content producers' products and services.
- The Marketplace must be national in scope but implemented[73] locally. The Marketplace infrastructure should be national in scope because 1) publishers would find it prohibitively expensive and complex to participate in dozens of regional or state marketplaces with different business models, contractual processes and content preparation requirements, and 2) economies of scale would be difficult if not impossible to obtain on a state or local level. However, the Marketplace should be implemented at the state/local level to ensure responsiveness to state and institutional needs and requirements.

Quantifying the Need for a Marketplace

Little reliable data is available to measure the true extent of instructor and student interest in a more granular, digital-based learning materials resource. However, the indicators suggest that 10-30%, or 110,000 to 330,000[74] instructors could have an immediate, active interest in an alternative learning content delivery model.[75]

Within the context of the textbook cost issue, the current information available is limited to surveys conducted by the two interest groups active in this dialogue, the Association of American Publishers and the State Public Interest Research Groups[76]. Their surveys were designed to focus on the tactical issue of textbook pricing, bundling and marketing from the viewpoint of publishers and students. Both of these surveys clearly demonstrate that the 'status quo' is not satisfactory to any of the constituencies.

An immediate Marketplace development priority, therefore, should be the commissioning of one or more studies to determine the predisposition of faculty and students to utilize an open, more granular learning materials resource. Such a study should:

- Be conducted by an independent entity using methodologies that provide the assurance of an unbiased sample of instructors and students;
- Be segmented across higher education institution segments because it is expected that student and instructor needs will vary significantly across institutional segments;
- Seek to 'ask the right questions';[77]
- Seek to quantify the underlying behaviors that determine the likelihood of instructors and students to benefit from the Marketplace, and
- Seek to quantify the learning style needs of students in various segments and across socio-economic and other factors.

The study(s) would form a knowledge base for the prioritization of development activities and contribute to the systems design effort.

Marketplace Stakeholders

This section will discuss six categories of Marketplace stakeholders:

- Instructors and students;
- Higher education institutions;
- Content providers;
- Those responsible for implementation facilitation;
- Enabling technology providers including technology companies and related entities; and
- State and federal policymakers seeking improved performance and efficiencies from their investment in higher education.

Stakeholder representation *- In the higher education community, virtually every constituency or interest group has one or more association, collaborative or initiative[78] that facilitates, represents or promotes its interests. These organizations represent different segments (e.g. community colleges), administrative groups (e.g. business officers), and institutional missions or departments (e.g. libraries, research; teaching and learning). It is reasonable to assume that*

some of these organizations would have interest in representing their stakeholders in the Marketplace. Our purpose in identifying potential organizations is for illustrative purposes only; participation would be driven solely by the interests of each organization and its membership.

Instructor and student interests should be considered the core constituency when developing the Marketplace. In keeping with the goal of nurturing existing behaviors rather than forcing wholesale change, we must look for organizational leadership from within those organizations that support technology-based teaching and learning activities and environments, rather than relying on traditional faculty policy and advocacy groups. The institutional and individual members and constituents of these organizations are more likely predisposed to favor a Marketplace concept to support their efforts.

A number of the organizations that focus on teaching and learning have diverse but nonetheless complementary missions. Typical of these many organizations and initiatives are:

- the EDUCAUSE Learning Initiative,[79]
- the Multimedia Educational Resource for Learning and Online Teaching (MERLOT),[80]
- the National Center for Academic Transformation, (NCAT), [81] and
- the National Institute for Staff and Organizational Development (NISOD).[82]
- the New Media Consortium (NMC),[83]

The instructor and institutional membership and proponents within these organizations are likely advocates for increased digital learning resource options.

There is also an important role in the Marketplace dialogue for the discipline-based societies and associations related to the discipline-specific indexing of content and the expressed interest of many of these organizations to stimulate and facilitate the development of technology based materials among and between their memberships.

The interests of students are not represented by similar organizations,[84] largely because of their transitory nature. However, students should be represented and provided with the opportunity to participate in the dialogue, with care taken to represent the range of students' institutional segment, demographic and socioeconomic interests.

Institutional interests in the marketplace should coalesce around three areas: institutional policy; functional and operational requirements; and the aggregation of institution participation in the Marketplace.

Institutional policy Institutional issues such as encouraging effective teaching and learning strategies and mediation and management of cultural change can be addressed by the variety of associations that represent the interests of senior administrative groups (i.e. chancellors and presidents; provosts; academic officers) across and within higher education segments. A sample of these organizations is included in the Stakeholder Map on page 34.

Each segment will have unique functional and operational requirements for the implementation of the institutional Marketplace within their member institutions. For example, community colleges may be very focused on low cost content and resources for the at-risk learner, while smaller private four-year institutions will look to the Marketplace to provide a new learning resource base for their students in order to be more competitive. It will be important to consider

all these requirements in the systems design so that the needs of all segments can be accommodated.

Each segment should consider Marketplace participation aggregation models to provide a common contractual framework and define a set of services tailored to their institutional requirements and budgets. These agreements could be enabled by organizations that currently exist in part to assist member institutions in the ongoing improvement of their educational programs. One example of such an organization is the Council for Independent Colleges[85] which represents many institutions the private four-year segment. Organizations serving other segments could elect to support aggregate their members' interest in Marketplace participation.

Content provider interests are segmented in four groups for the purpose of this discussion; the 'Big 5' textbook publishers,[86] the "long tail"[87] commercial publishers, 'new model' collaborative developers, and the 'no charge' content providers.

- The Big 5 publishers now sell more than 80% of new textbooks in the U.S.[88], and are represented by the Association of American Publishers (AAP).[89]
- The commercial publishers beyond the Big 5 are described as long tail[90], or lower volume publishers. This is a large constituency in the higher education learning content market; the AAP says that 8000 publishers are present in college bookstores today[91] – meaning that roughly 20% of the market is split among nearly 8000 publishers.[92] The most relevant reason for using the long tail concept to describe this group is that the Marketplace will provide a valuable and leveragable market opportunity for medium and small publishers who may have difficulty deploying the resource base needed to support distribution of their content in physical forms.
- It is anticipated that a breed of 'new model' publishers will bridge the gap between commercial publishers and no-charge subsidized content repositories. These may be sponsored by institutions, consortia of institutions, discipline-based professional associations and other collaborations. These producers will leverage digital production efficiencies and operate peer review and editorial functions as valid and rewarded academic activities. They will charge fees for their content sufficient to defray the financial costs of creating, maintaining, updating and distributing the content, and to fund new content development. The most efficient and effective of these new models could rival the quality of commercial content at a fraction of the cost to students.
- A growing array of no-charge subsidized content providers will come and go over the decades to come, many to evolve to the 'new model' content business model described above to supplant temporary government, foundation and institutional subsidization.

Each of these content provider categories will have unique interests in the Marketplace, and will seek to be at the table as the Marketplace is developed, implemented and operated.

Implementation Facilitation: A range of important collaborative activities will be required to develop some of the needed standardized components such as contractual mechanisms, licensing standards and systems integration processes needed to deploy an effective, efficient Marketplace. Two distinct collaborative processes are anticipated:

Business processes might be developed through the combined efforts of the publishers and their representative organization (AAP)[93] and the associations that represent the administrative managers responsible for purchasing (NACUBO)[94] and legal matters (NACUA)[95] related to digital content acquisition and distribution. These tasks include:

- Developing common procurement standards and contractual agreements that can enable institutions to purchase content through standardized contracts,[96]
- Developing standard licensing agreements[97] and use rights framework matrices that provide a common yet flexible way for publishers to package and price their content,
- Risk management programs related to potential copyright violations stemming from institutional content management, which might include negotiating limitations of liability with content providers for inadvertent copyright violations related to content licensed for institutional use and deployed on an institution's secure distribution infrastructure.

Technology integration standards would be based on available standards and include a variety of integration considerations including financial system integration for purchasing, student system integration of course information, and library system integration. Coordination of this integration activity could be managed by organizations such as EDUCAUSE and/or organizations that represent the financial and student services administration including ERP integration, user authentication and integration to library systems and existing digital library initiatives.

The **Enabling Infrastructure** should be provided to the Marketplace by private sector companies in the form of hosted Web applications and a transaction and rights clearinghouse function.

The entities included in this constituency would include infrastructure related software and hardware firms, IT services organizations, and standards bodies.

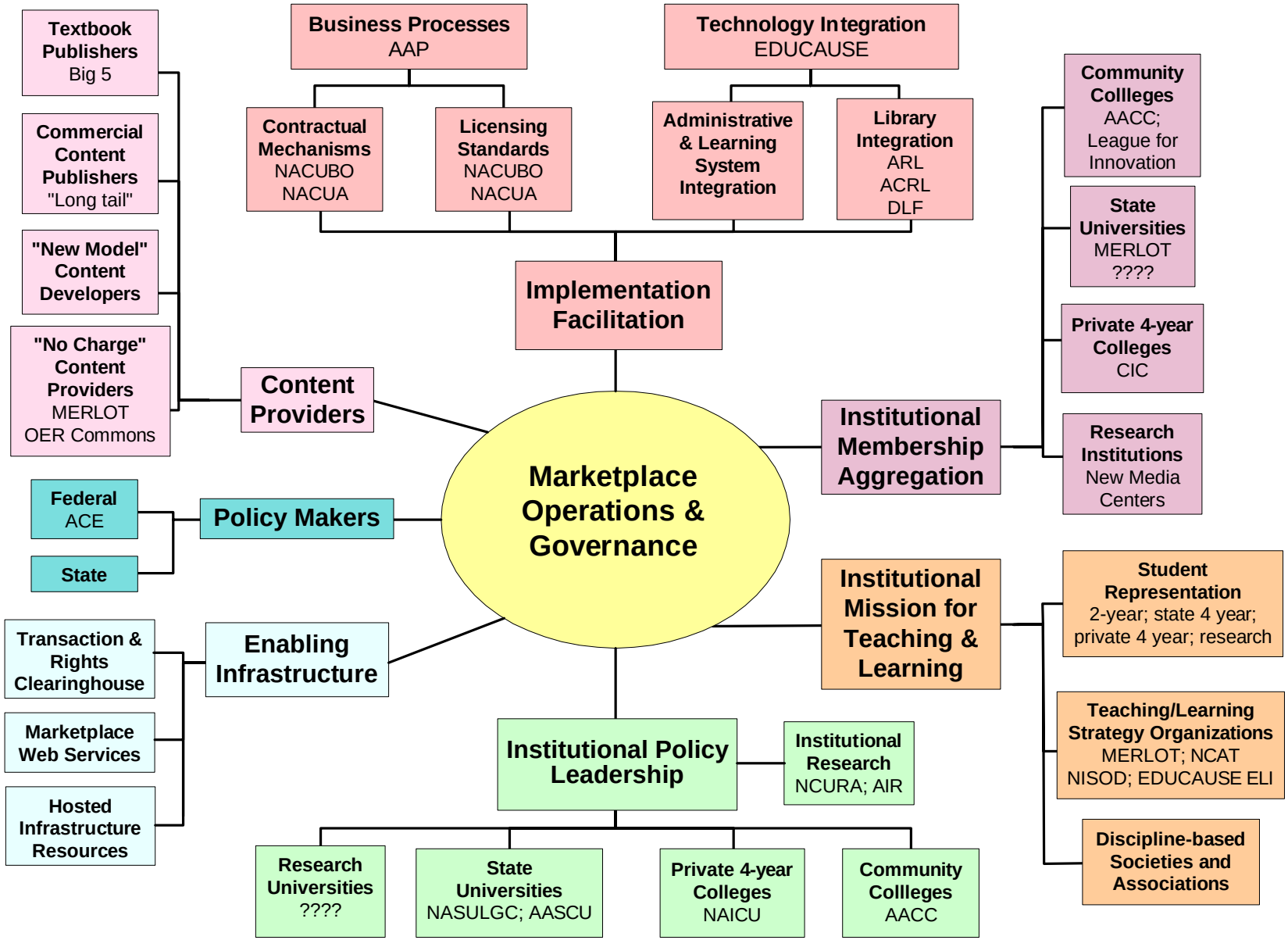
These companies and organizations would need to actively participate in the collaborative effort to assure that the functionality and services meet the needs of the wide array of constituencies and segments within the higher education community.

State and federal policymakers are keenly aware of the rapidly rising costs of higher education in general – not just with textbooks. However, the impact of escalating textbook prices is evidenced by over 120 active of state level legislative initiatives[98] and uncounted institutional initiatives to reign in textbook costs and to increase the transparency of the textbook recommendation and purchase decision. At the federal level there is significant pressure to also focus on learning outcomes and use of technology to lower costs and improve student outcomes.[99]

Policy level representation for higher education at the national level is often lead by the American Council on Education (ACE) in collaboration with 135+ other higher education associations in its membership. At the state level there are a myriad of organizations representing executives, administrators, faculty, staff and governing boards which are responsive to these issues on behalf of their membership.

The illustration on the following page graphically represents these interest groups and some of the associations that collectively represent their interests.

Higher Education Digital Marketplace Contstituency Map



The Key to Success: an Effective Marketplace Management Model (MMM)

The linchpin in the successful creation, management and operation of the Marketplace is the establishment of a management structure that is effectively designed, empowered and supported. This section will briefly discuss a host of operational responsibilities as well as the form and function that must be considered for the organization(s) that implement the MMM.

MMM Operational Considerations: The organization(s) that implement and operate the MMM should be structured to assume responsibility for:

- Developing and maintaining marketplace interoperability and content standards;
- Implementing and supporting standardized contractual and licensing mechanisms including implementation and integration specifications;
- Developing and implementing equitable business and fulfillment models for contracted Web applications and Marketplace services to member systems and institutions;
- Establishing and negotiating a content value net (who gets what from a transaction - royalties, commissions, overhead charges, etc);[100]
- Developing institutional membership aggregation partnerships with associations and/or collaboratives; and
- Providing (or contracting for) transaction and rights clearinghouse services, Marketplace Web applications, and hosted infrastructure services for Marketplace members.

MMM Organizational Form and Function

How to develop an appropriate organizational form and function for the MMM is both the '$64,000 question' and the 'sticky wicket' in the successful development/deployment of the Marketplace. To be effective, the organization(s) that implement the MMM must first be neutral to all parties. Second, the organizational structure must legitimately serve two 'masters' – its institutional, instructor and student customers and the content development industry at large.

- **The Yin:** A comprehensive customer-centric Marketplace would require a coordinating membership service organization that represents the interests of the Marketplace's primary customers - the higher education institutions it serves, their instructors and students, and the state systems and national agencies that provide their funding. Such an organization would also need to be responsive to and inclusive of the many associations and organizations that represent the interests of the Marketplace's customers.

  This type of organization would require a leadership team skilled in the art of building consensus across a highly diverse, segmented community known for not always 'playing well together'.

  In the past, this kind of organization would typically be set up as a nonprofit corporation and establish a board comprised of members of its customer base or their representative organizations. Such an organization would function in the academic tradition - and at a measured, deliberate pace typical of academe.

- **The Yang:** However, if the higher education community wants commercial publishers to embrace the Marketplace (and there is no Marketplace without them), an academically focused organization will fall well short of the mark in meeting their needs.

  Publishers will absolutely (and justifiably) require that any Marketplace that will have their support must be established and run as a business that is focused on providing them with a larger market opportunity for its products and services than they have today and as quickly as possible.

  It is inconceivable that publishers would place any confidence in a Marketplace solution for their collective $6B business unless they had significant input into the business processes and technology design, and meaningful participation in the governance of the business functions of the Marketplace. Publishers would also expect the Marketplace to be operated in an efficient and effective manner.

  This suggests that the Marketplace infrastructure component should be run as a 'business' rather than as an educational venture, regardless of its status as a for-profit or nonprofit organization.

If one assumes that both of these 'masters' must be served in a MMM, and that each master requires a different organizational structure and focus in order to be successful in meeting the needs of its constituency, then it follows that two related, interdependent organizations would need to be established to build and grow the Marketplace:

- A Marketplace Collaborative would focus on policy issues, standards development and maintenance, and aggregation of institutional participation, and representation of consumers' interests in the marketplace.
- A Marketplace Utility would focus on the operational aspects of the Marketplace and the development and management of the enabling infrastructure. This entity might be established as a nonprofit or for-profit 'regulated utility' whose operations are transparent to all stakeholders, and whose core tasks would be to lower the cost of the distribution function, increase the market opportunity for content producers, and provide content consumers with a wide range of granular and packaged learning materials that meet the need of today's students and instructors, all at an affordable cost.

Referential Models and Initiatives

The desire to create a Marketplace is a natural outgrowth of the maturing digital transformation that has impacted our society in so many ways. One need only look to what has and is occurring in the consumer content markets for both good ideas and cautionary tales.

While no operational models for a national Marketplace in higher education exist at this time, we can benefit from the many initiatives and organizations that are focused on using technology in teaching and learning, and take a page or two from at least one institutional Marketplace model.

These referential models and initiatives can form an effective foundation for the development and launch of a national Marketplace that is responsive to both State and local requirements.

The **iTunes model** for music distribution 'by the song' is a compelling illustration of the widespread demand for granular content when enabled by the efficiencies of digital distribution. ITunes provides a good referential business model as well, demonstrating a value net that appropriately rewards content owners, content sellers, and the distribution infrastructure provider while providing a low cost product to the consumer.

For the Marketplace model, however, iTunes falls short of the mark as a model in two areas. First, it is a closed system linked at this time to a proprietary distribution system such that the music purchased from iTunes cannot play on other MP-3 players. Second, the iTunes digital rights management solution is a closed, proprietary system. This occurred in part because the music industry did not collectively embrace a secure distribution solution when options became available. Then along came Napster which disrupted the music industry's business model, and the rest is both a painful lesson and ongoing liability for the music industry.

What can be learned from iTunes? First, a commonly adopted distribution system can be good for both the content industry and the customer, particularly in a market like digital learning content which is exponentially more complex than the music or movie businesses. Common access to content on a variety of delivery devices such as PCs, tablet computers, custom print resources and electronic paper is good for publishers and good for students and instructors. A common system also provides multiple DRM protection options that are available to all content providers. This is all good news for publishers and consumers, and provides important lessons to help guide the creation of the Marketplace.

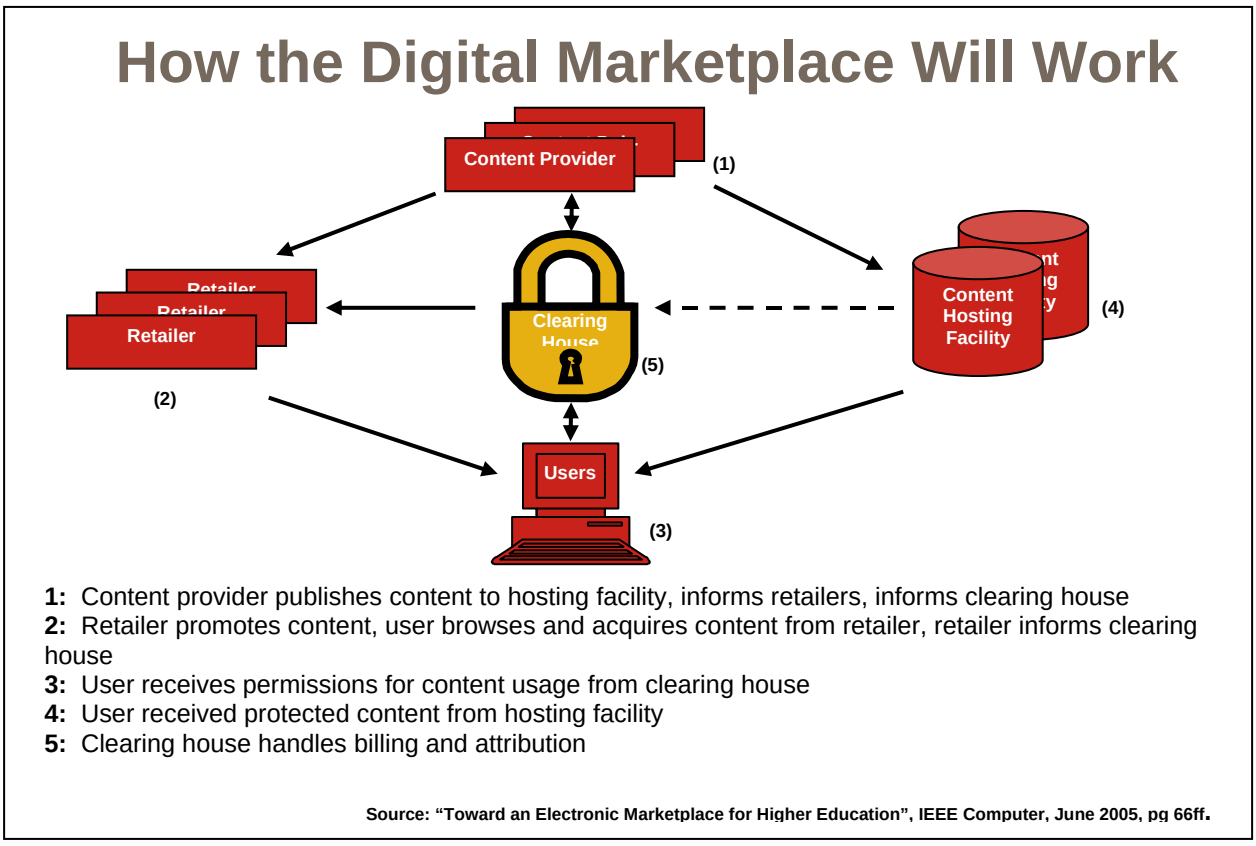
Improving teaching and learning with technology has engaged a wide variety of instructors, instructional support resources and academic leaders in the pursuit of better student outcomes and more efficient instructional delivery. A variety of organizations[101] are addressing this opportunity in countless ways, too numerous to discuss in detail here. What we can discuss is the twofold impact of these organizations in the context of this discussion.

First, as previously mentioned, these teaching and learning-focused organizations naturally attract those instructors who embrace technology as a means to improve the effectiveness of their teaching mission, and are therefore ideal aggregation points for Marketplace participation.

More important, these organizations have collectively spent years creating and evolving models for effective use of technology in teaching and learning. Other than simple textbook replacement in digital forms, effective educational technology deployment requires the development of successful instructional models and corresponding evaluative processes. The groundbreaking efforts of these organizations set the stage for widespread, mainstream use of educational technology to improve outcomes and lower costs.

A valuable **contextual model** has been under development for five years at the largest State university system in the U.S., The California State University (CSU).[102] The CSU Digital Marketplace initiative, through broad community dialogue within the CSU (and among the systems member of CSU-supported MERLOT Consortium) has taken the idea of an open digital marketplace from a concept to the development of a well developed collaborative effort with the participation of publishers and technology companies. The CSU Digital Marketplace is now preparing for a pilot release of the first generation digital marketplace in late 2007.

Naturally, the CSU initiative approaches the marketplace concept from the institution's perspective. It assumes that the business components of the marketplace will emerge from the collaborative effort, with different private sector entities assuming the various business roles. The graphic below from an IEEE Computer Magazine article[103] outlines the conceptual framework on which the CSU Digital Marketplace is being developed.



1: Content provider publishes content to hosting facility, informs retailers, informs clearing house
2: Retailer promotes content, user browses and acquires content from retailer, retailer informs clearing house
3: User receives permissions for content usage from clearing house
4: User received protected content from hosting facility
5: Clearing house handles billing and attribution

Source: "Toward an Electronic Marketplace for Higher Education", IEEE Computer, June 2005, pg 66ff.

The CSU initiative is an important and potentially useful foundation for the national Marketplace:

- The CSU's collaborative membership offers a valid starting point for a national collaborative process with its publisher, standards groups and technology vendor participants.
- The group has developed functional use cases, addressed the marketplace interoperability issues and has initiated a dialogue around enabling business models.
- The initiative's reputation as a thorough, consensus-based and constituent-driven development process will engender respect from other higher education systems.
- Their model is poised to be implemented at a state level across the University of California and California Community College System, and subsequently across many state university and community college systems through the CSU's leadership in MERLOT.

Potential Marketplace Timeline

Moving any highly visible higher education project along the path from concept to reality is a daunting task at best, and one where the road to success is fraught with potential challenges.

A business-as-usual higher education approach to the Marketplace challenge is unacceptable given the immense pressures facing the higher education community about the cost of textbooks and affordability of college, and the increasingly untenable position of textbook publishers. History suggests that if these issues are to be addressed at the normal pace of higher education's deliberative processes, years of discussion may precede any concrete action towards a solution.

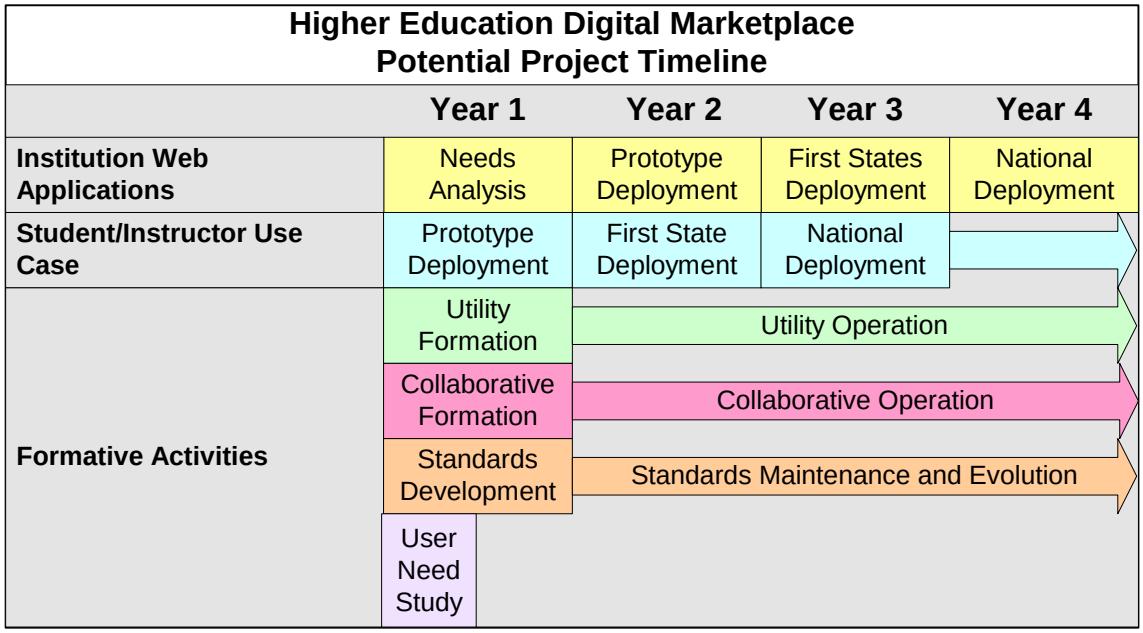
Therefore, any proposal for implementing a Marketplace should establish two concurrent paths. First a national dialogue and process should be initiated with input from all stakeholders to establish an enabling organizational structure in support of the creation of a national Marketplace. At the same time, the momentum of any existing Marketplace projects should be leveraged to create one or more operational prototype systems.

In sum, while the bigger issues are addressed by the broader community, a working prototype can be built and deployed as a model for review and enhancement by the community.

Implementation Timeline Recommendations

This section outlines one recommendation for a strategic action plan to bring a Marketplace to life in a timely manner. This strategic plan has four key objectives that can be concurrently executed:

- Quantify the need for a Marketplace with instructors and students.
- Complete formation activities including a viable digital market organizational framework and governance model that provides appropriate roles and representation for all stakeholders, and development of the needed business model and implementation standards.
- Develop a first generation Marketplace infrastructure and Web applications for the student/instructor use case (instructors assigning materials for students to use/purchase) using the existing CSU initiative as a base, and deploying this system as a prototype in the CSU.
- Expand the systems to include institutional Web applications for the acquisition and management of the breadth of institutional content including learning materials, library content and instructional support content.



The graphic above illustrates a potential project timeline for marketplace development & deployment based on a project initiated by the end of the current federal fiscal year.

- **Year 1** – would include management organization establishment, user needs study completion, business models and standards development, prototype(s) development for a student/faculty use case, and a needs analysis for the institutional use case

- **Year 2** – would see widespread deployment of the student use case across a first State in multiple segments, and in selected other states on a pilot basis. The institutional use case prototype would be deployed in multiple institutions under a controlled release.

- **Year 3** – would see a full general release and scalable deployment of the student and instructor use case nationwide, and broad deployment of the institutional use case in multiple states in a controlled environment

- **Year 4** – would see the full Marketplace functionality deployed on a national basis.

This timeline assumes a commitment by all stakeholders to meet needed timelines and the availability of development and implementation funding and resources.

Chapter 4:
Challenges to Marketplace Development and Deployment

The Marketplace is a grand strategic plan that has the potential to fundamentally transform how learning content is produced and delivered in ways that meet the needs of today's instructors and students. As can be expected, there are a range of technological, legal/regulatory and economic/market challenges to bringing this vision to reality. In order to present as comprehensive a view as possible, the following section summarizes both the previously addressed issues along with several new challenges that have not yet been discussed.

Technology Challenges – The great majority of the technologies needed to develop the Marketplace infrastructure exist today to support the architecture design for the Marketplace. However, several technology-related challenges remain:

- Standards development – A number of enabling standards were discussed in Chapter 2 that are essential to Marketplace development. Many of these standards are really more like languages that allow development of specific operational standards for disparate systems to 'talk' to each other. For example, metadata standards usually describe how one would express or structure metadata for a particular purpose. The standards often do not specify exactly how to express, say, the ways a user might have access to a piece of content. So there is work to be done in a number of areas where the 'language framework' of the standard must be specifically expressed in ways that enable Marketplace functionality. There is also a need for content format standards that go beyond today's interoperability standards (i.e. common interactive e-book formats).
- An open digital rights management (DRM) framework – At least one viable option for an open DRM framework exists that will accommodate the continuum of content from commercial content protected by DRM 'wrapper' to content made available at no cost under a Creative Commons license.
- Common rights frameworks – Learning materials can be made available in multiple forms (online, custom print), for differing terms (price or length of use; academic term or multiple year), to different individuals (students vs. instructors). A common rights expression framework needs to be developed to provide sufficient flexibility, while not so elaborate as to overwhelm producers and consumers with too many options.
- Impact of 'walking' patents – As the story goes, had the first primate to walk on two legs lived in the current intellectual property environment, s/he would have applied for and received a patent for 'walking on two legs' and everyone that followed would be paying a royalty for that pleasure. These 'patents of the obvious' are rampant in the technology world today, and can be stumbling blocks as the Marketplace develops. This is not to say that there are not significant legitimate intellectual property issues that need to be resolved, but these patents that reward obvious developments can be challenging and may need to be addressed within the framework of the marketplace..

Legal/Regulatory Challenges

- Common contractual mechanisms – An efficient Marketplace will require the co-development of purchasing agreements that are accepted by publishers and approved for use by the purchasing organizations across all states, within state systems and for individual institutions. This is analogous to a Staples or Office Depot contract that allows both small business and large, multi-national organizations to buy all their office supplies under a single contract rather than bidding out paperclips and pencils.

- Common licensing mechanisms – The Marketplace will require creation of a common licensing framework for content purchased by institutions and students in the Marketplace. Master contracts would need to encompass a wide variety of content types and use rights, and be accepted by both content producers and purchasers.
- Marketplace organizational structure – As discussed in Chapter 3, the development of effective organizational structures that respond to both the academic and business requirements will be a critical challenge.
- Intellectual property related to the infrastructure – Many parties have legitimate claim to intellectual property that would enable development and operation of the marketplace. These rights will need to be accommodated in any resulting organizational structure and business/financing model.
- Copyright/ fair use issues – It is clear that significant federal policy-level support will be required to improve the balanced application of the intent of copyright law as it relates to digital content in order to make maximum use of digital resources in education. These included legislative, judicial, information systems and application of best practices as outlined by Fischer and McGeveran[104] and summarized on page 28.

Economic/Market Challenges

- Value net development – The Marketplace will need to establish an equitable process to devise a value net that appropriately rewards all members of the value creation chain, whether the contribution or reward is financial or academic. Many important issues such as allocation of infrastructure costs for fee-based and no-charge content need to be considered. Other important issues include arriving at appropriate value propositions for content producers, content review entities, marketplace services, and demand aggregators.
- Marketplace organizational structure – The issues and requirements for creation of this mission critical challenge are detailed on pages 36 & 37.
- Funding – It is clear that substantial funding will be required from all sectors participating in the Marketplace to enable collaboration, rapid design, development and deployment until it can reach a critical mass of membership and content transactions. Financial and human capital resources will be required from institutions, states, the federal government, and the private sector[105].

Other Challenges

- Directional/timeline leadership – The confluence of the financial pressures placed on students from the outmoded textbook business model, and the many pressures on the publishing industry are spawning a variety of short term, reactive solutions, many of which will be detrimental to a viable long term solution for both consumers and producers. It will be very important to initiate the Marketplace project with the authority and responsibility to establish a reasonable development timeline and to provide appropriate incentives to stimulate a collaborative effort towards a mutually beneficial Marketplace solution.

Conclusion:
An Opportunity for a Proactive Approach to Digital Age Learning

The cost of textbooks is an increasingly visible and divisive issue; not a week goes by without an announcement of a new institutional program, state legislative initiative, student protest, or publishing industry response.

- Student groups complain of high textbook costs, publishers' bundled and to-frequent new editions, and the textbook business' 'Big 5 oligarchy'.[106]
- Concerned institutions propose new textbook cost control programs that often limit instructor control over textbook selection and are expensive to administer.
- The textbook publishing industry continues to defend the textbook/bundle as the de-facto method for delivering learning content.
- Thirty state legislatures are pursuing over 120 initiatives[107] to regulate the marketing of textbooks at the state level to increase transparency of textbook options and costs, influence instructor selections, protect local textbook retailers, and eliminate sales taxes on textbooks, all done with the intent to lower student costs or protect local interests.

No one is satisfied with the status quo. Yet many of these initiatives are 'band-aid' solutions that mask the underlying problem - a 'rearranging of the deck chairs on the Titanic' if you will.

What is clear about the textbook as a learning tool today?

- Textbooks are no longer a durable resource valued by students, but a disposable commodity that has little intrinsic value to students once the class is over.
- Current textbook production and distribution systems are outmoded and their expense to students are difficult to justify in light of viable digital age options for both print and digital content forms.
- Today's students learn differently than previous generations, and the textbook is the least desirable mode of content delivery for these intuitive, experiential learners.
- Textbooks may no longer be considered the de facto 'container' for learning content in a digital age where the 'album' has given way to the 'track', and consumers expect more granular content options.

We also believe that:

- A publishing industry based on the production and delivery of textbooks and bundled solutions is an increasingly less sustainable business in the long term.
- Reducing the cost of higher education and improving learner outcomes will require learning materials that are appropriate and effective for all of today's students at costs that reflect the efficiencies of digital production and distribution.
- Higher education institutions face organizational and financial challenges responding to the digital transformation of content, and should address this challenge collectively and collaboratively in order to adopt common standards and achieve economies of scale.

It is clear that the higher education community is calling for new forms and formats of learning content that meet the needs of our students and instructors. Given the untenable state of the textbook-based learning content industry, there is little choice but to move forward with alacrity towards a digital age solution: a 'transcontinental railroad' for learning content.

This paper offers one conceptual model of a collaborative Marketplace solution that can address this crisis in higher education. It is not intended to be comprehensive in its consideration of the issues, constituencies and possible solutions. Rather, it is intended to serve as a stimulus for a broader dialogue.

There are many challenges along the way to developing a Marketplace that can reinvigorate the higher education teaching and learning mission. The enabling technologies exist and are not a significant barrier; all the basic building blocks are available. The key challenges will be:

- establishing an enabling organizational structure that is responsive to key stakeholders;
- establishing a timeline that results in a viable alternative to today's 'fine mess' within a reasonable time frame; and
- structuring and completing an inclusive collaborative process that addresses the many Marketplace formation and operational issues in a timely manner.

Critical roles exist for all constituencies in developing a Marketplace vision and action plan:

- The federal government's role should include establishing an initiative at a national level to create an action plan and timeline for the Marketplace. Such an entity should be empowered to provide appropriate financial and regulatory incentives to facilitate Marketplace creation and to assure the timeline is met and parties are held accountable. There is also a federal policy role in addressing the intellectual property and copyright issues that currently impede the education use of copyrighted materials.
- The state governments' role should focus in two areas. First, state-level higher education systems should be responsible for developing and funding implementation plans that maximize the value of a national Marketplace infrastructure for their institutions, including technology integration for state level ERP systems, and assessment of local needs and requirements. Second, a potential state legislative role exists to enable state institutions to adopt national procurement and licensing standards, and enable institutions to participate in a collaborative digital content management resource.
- National and regional higher education associations may choose to seek appropriate roles in facilitating formation dialogues that are of importance to their constituencies.
- Colleges and universities would each be responsible for managing the integration of the Marketplace into their organization, culture and technology infrastructure.
- The publishing industry should seek an active role in the formation process to assure that its needs are met for a viable alternative distribution resource that enables the development of a new value proposition for their industry in the digital age.

The U.S. higher education community has two options. The current contentious, reactive dialogue can be allowed to continue, which will result in greater frustration for students, instructors and publishers, with no end in sight.

Higher education and national policy leadership can also choose a proactive approach, and initiate a 'transcontinental railroad' project for the development of a digital age Marketplace. This environment would enable publishers to once again flourish, students to learn faster and easier with materials that meet their learning styles at a lower cost, and provide instructors with a wide variety of quality learning materials from which to choose to meet the needs of their diverse students.

Endnotes

[1] Previously published resources by the authors include Developing an International Learning Object Economy - McElroy & Beckerman, 2003, and Managing Web Based Digital Content in Higher Education Institutions - McElroy & Beckerman, January 2002, both available at http://www.lcxcorp.com/pressroom.html. Also see McElroy's 2003 keynote to the National Learning Infrastructure Initiative conference If You Give A Student A Computer: Managing a Growing Demand for Digital Content – the abstract, PowerPoint and NLII Review article on the presentation are available at http://www.educause.edu/LibraryDetailPage/666?ID=NLI0338

[2] The Association of American Publishers provides two different estimates of the number of publishers serving higher education. The AAP website's message from Patricia Schroeder as of March 26, 2007 identifies "more than 4,000" as the number of publishers serving higher education - http://www.textbookfacts.org/schroeder.htm , but the AAP report to the ACSFA indicates that there are more than 8,000 publishers. http://www.textbookfacts.org/pdf/AAP_Higher_Education_Textbook_Market.pdf

[3] http://www.textbookfacts.org/schroeder.htm

[4] GAO 05-806 – College Textbooks: Enhanced Offerings Appear to Drive Recent Price Increases July 2005, page 2

[5] The 16 million undergraduate college students are a diverse group; 40% attend community colleges , one third are over 24, and 40% are part time. Source: US Department of Education, A Test of Leadership: Charting the Future of U.S. Higher Education 2006, page xi

[6] Norris, Donald; Mason, Jon; Lefrere, Paul; Transforming e-Knowledge Society for College and University Planning 2003 page 2

[7] Adapted from Transforming e-Knowledge page 2

[8] Association of American Publisher's website - http://www.textbookfacts.org/about.htm

[9] Even the limited available data (the Zogby/AAP study; CalPIRG study) indicates there is likely a potential critical mass of instructors that would welcome an alternative content development and distribution mechanism. Depending on the study, from 45% to 65% of faculty do not use the supplemental materials provided in publishers' bundled solution. Only about 30% of instructors assign and use the exercises and case studies in the textbook. A significant portion of these instructors would likely welcome an environment where they can select materials to supplement the textbook other than those bundled by the publisher. In the Zogby AAP report, 24% of instructors said the textbook was not needed to pass their course; many of these instructors might welcome an environment where they can select core instructional materials from many sources in lieu of a textbook.

[10] Examples abound including Lulu.com, blogs, collaborative community development projects such as MERLOT www.merlot.org and a rapidly expanding collection of shared knowledge resources such as OER Commons www.oercommons.org.

[11] These materials included teacher's guides with lesson plans, overhead transparencies, sample tests and related background information, and were/are provided at no cost to instructors that adopt a textbook.

[12] GAO 05-806 – College Textbooks: Enhanced Offerings Appear to Drive Recent Price Increases July 2005

[13] Source: ACSFA Staff

[14] National Association of College stores data for 2004-5 from the NACS *2006 College Store Industry Financial Report* indicated that 30.6% of textbook sales were used texts. http://www.nacs.org/public/research/higher_ed_retail.asp

[15] The Zogby/AAP faculty survey was a voluntary response survey sent to 16,000 faculty from publishers' mailing lists with a 6.25% response rate. Zogby did not indicate in the report that controls were established to eliminate the influence of the survey sponsor in stimulating survey response by faculty with ties to the publishing industry.

[16] The sell back price for a used textbook that has been replaced by a new edition can be as little as 5% of the new book cost. Source, GAO 05-806 – College Textbooks: Enhanced Offerings Appear to Drive Recent Price Increases July 2005, page 8.

[17] Digital Natives, Digital Immigrants, Marc Prensky, from *On the Horizon*, NCB University Press, Volume 9 No. 5, October 2001, page 1.

[18] ibid.

[19] Prensky tagged the older generations that grew up before the digital age as "digital immigrants". Prensky noted that digital immigrants "always retain….their foot in the past." (page 2)

[20] ibid.

[21] Salaway, Gail; Katz, Richard; Caruso, Judith et al; The ECAR Study of Undergraduate Students and Information Technology, 2006 Volume 7, 2006, page 14 http://www.educause.edu/ir/library/pdf/ers0607/ERS0607w.pdf

[22] ibid. page 16 The citation is as follows: "Most (64.4%) of them agree or strongly agree that IT in courses is improving their learning" .

[23] Ibid.

[24] Source: California State University Chancellor's Office

[25] The 'digital flip' in the academic journals business is a widely known story. When digital forms of the journals were first made available, they were provided to libraries for an additional 20% fee over the print journal cost. When the libraries came to the conclusion that they only needed the digital versions, the publishers responded by charging libraries about 80% of the cost of the print version. There remains significant tension in the marketplace for the pricing of digital forms of reference materials.

[26] Print materials are protected in large part because of their physical nature – a library buys one book and must buy another if two users want to use the resource simultaneously. Publishers have learned to accommodate for violations of this copyright protection, such as copies made of parts of books in libraries, as unfortunate but unpreventable .

[27] Fisher, William & McGeveren, William of the Beckman Center for Internet and Society at Harvard Law School in their 2006 white paper The Digital Learning Challenge: Obstacles to Educational Uses of Copyrighted Material in the Digital Age noted "We found that provisions of copyright law concerning the educational use of copyrighted material, as well as the business and institutional structures shaped by that law, are among the most important obstacles to realizing the potential technology in education." (page 6)

[28] Grove, Andrew S., Only the Paranoid Survive, 1996 Random House – NY, page 33

[29] Grove, Andrew S., Only the Paranoid Survive, 1996 Random House – NY, page 30

[30] No digital distribution model can be 'leak-proof'. However, publishers have learned to accommodate significant leakage in the physical distribution model such as the gray market and used book market, and copying of copyrighted materials in libraries.

[31] See page 6 for a more detailed discussion of the gray textbook market

[32] The fair use provision (section 107) and the library exemption (section 108)

[33] James S. Heller provides a thorough review of the history of copy shop litigation in a May 2002 article in Information Outlook – Heller, James S. Copyright, fair use and the for-profit sector, Information Outlook, May 2002

[34] Copyright, fair use and the for-profit sector, James S. Heller, Information Outlook, Vol. 6, No. 5, May 2002 http://www.sla.org/content/Shop/Information/infoonline/2002/may02/heller.cfm

[35] Xanedu is a good example of a coursepack company - www.xanedu.com

[36] *Blended Learning: Education Innovation & Productivity,"* Campus Technology, 2/14/2006, http://www.campustechnology/article.aspx?aid=40730

[37] The 2005 repeal of the 50/50 rule that required institutions to have at least 50% of their classes on campus to qualify for federal student financial aid opened the floodgates for financial aid applications for online courses.

[38] Some institutions are mandating the use of instructional technology to free up facilities. For example, the Dallas Community College District has mandated the use of technology to lower the number of hours of classroom time to allow more classes in existing facilities.

[39] There is a significant national movement to use technology to improve student outcomes and lower the cost of instructional delivery. A good example is the National Center for Academic Transformation www.thencat.org

[40] With the exception of the for-profit higher education segment, where instructors have much less control over the learning process and the selection of learning materials.

[41] The Americans with Disabilities Act requires that learning institutions are responsive to the learning needs of a wide variety of disabled learners, and are required, where possible, to make appropriate alternative forms of learning materials available to these populations.

[42] Lessig, Lawrence, The Future of Ideas, Vintage Books 2002

[43] The Digital Millenium Copyright Act of 2002 holds campuses that provide email addresses (and are therefore classified as ISP's) liable for copyright violations on or from their networks.

[44] Malcolm Gladwell (2002) introduced the idea of the "tipping point" as "that magical moment when an idea, trend or social behavior crosses a threshold, tips, and spreads like wildfire" The Tipping Point, Malcolm Gladwell, Little, Brown, 2002 – back cover

[45] www.creativecommons.org

[46] ibid.

[47]McElroy, Patrick & Beckerman, Barry, Managing Web Based Digital Content in Higher Education Institutions - , January 2003, available at http://www.lcxcorp.com/pressroom.html.

[48] This e-learning market transformation from vertical to horizontal is analogous to the computer industry in the 1980's and 1990's, and how it shifted from vertically integrated solutions (e.g. IBM, DEC, Wang) to a horizontal market structure that allowed vendors to provide products at each level of the solution (operating systems, hardware, applications etc.) Andrew Grove described this transition and the profound positive effect it had on the industry as prices dropped dramatically for consumers, and vendors could sell large volumes of "plug compatible" products to an exponentially growing market. - Grove, Andrew S., Only the Paranoid Survive, 1996 Random House – NY, page 39-50

[49] McElroy, Patrick & Beckerman, Barry, Developing an International Learning Object Economy , 2002, available at http://www.lcxcorp.com/pressroom.html.

[50] Ibid.

[51] SCORM and IMS are two standards discussed later in this chapter.

[52] The reasons for the cost reductions are further discussed on page 26.

[53] In this context, the supply chain is the relatively fixed series of relationships that produce a textbook from content creation through editorial review to production and printing to wholesale and retail distribution to the consumer, the student.

[54] Bovet and Martha provide a definition and description of the value net. This section draws liberally from their 2002 book on the topic- Bovet, David and Martha, Value Nets, Joseph; John Wiley 2000

[55] McElroy, Patrick & Beckerman, Barry, Developing an International Learning Object Economy , 2002, available at http://www.lcxcorp.com/pressroom.html.

[56] Extensible Markup Language. A flexible way to create common information formats and share both the format and the data on the World Wide Web, intranets, and elsewhere. XML is a formal recommendation from the World Wide Web Consortium (W3C) similar to the language of today's Web pages, the Hypertext Markup Language (HTML). www.netproject.com/docs/migoss/v1.0/glossary.html

[57] SOAP is a standard for exchanging XML-based messages over a computer network, normally using HTTP. SOAP forms the foundation layer of the web services stack, providing a basic messaging framework that more abstract layers can build upon.

[58] Enterprise Resource Planning systems, which in Higher education include the financial, human resource and student information systems as the core ERP applications

[59] www.adlnet.gov

[60] www.shibboleth.internet2.edu

[61] http://www.loc.gov/standards/mets/

[62] http://www.niso.org/

[63] http://www.openmediacommons.org/

[64] http://odrl.net/

[65] One of two goods that can replace each other in consumption--that is, each provides the same basic satisfaction of wants and needs.

[66] The authors are not implying or suggesting that the major publishers and other ethical publishing entities are marketing student information, but many other potential content producers and resellers could well collect and sell this information.

[67] A Curriculum Vitae is the academic equivalent of a resume.

[68] A complete discussion of this 10X benefit is provided in McElroy & Beckerman's white paper Managing Web Based Digital Content in Higher Education Institutions - , January 2003, available at http://www.lcxcorp.com/pressroom.html.

[69] Seth Godin presented the concept of permission marketing in his 1999 book Permission Marketing. Permission marketing "offers the consumer the opportunity to be marketed to" (p. 43) He contrasts permission marketing with what he calls "interruption marketing" which is traditional advertising and direct marketing. (p. 43), Godin, Seth; Permissions Marketing, Simon & Schuster, 1999

[70] US Department of Education, A Test of Leadership: Charting the Future of U.S. Higher Education 2006

[71] Fisher, William & McGeveren, William, The Digital Learning Challenge: Obstacles to Educational Uses of Copyrighted Material in the Digital Age Beckman Center for Internet and Society at Harvard Law School , 2006 pgs 90-, 91 http://cyber.law.harvard.edu/home/uploads/823/BerkmanWhitePaper_08-10-2006.pdf

[72] Source: Mark David Milliron, Executive Director of the National Institute for Staff and Organizational Development (NISOD) and nationally renowned speaker on teaching and learning.

[73] When we discuss local implementation, we mean that the national infrastructure is linked into local institution's ERP and other systems, and the Marketplace reflects local requirements such as purchasing approval processes.

[74] Based on a total of approximately 1.1M full and part time faculty in public and private not for profit education. Source: 2004 National Study of Postsecondary Faculty. U.S. Department of Education.

[75] Supporting information is detailed on page 8 in the "Elephant in the Room" section

[76] The Zogby/AAP 2005 voluntary response faculty survey sought to defend the publisher's position. http://www.textbookfacts.org/pdf/AssnAmPub_final.pdf The State Public Interest Research Group's report Ripoff 101: Second Edition –February 2005 focused on textbook pricing and bundling. http://www.uspirg.org/uploads/_H/rF/_HrFuXAyUQ-KUSZ8Y80bAQ/ripoff2005.pdf A more recent faculty survey was done by the MASSPIRG http://www.masspirgstudents.org/

[77] See Page 7 for the 'ask the right questions' discussion

[78] The American Council on Education includes 135 national and regional associations alone, not including hundreds of collaboratives and initiatives.

[79] http://www.educause.edu/eli

[80] http://www.merlot.org/merlot/index.htm

[81] http://www.thencat.org/

[82] http://www.nisod.org/

[83] http://www.nmc.org/about/more.shtml

[84] The associations that the authors have identified that are focused on students are either for-profit entities with unrelated agendas or non-profits with a focus on services aggregation.

[85] http://www.cic.org/

[86] John Wiley & Sons, Houghton Mifflin, McGraw-Hill, Pearson Education, and Thompson Learning (in alphabetic order)

[87] The term "long tail" was first presented in a 2004 Wired magazine article by Chris Anderson to describe the demand curve for highly diverse goods such as music or books where the demand for titles rapidly dropped from a few high volume sellers to a "long tail" of diminished demand for other books or song. The concept implies that the Internet and digital distribution provides a market for content that has low demand and cannot make it to the threshold sales requirement of a bookstore or retailer. It is further described and discussed in Anderson's 2006 book The Long Tail.

[88] College Textbooks – Enhanced Offerings Appear to Drive Recent Price Increases – July 2005 Page 2

[89] www.publishers.org

[90] See "long tail" endnote above

[91] The Higher Education Textbook Market, Association of American Publishers – Report to ACSFA - September 2006, page 4

[92] This may be a somewhat inaccurate characterization of the market share for these vendors, as many provide books and materials that are supplemental to the traditional hardbound textbook. But it is not unreasonable to say that the big 5 publishers capture 70-75% of the new book market.

[93] Association of American Publishers www.publishers.org

[94] National Association of College and University Business Officers www.nacubo.org

[95] National Association of College and University Attorneys www.nacua.org

[96] The best analogy for this function is how institutions and companies now buy all their office supplies from Staples or Office Depot, instead of issuing separate bids for paper, pens and paperclips. The marketplace would be a "Staples" for digital content from a contractual perspective.

[97] This would be similar to the "check the box" license agreement that is provided in online software purchases. This pre-approved license agreement would eliminate the need for review and negotiation of license agreement terms for every institutional content purchase.

[98] Source: ACSFA Staff

[99] The Spelling Report calls for "…develop(ing) new pedagogies, curricula and technologies to improve learning" US Department of Education, A Test of Leadership: Charting the Future of U.S. Higher Education 2006

[100] See page 22 for a discussion of value nets

[101] Some of these organizations are identified on page 32 with connecting URL links

[102] The CSU has over 417,000 students on 23 campuses with over 46,000 faculty and staff. The CSU was highlighted for its leadership in addressing the high school to college transition in the Spelling Report. US Department of Education, A Test of Leadership: Charting the Future of U.S. Higher Education 2006, page 18

[103] Mourad, M., Hanley, G.L., Sperling, B.B., Gunther, J., IBM Thomas J. Watson Res. Center, NY, USA, Toward an Electronic Marketplace for Higher Education IEEE Computer, June 2005, Page 66.

[104] Fisher, William & McGeveren, William, The Digital Learning Challenge: Obstacles to Educational Uses of Copyrighted Material in the Digital Age Beckman Center for Internet and Society at Harvard Law School , 2006 pgs 90-, 91 http://cyber.law.harvard.edu/home/uploads/823/BerkmanWhitePaper_08-10-2006.pdf

[105] The degree to which private sector funding might be available to support Marketplace development would likely depend upon the organizational structure and the business structure of the Marketplace entity.

[106] The recent MASSPIRG Study Exposing the Textbook Industry: How Publishers' Pricing Tactics Drive Up the Cost of College Textbooks (Saffron Zomer, February 2007, page 8) referenced Dr. J. V. Koch's paper for the Commitee, Economic Analysis of Textbook Costs (Page 9) "Textbook publishing is oligopolistic; five firms dominate the industry"

[107] Source: ACSFA Staff