

FACTORS AFFECTING SELECTION OF LEARNING MANAGEMENT SYSTEMS IN  
HIGHER EDUCATION INSTITUTIONS

BY

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DISSERTATION

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## **ABSTRACT**

Learning Management Systems, or LMSs, are widely used throughout higher education to deliver a range of instructional services including content delivery, discussion boards and collaborative work space, testing tools, and gradebook functions. LMSs can be used asynchronously or synchronously in support of online learning, classroom-based learning, and blended or “hybridized” learning which combines face-to-face and online instruction. An institution-wide Learning Management System can represent an investment of several hundred thousand to several million dollars, require significant staffing resources, and potentially affect most, if not all, faculty and students at an institution. Selection of an appropriate LMS for a college, university, or state higher education system is a consequential process.

This study investigates two closely related areas of inquiry pertaining to the selection of a Learning Management System for institution-wide use at a college, university, or state higher education system. The first area of inquiry concerns the LMS selection and decision-making process employed by the institutions represented in this study and the role their senior IT leaders play in that process. The second area of inquiry investigates the possible impact that intellectual property rights (IPR) litigation, relative to Learning Management Systems, may have on the thinking and decision-making of these IT leaders when helping to select their institution’s LMS.

Interviews with fifteen Chief Information Officers (CIOs) and Learning Technology Directors from a range of Carnegie classification higher education institutions were conducted, and transcripts from these in-depth interviews were coded using qualitative analytical methods and techniques developed by Strauss (1987) and others. Analysis of this data generated topics, themes, and dimensions related to the two major research foci of this study. Theoretical works pertaining to the diffusion of innovations, evolutionary theory of individual and organizational behavior, and research on intellectual property protections like patent and copyright and their possible impact on innovation are used to help frame the analysis of these areas of research inquiry.

Litigation by Blackboard Inc., the largest Learning Management System manufacturer, against one of their commercial competitors, Desire2Learn Inc., citing patent infringement, helps provide context for portions of this study. The *Blackboard v. Desire2Learn* legal case was selected because it directly related to the IPR legal enforcement issues being investigated; it was timely, since the case was being prosecuted at the time of the interviews; and it was familiar to most higher education IT leaders due to the widespread publicity and debate it had generated. Having this common frame of reference across interviews and respondents helped facilitate the collection, organization, and analysis of the data used in this study.

This research contributes information about the process higher education institutions employ when selecting a Learning Management System for institution-wide use. It investigates who is involved in the selection process, how selection decisions are made,

and the role institutional IT leaders play in that process. Findings from the data also reveal the impact that IPR legal protections like patent and its enforcement have on the selection process, and what these senior IT leaders think the impact is on the open source and commercial LMS marketplace, and on innovation. Additionally, the CIOs and Learning Technology Directors consider other means of IPR protection which may be better suited to software-based technologies like Learning Management Systems - innovations which have developed through a cumulative and collaborative invention process.

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## **CHAPTER 1**

### **INTRODUCTION**

The selection and deployment of a Learning Management System, or LMS, for a college, university, or state system of higher education institutions is a major undertaking, both in terms of the selection process itself, and the investment in financial and human resources this software and hardware-based learning technology represents. Whether the selected LMS is a commercial product or an open source solution, the selection process usually involves a number of people, often called the LMS Selection Committee, who dedicate considerable time and effort in order to choose the most suitable LMS for their institution's faculty and students. Depending on the implementation scale and product selected, the cost of an LMS can range from several hundred thousand to several million dollars, and its deployment can affect most, if not all, faculty and students at an institution.

The foci of the research for this dissertation and the findings which will be presented follow two closely related areas of inquiry: how LMSs are selected at colleges, universities, and state higher education systems and the role their senior IT leaders play in that process; and what impact, if any, does the legal enforcement of intellectual property rights (IPR), relative to Learning Management Systems, have on the thinking and decision-making of these Chief Information Officers and Learning Technology Directors when engaged in the process of helping select an LMS for institution-wide use.

The portion of this research focusing on how an institution selects an enterprise-level Learning Management System identifies, describes, and explores the various steps involved in that process, including:

- How and why institutional leaders determine that a new Learning Management System is required.
- Who at an institution participates in the LMS selection process.
- The manner in which required LMS capabilities and features are determined.
- The procurement process followed by the institution, including development of Requests for Proposals (RFPs), arranging for vendor product demonstrations, and sometimes setting up pilot projects to compare LMS products under consideration.
- How a final selection decision is reached, including whether LMS Selection Committee members agree by consensus, by voting, or by engaging in some combination of these methods.
- The role senior IT leaders like CIOs and Learning Technology Directors play in the selection process.
- Who at an institution makes the final LMS selection decision.

According to the IT leaders who participated in this study, the process for selecting an enterprise-wide Learning Management System, including who participates, is largely consistent across the institutions where they work, and several respondents reported a similar pattern at other institutions with which they had been affiliated earlier in their careers.

While many factors contribute to the decision-making process by Chief Information Officers (CIOs) and Learning Technology Directors, the senior IT leaders at their institutions who usually help make the final LMS selection decision, the widely publicized patent infringement lawsuit in 2006 by the leading proprietary LMS manufacturer, Blackboard Inc., against one of their major competitors, Desire2Learn Inc., added the additional dimension of intellectual property rights enforcement and its potential consequences to the selection process.

There are two major schools of thought regarding patents and their effect on innovation and productivity. One side advocates strong enforcement of intellectual property rights and broadly constructed patent claims. They believe that such an environment protects inventors and incentivizes them to further develop their products, free from the threat of others impinging on their work or diminishing the profitability of their investment in time, resources, and intellectual energy (Kitch, 1977; Hellman, 2007). The other side sees strict intellectual property rights enforcement and broad patents as creating a chilling and counterproductive environment for those who develop new or related products, build on the work of others, or further advance technological products and solutions (Merges & Nelson, 1994; Murray & Stern, 2007). In many cases, they argue, these patented products evolved out of the public commons of knowledge, ideas, and experimentation in the first place. Another patent-related concern has to do with their 20-year duration.<sup>1</sup> While 20 years may be reasonable for providing the owner of traditionally patented inventions (like manufactured products) with protection and sufficient opportunity to recoup development costs, the significantly shorter lifecycle of software-based products makes it more probable that a patent could serve to limit innovation (Muffatto, 2006). The IT leaders in this study, as findings from the research will indicate, are concerned about the topic of IPR enforcement as it relates to software development, they have strong feelings about the legal actions Blackboard took to enforce their intellectual property rights, and most believe that IPR protection mechanisms for products like Learning Management Systems - inventions based on cumulative software technology and the collective effort of developers - need to be refined and improved.

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<sup>1</sup> As of January 1, 1995, under international trade agreements, patent protection extends for 20 years from date of filing (Ghosh, Gruner, Kesan, & Reis, 2007).

The debate about the appropriateness of applying patent and copyright to computer software-based applications like Learning Management Systems extends over three decades, and has yet to be satisfactorily resolved. Software developers, and those who use their programs and source code, have much at stake if patents are granted that restrict or prohibit use of these products, or products derived from them. Within the context of this research, the possibility of legal enforcement of IPR could conceivably affect LMS selection decision-making by creating risk-related concerns on the part of IT leaders and their institutions. These concerns, ranging from the possible imposition of royalty charges for use of products found to be infringing, to requiring the total replacement of an institution's LMS if court rulings and financial consequences were to cause an existing product to be discontinued or sold to a competitor, were among the topics explored as part of this study. IPR enforcement may also affect future innovation and productivity in the software development field, which, in terms of Learning Management Systems and related eLearning technologies, can either help facilitate or serve to limit the depth of features and pedagogical benefit available to instructors and their students.

Understanding the impact, if any, that IPR enforcement has on innovation and on the LMS marketplace can help inform the debate about the fit of current patent and copyright laws and regulations as they have been applied to computer software-based products and processes. Perhaps intellectual property rights for this area of invention can be provided and secured through some new mechanism, a process different than the established IPR protections of patent, copyright, and trademark - remedies devised hundreds of years ago for traditionally developed and manufactured industrial products, a quite different process from the way most 21<sup>st</sup> century computer software is invented, improved, distributed, and

adapted (Muffatto, 2006). Participants in this study were asked to consider whether the aforementioned traditional IPR protections were appropriate as they're being applied to software-based products and services like Learning Management Systems, or if other solutions might be better. Findings from this area of the research are presented in Chapter 6.

Learning Management Systems are used by thousands of educational institutions, and by commercial and not-for-profit corporations and organizations, and they support millions of learners worldwide. Encouraging future innovation and protecting the viability of commercial and open source LMS solutions will continue to be important in helping to assure successful learning outcomes for a growing and diverse community of online students. Establishing a clear understanding of the potential impact of IPR enforcement on innovation and productivity in eLearning systems and tools development, and strategically considering how competing interests and concerns may be properly reconciled, will help ensure the future advancement of educational technology systems and services.

### 1.1 *Blackboard v. Desire2Learn as Context for IPR Impact Inquiry*

Blackboard Inc.'s lawsuit against Desire2Learn, following receipt of a patent issued to Blackboard for their Learning Management System in 2006, and the accompanying controversy this litigation caused, provided context for the portion of research focusing on IPR legal enforcement and its possible impact on LMS selection decision-making.

*Blackboard v. Desire2Learn* has been closely followed by the higher education information technology community and others in higher education since its inception, and as will be demonstrated throughout this work, has generated considerable attention and

often intensely felt reaction. Reference to this legal case helped facilitate the gathering of empirical evidence about the second major focus of this research: the impact of the assertion of legal enforcement of intellectual property rights on LMS selection decision-making and on IPR-related thinking by the IT leaders who participated in this study. Specifics from this litigation helped provide background for considering and analyzing the data generated from respondents regarding this area of inquiry. To summarize, *Blackboard v. Desire2Learn* was selected as a framework for contextualizing discussion in this area of the research because:

- It related specifically to one of the two major research foci of this dissertation.
- It had received widespread publicity, making it likely that the IT leaders participating in this study would already be familiar with the issues, claims, and counterclaims represented in the litigation, thereby helping to situate and contextualize discussion with respondents relative to this area of inquiry.
- Examination of attitudes about this case could contribute data to support or refute the idea that broadly-constructed patent claims have a chilling effect on innovation and productivity (see discussion of Merges' and Nelson's work in this area, pp. 26-27).
- *Blackboard v. Desire2Learn* is about intellectual property rights applied to computer software-based products and processes - one of the areas of inquiry in this research.
- This specific patent infringement suit and the developments surrounding it provides useful information about whether or not IPR legal enforcement causes individual and organizational behavior change among IT leaders and others involved in the procurement and development of Learning Management Systems.

## 1.2 Research Questions

This dissertation focuses on two principal research questions, both related to the selection of Learning Management Systems for institution-wide use in colleges, universities, and state higher education systems:

1. What are the principal characteristics of the decision-making process employed by institutions of higher education when selecting an institutional Learning Management System, and what is the role of senior IT leadership in that process?
2. What impact, if any, does the legal enforcement of intellectual property rights have on decision-making by IT leaders when selecting Learning Management Systems for their institutions?

### *1.3 Research and Theoretical Works Employed in this Study*

Selected research studies and theoretical works provided a useful framework for considering and analyzing the interview data with Chief Information Officers and Learning Technology Directors relative to the two major research questions just presented.

Steven Weber's research into the factors which contributed to the evolution of a world-wide community of software developers, presented in his book, *The Success of Open Source* (2004), contributed significantly to the conceptualization of this study by providing historical, social, political, and economic insights into issues ranging from proprietary and open source software development, distribution, and business practices, to legal issues surrounding IPR protection of software-based products and processes, including patent, copyright, and alternative licensing approaches. Weber's belief that the emergence of the open source software community represents a new paradigm with economic, sociological, anthropological, and legal implications which will extend beyond software production to other areas of human endeavor, resonated with the IT leaders in this study, especially with regard to the value of collaboration rather than competition, and the necessity of interoperable rather than closed and proprietary Learning Management Systems and related eLearning technologies.

Everett Rogers (2003) and Barbara Wejnert (2002) in their separate but related work on diffusion of innovations identify features of the innovation adoption process and variations in approaches to innovation decision-making which aligned with the range of decision-making experiences and management styles of the participants in this study, including those who served as change agents at their institutions, topics covered in Chapter 4.

Irving L. Janis' theoretical work on *Groupthink* (1972) afforded a useful and interesting psychological and behavioral perspective from which to consider the CIOs' and Learning Technology Directors' perceptions and attitudes about the *Blackboard v. Desire2Learn* legal case, their views about Blackboard as a company, and their ideas about differences in institutional culture between higher education and proprietary LMS manufacturers. Janis' ideas about cohesive in-groups and consensus-building behavior help explain some of the consistency in narratives which emerged from the interview data in this study.

Finally, Robert P. Merges' and Richard R. Nelson's research (1994) on patent scope decisions and the impact of those decisions on competition and productivity, and Fiona Murray's and Scott Stern's analysis (2007) of the anti-commons theory, both summarized in the Literature Review which follows (Chapter 2), provided a valuable foundation for the consideration of the impact of legal enforcement of intellectual property rights on LMS selection decision-making by IT leaders in this study. These works also helped facilitate exploration of the respondents' perspectives on identifying appropriate alternative IPR protections for cumulatively and collaboratively invented software-based products like Learning Management Systems. These and related areas of inquiry are presented in Chapter 6.

## **CHAPTER 2**

### **LITERATURE REVIEW**

To investigate the process an institution follows when selecting an enterprise level Learning Management System, the impact legal enforcement of intellectual property rights may have on that process and on decision-making by higher education IT leaders, and possible implications of IPR legal enforcement for future LMS innovation and marketplace viability, literature was reviewed in four subject fields. Specifically, the subject fields for the literature review included history of the open source software movement and the accompanying evolution of open source licensing models; diffusion of innovations and decision-making relative to adoption; legal implications of intellectual property rights with a focus on patents, and especially patents for computer software-based business methods and technologies like Learning Management Systems; and the work of economists who have contributed to an evolutionary theory of individual and organizational behavior. Literature included scholarly works by authors respected for providing clear and accurate descriptions of principles and concepts essential for an understanding of these fields; and journal articles and Internet-based resources, which provided and continue to provide up-to-date information about current developments and issues pertinent to this research. By reading across these fields, one can gain valuable insights into how the research questions under consideration are affected by the intersection of these disciplines. As Swanson (2001) has noted, reading across specialty fields is very powerful and can connect what would otherwise be fragmented pieces of knowledge. Additional reading and research were conducted regarding Blackboard Inc.'s lawsuit against Desire2Learn, alleging patent infringement, and reaction to it in the

higher education community. Developments regarding this case, including historical information and a chronology of events, are presented in Chapter 5.

### *2.1 History of Open Source / Open Source Licensing Models*

It is important to understand the history of open source because virtually all Learning Management Systems software had its origins in the higher education technology community, with its invention and refinement coming from applications developers, programmers, and educational technologists associated with colleges and universities. This includes Learning Management Systems that evolved into commercial products like Angel, Blackboard, and Desire2Learn, as well as open source products like Moodle and Sakai.

As with any social, political, or technological phenomenon, the open source software movement, the software and systems which have developed as a result, and the licensing models which continue to evolve in order to help ensure the future innovation and viability of these products, must be understood within multiple contexts of history, culture, and marketplace economics. Steven Weber (2004) emphasizes that learning how open source came to be, what its boundaries and limitations are, what makes it work (and sometimes not work), and what its success implies for other sectors of the economy, including how other goods are manufactured and how intellectual property rights are managed, is important for developing an understanding of how open source will continue to evolve in the coming decades, and how developments in this community may likely permeate other parts of the human creative process. In his book, *The Success of Open*

Source (2004), Weber identifies four general areas that surround and embed the open source process:

1. *The context of the Internet revolution.* “The rapid introduction into human affairs of extensive telecommunications bandwidth, configured as a neutral network, does not change everything, but it does change some very important things about the constraints and opportunities that face individuals and organizations in the new economy...***And it demonstrates the viability of a massively distributed innovation system that stretches the boundaries of conventional notions about limits to the division of labor*** [emphasis added]” (p. 14).<sup>2</sup>
2. *The evolving relationship between communities, culture, and commerce.* The open source community continues to establish and refine sets of organizing principles. “These include criteria for entering (and leaving) leadership roles, power relations, distributional issues, education and socialization paths, and all the other characteristics that describe a nascent culture and community structure. At the same time, the community is figuring out how it relates to commerce and the capitalist economy that embeds it...” (p. 15).
3. *The nature of collaboration and production in knowledge-intensive economic processes.*<sup>3</sup> “Open source is an experiment in social organization for production around a distinctive notion of property. The narrow problem in thinking about property is simply who owns what. Broader theories of property differentiate among bundles of rights – rights to access, rights to extract, rights to sell or lease other rights, and so on – that can be combined in different ways... the open source process is experimenting with some of the most fundamental aspects of property. That is, what does it mean to ‘own’ something? What rights does ownership confer upon whom and for what purpose? The intuition around ‘real’ property is that to own something is to be able to exclude nonowners from it. In practical implementations, of course, property often carries with it expectations and obligations as well as rights. But the right of exclusion is essential because it brings with it opportunities to sell access or transfer the right of exclusion to someone else, under terms that the owner can set. Free riding is an unfortunate imperfection that governance systems try to minimize. For intellectual property,

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<sup>2</sup> Deek & McHugh (2008) and Weber (2004) emphasize that while collaboration around software development took place before the emergence of the Internet, it was a time-consuming and difficult process with code being shipped back and forth on disks and tapes. It was not until the advent of Internet communications that viable virtual communities of developers came into being, exchanging innovations and interacting “almost without regard to constraints of space, time, or national boundary” (Deek & McHugh, 2008, p. ix).

<sup>3</sup> This point is quoted extensively here because it provides an essential synthesis of the major patent premises and conflicting philosophies which were a major topic of discussion with the IT leaders who participated in this study.

copyright and particularly the fair use provision is a pragmatic compromise between the interest of the owner-creator in having exclusive rights and the aggregate interests of society in gaining access to ideas. Open source radically inverts the idea of exclusion as a basis of thinking about private property.

***Property in open source is configured fundamentally around the right to distribute, not the right to exclude*** [emphasis added]" (p. 16).

4. *How big a phenomenon is this, and how broad is its scope?* The open source model is likely applicable to other areas of human endeavor involving large-scale cooperation. It has "significant implications for economic growth and development... the open source process has generalizable characteristics, it is a generic production process, and it can and will spread to other kinds of production. The question becomes, are there knowledge domains that are structured similarly to the software 'problem?' If we take the structure of the knowledge domain and the nature of demand that people have to solve particular kinds of problems in that domain as independent variables, then allow organization in the broadest sense (how people organize themselves to solve the problem) to be the dependent variable, can we sketch out some of the boundaries within which an open source type process might work? In addition to the practical implications, this is a reasonably good test of how well we really understand what makes the open source process succeed" (p. 17).

Literature in the history and development of open source falls across a number of academic disciplines, as already noted, but it also can be characterized as being either of an historical, economic, and descriptive nature (Steven Weber and others), or couched in a political, ethical, activist, and philosophical context (Lawrence Lessig, Eric Raymond, Richard Stallman, and others). The latter authors sometimes speak about the open source movement and intellectual property rights in almost evangelical, and sometimes apocalyptic terms. In *The Future of Ideas* (2002), for example, Lawrence Lessig observes:

"All around us are the consequences of the most significant technological, and hence cultural, revolution in generations. This revolution has produced the most powerful and diverse spur to innovation of any in modern times. Yet a set of ideas about a central aspect of this prosperity - 'property' - confuses us. This confusion is leading us to change the environment in ways that will change the prosperity. Believing we know what makes prosperity work, ignoring the nature of the actual prosperity all around, we change the rules within which the Internet revolution lives. These changes will end the revolution" (Lessig, 2002, p. 7).

Lessig believes that the great educational and innovative opportunities which the Internet represented from its inception are being seriously eroded: dramatically and negatively affected by the enforcement of traditional intellectual property rights.

Eric Raymond, in *The Cathedral and the Bazaar* (2001), makes an important contribution to understanding the open source software process through his investigation of the two prevailing approaches to applications development, innovation, and revision: the “Cathedral” model, in which source code is made freely available with each official software version release, but the between-release refinement and repair of software is restricted to a few key developers; and the contrasting “Bazaar” model in which code development is a continuing, public, and largely inclusive matter. This dichotomy has led to one of Raymond’s most famous observations: the concept that “given enough eyeballs, all bugs are shallow.” This principle, which Raymond calls Linus’ law (after Linus Torvalds, the creator and leader of the Linux project), advocates a “Bazaar approach” to software development - a completely transparent process where user contributions are continually welcomed and valued, where collective problems are solved collectively, and where wide participation is believed to result in a better, more stable, and more innovative software product. It is this latter model that Raymond credits as being responsible for the extraordinary success of Linux.

Richard Stallman, the founder of the Free Software Foundation (and developer of the GNU General Public License - the most widely used free software license), has written widely on software freedom, and may be the most vocal and ardent advocate for publicly

shared source code and collaborative innovation. Stallman continues to be a staunch opponent of proprietary software and the awarding of software patents. In a 2006 essay, he discusses common public misperceptions of the concept of intellectual property rights, most notably the common practice of lumping the three major IPR categories - copyright, patent, and trademark - under one umbrella when, in fact, they are entirely different laws which evolved independently for distinctly different purposes. Copyright laws were designed to promote authorship and art, and copyright covers the details of expression of a work. Patent law, as Stallman interprets it, is concerned with promotion of the publication of useful ideas “at the price of giving one who publishes an idea a temporary monopoly over it - a price that may be worth paying in some fields and not in others.” Finally, trademark law, Stallman observes, was not intended to promote a particular course of action, only to assist buyers in knowing what they were buying and protecting the reputation of the seller. Stallman suggests that the public needs to clearly understand the distinctions between IPR categories, and to always consider critically the appropriateness and fit of what is specifically being regulated, how - and why.

In his work on open source, Moreno Muffatto (2006) observes that two opposing approaches to IPR for software-based products and processes have emerged, each employing the established protections of copyright and patent. The open source community has applied copyright law in ways that serve to protect the freedom to reproduce, modify, and redistribute software (see licensing discussion immediately following), while proprietary software companies have increasingly sought software patents as a means for securing their intellectual property rights (Muffatto, 2006, p. vi).

The dozen or so licenses which have evolved over the years for use with open source software have ranged from highly open and freely useable models where any restrictions on the product or on derivative products are strictly prohibited (the General Public License, or GPL, for example), to more restrictive models which allow for open source code to be used in conjunction with proprietary products intended for commercial use and sale (like the Berkeley Software Distribution or BSD license). Hybrid licenses have also been developed which blend features to lesser or greater extents from both the open and more restrictive licensing models (Deek & McHugh, 2008; Thomas, 2004; Weber, 2004). Newer software licenses have tended to emulate and adopt earlier software license designs<sup>4</sup> which seem to have proven successful - though there has been little or no litigation to date that has truly tested, established, or refuted the legitimacy of open source licensing models (Frey, Frey, & Smith, 2009; Thomas, 2004). As a consequence of the proliferation of software patents, the current version of the GPL (GNU GPLv3) specifically requires an express grant of patent rights from the copyright owner to the user, in addition to other new, patent-related provisions (Deek & McHugh, 2008).<sup>5</sup>

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<sup>4</sup> The open source license definition itself, for example, was adopted verbatim from the Debian Free Software Guidelines. Debian, a Linux developer, had by 1997 articulated a sophisticated social contract with the free software community, according to Weber (2004). This license states that an open source program “must include source code and must allow distribution in source code, as well as in compiled form.” It says of derived works that “the license must allow modifications and derived works, and must allow them to be distributed under the same terms as the original software.” This accommodates both GPL, which *requires* distribution of derived work under the same terms as the original, and BSD, where this rule is *optional*. Frey, Frey, & Smith (2009) observe that the GPL is the prototypical *reciprocal license* while the BSD is the prototypical *nonreciprocal license*. Because of the optional nature of a nonreciprocal license (meaning a user of the source code is not required to distribute the source code of any derivative works back to the public), Frey, Frey, & Smith conclude that the BSD and similar nonreciprocal license models are the most user-friendly from the perspective of the proprietary software world.

<sup>5</sup> Specifically, the Quick Guide to GNU GPLv3 states: “Whenever someone conveys software covered by GPLv3 that they've written or modified, they must provide every recipient with any patent licenses necessary to exercise the rights that the GPL gives them. In addition to that, if any licensee tries to use a

## 2.2 Diffusion of Innovations

The theory of diffusion of innovations considers the factors and processes by which new technologies, new ideas, and other innovative phenomena are adopted by an organization or a society. Pertinent to this research, these factors and processes include the different types of decision-making models that are employed to decide whether or not to adopt an innovation or to select a particular innovation from among a choice of competing options. Diffusion research also considers how information about an innovation is communicated; the *rate of adoption*, or relative speed with which an innovation is adopted by members of a social system; and *adopter categories*, a classification of the members of an organization or other social system based on their innovativeness - their willingness to accept and support change. Everett Rogers (2003) establishes five innovation adopter categories: innovators, early adopters, early majority, late majority, and laggards. Additionally, Rogers considers the role of *change agents*, individuals influential in affecting the innovation-decisions of others. Learning Management Systems, as a sophisticated set of integrated software and hardware technologies, are a form of innovation, and as already noted, can represent a significant investment for the institutions that choose to obtain and operate them. The diffusion of innovations theory provides a useful lens through which to view and analyze dimensions of the LMS selection process and the decision-making characteristics of the IT leaders who participated in this study.

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patent suit to stop another user from exercising those rights, their license will be terminated”  
<http://www.gnu.org/licenses/quick-guide-gplv3.html> .

In his book, *Diffusion of Innovations*, Rogers (2003) explains that every new idea or invention creates a level of uncertainty, since one doesn't really know if a new practice will be superior to an existing one. This uncertainty, in turn, leads to what Rogers describes as information seeking behavior (Rogers, 2003, pp. xx - xxi) which, as Chapter 4 will illustrate, is consistent with the steps taken by Learning Management System selection committees as they endeavor to ascertain which among several competing LMS products would be best for their faculty, students, and institutional environment. Rogers' typology of decision-making, *optional innovation-decision*, *collective innovation-decision*, and *authority innovation-decision*, described in Chapter 4 (p. 94), helps facilitate the categorization and consideration of the range of approaches to the LMS selection process reported by respondents in this study, and the range of leadership styles exhibited by the IT leaders interviewed for this research.

Barbara Wejnert, in her article entitled *Integrating Models of Diffusion of Innovations: A Conceptual Framework* (2002), expands on the earlier work of Rogers (1962 through 1995), suggesting that diffusion of innovations can be organized into three major components, useful for analyzing an actor's decision to adopt an innovation:

1. "Characteristics of the innovation itself, within which two sets of variables are defined concerning public versus private consequences and benefits versus costs of adoption."
2. "Characteristics of innovators (actors) that influence the probability of adoption of an innovation."
3. "Characteristics of the environmental context that modulate diffusion via structural characteristics of the modern world" (Wejnert, 2002, p. 297).

Along with Rogers' work, Wejnert's framework provides context and organization for the findings which emerged from the interview data regarding the decision-making process employed by institutions and their IT leadership when selecting a new or replacement Learning Management System.

### *2.3 Intellectual Property Rights, Patents, and Computer Software*

Weber (2004) notes that the core of a property right is the exclusive right to choose whether and on what terms the property is made available to others. Different packages and combinations of rights may include access rights, extraction rights, management rights, and so on, but each is made meaningful by the ability to exclude under defined conditions (Weber, 2004, p. 296).

As a "work of authorship," U.S. copyright law protects computer software including source code, object code, operating systems, and graphical user interfaces. Copyright allows software authors (an individual, consortium of developers, or commercial entity) to prohibit the unauthorized copying, distribution, creation of derivative works, importation, and reverse engineering of their creative product. These protections are extended and enforceable internationally in all nations adhering to international copyright treaties and conventions. Creators of open source software and any subsequent contributors are likely to have enforceable copyrights (Lesser, 1998). Lesser notes that "any copyright author may choose not to enforce its rights," to allow certain activities to take place, or to grant copyright licenses to third parties. She observes that in open source licensing, the software is still protected by copyright, but the owner of the original

work or the creator of a derivative work based upon it has chosen not to enforce such rights as long as the user complies with the terms of its license. Since the software owners were never obligated to grant initial licenses, users must be in compliance with the open source licensing terms, or they may be liable for copyright infringement.

According to U.S. *patent* laws, patentable subject matter comprises only "processes, machines, manufactures and compositions of matter," and excludes abstract ideas, mental processes, laws of nature and abstract phenomena (Lesser, 1999).<sup>6</sup>

As noted earlier, the question of whether or not computer software applications should be patentable (and/or whether copyright guidelines are more appropriate) has been a much debated and often contentious issue for over 35 years. In their casebook on intellectual property, Ghosh, Gruner, Kesan, & Reis (2007) review significant cases regarding the patenting of computer software applications and computer-based processes. They cite *Gottschalk v. Benson* (1972), which concerned a patent for converting binary-coded decimal numerals (BCDs) into pure binary numerals for use with general purpose digital computers; *Diamond v. Diehr* (1981), regarding a patent claiming the use of a mathematical formula in a computer program for controlling a synthetic rubber curing process; and *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* (1998), a case relating to a patent for a "Data Processing System for Hub and Spoke Financial Services Configuration," a financial services application which allows several mutual funds ("spokes") to pool their investment funds into a single portfolio (or "hub"). These cases are important because they serve to establish or attempt to establish precedent for

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<sup>6</sup> Unlike copyright, which as just noted is largely recognized internationally, patent laws and protections vary considerably across nations, and this is especially the case with regard to software patents (Deek & McHugh, 2008, p. 228).

what is patentable in the computer software applications field. They also illustrate the inconsistency in court rulings over the years which have tended to confuse rather than clarify these issues.

In the case regarding conversion of binary-coded decimal numerals into pure binary numerals, *Gottschalk v. Benson*, the court held that the software facilitating this process was not patentable:

“It is conceded that one may not patent an idea. But in practical effect that would be the result if the formula for converting BCD numerals to pure binary numerals were patented in this case. The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.”

In its 1972 ruling in *Gottschalk*, the court addressed the general question of patentability of computer programs:

“Uncertainty now exists as to whether the statute permits a valid patent to be granted on programs. Direct attempts to patent programs have been rejected on the ground of nonstatutory subject matter. Indirect attempts to obtain patents and avoid the rejection, by drafting claims as a process, or a machine or components thereof programmed in a given manner, rather than as a program itself, have confused the issue further and should not be permitted.”

In the 1981 case, *Diamond v. Diehr*, the patent challenge alleged that the mathematical formula for curing synthetic rubber was well known to people in the rubber manufacturing business, and that others had employed this formula earlier, so it was neither patentable nor novel. The Supreme Court, in its ruling, held that claims may not be divided into parts by subject matter or novelty and must be considered as a whole. On that basis, the court concluded that the entire process of curing synthetic rubber,

including use of the mathematical formula in the related computer software application, was patentable subject matter.

Ghosh et al. (2007) note that computer software applications do not readily fit any of the four statutory classes enumerated in Section 101 of the Patent Act: a process, machine, manufacture, or composition of matter. The authors go on to ask the key question: *is patent the best legal mechanism for protecting the intellectual property of computer programs?* (Ghosh et al., pp. 257-258).

Throughout the 1980s, the U.S. Court of Appeals gradually removed limitations on the patenting of software. In the notable 1998 State Street Bank case (Ghosh et al., 2007; Weber, 2004), the court attempts to reconcile the question of patentability of computer programs by expanding the definition and reinterpreting the scope of the patent laws. Regarding the contested patent for a “Data Processing System for Hub and Spoke Financial Services Configuration,” the Court of Appeals reversed the lower court’s finding (overturning an existing prohibition on the patenting of mathematical algorithms and business methods) and concluded that Signature Financial Group’s software was indeed eligible for a patent by changing the legal test for patentable software from “causing a physical transformation” (like software that implemented the process of manufacturing synthetic rubber, or software in a medical device that changed patients’ heartbeats into electrocardiograph signals) to producing “useful, concrete, and tangible results” - a broader and more lenient standard (Lesser, 1999). Lesser notes that the State Street Bank decision resulted in a sharp increase in software patent applications:

[After *State Street*], “the U.S. Patent and Trademark Office reported a record 151,024 patents issued last year (1998), up 33 percent from 1997, according to patent data firm IFI/Plenum Data Corp. A boom in software patents is credited for much of this growth - some 15,000 software patent applications are now on file at the USPTO. The USPTO issued 1,016 Internet and network-related patents in 1998, up 109 percent from 1997, and business-method related patent applications soared 40 percent in the six months after the *State Street* decision. The patent office has increased its recent hiring by 20 percent to process the increased numbers” (Lesser, 1999).

The three patent cases just described represent important developments and shifts in the court’s thinking about the applicability of patent to computer software products and processes. The earliest case, *Gottschalk v. Benson* (1972), holds that a software application, if it functions to automate an earlier, existing mathematical process, should not be awarded a patent, because that would be tantamount to permitting the patenting of an abstract idea. Thinking progresses in *Diamond v. Diehr* (1981) where a software application is deemed patentable if it facilitates part of a larger, clearly patentable manufacturing process, but that can be viewed as a software patent granted only under very limited and specific conditions. The reason the third case, *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* (1998), is considered so significant is that, by relaxing the utility requirements and allowing for usefulness to become a criterion for patent eligibility, the Federal Circuit Court established a precedent that, as noted above, served to legitimize the patentability of certain computer software applications and products, and opened a floodgate of software-related patent applications.

Despite the dramatic increase in software patent activity, many software professionals, open source theorists, and a number of software companies continue to oppose the patenting of software (Lessig, 2000; Stallman, 2006; Weber, 2004). Perhaps the

strongest argument against the patenting of software is that software development itself is markedly different from the other industries for which patent laws were enacted and intended. Specifically with regard to these differences, Weber (2004) observes that in computer software development, innovations occur rapidly, these innovations can often be achieved without substantial capital investment, software products tend to be creative combinations of previously known ideas and techniques rather than entirely new inventions,<sup>7</sup> and producing and distributing software is usually simpler, faster, and much less expensive than the same process for almost any other industrial product. There is also the practical argument about the patenting process itself, and the Patent Office staff's knowledge, skill, and ability to search and determine prior art, novelty, and nonobviousness of claimed innovations in software design and function (Weber, 2004). This last issue, the question of the competence of the U.S. Patent and Trademark Office and its patent examiners, was raised by several respondents in this study and is presented in Chapter 6 (see discussion beginning on p. 167).

Deek & McHugh (2008) conclude that patent, when applied to software-based products and processes, rather than serving as an IPR protection and a means of promoting innovation, may actually produce an opposite result:

“[The] accusation of infringement can even become a predatory business model with individuals and smaller enterprises willing to pay license fees to settle an allegation rather than embark on expensive litigation. Given that the entire intent of the Patent and Copyright Clause of the U.S. Constitution was to promote the advancement of commerce, science, and the arts and to encourage inventors to make their inventions public, so other inventors could build on earlier work, it is strange that patent law itself now seems to threaten software invention” (Deek & McHugh, 2008, p. 232).

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<sup>7</sup> Research by Merges & Nelson (1994), and Murray & Stern (2007), focuses on issues related to intellectual property rights enforcement for inventions based on cumulative and collaborative work, and their research is summarized in the section which follows.

## 2.4 *Evolutionary Theory of Individual and Organizational Behavior, and Research on Patent and Innovation*

The fields of economics and evolutionary biology are closely allied fields with many useful parallels and points of intersection (Krugman, 1996). The basic approach of both disciplines is largely the same: a study of the phenomena emerging from interactions among intelligent, self-interested individuals. Krugman describes economic theory's perspective on this phenomenon as consisting of four parts:

1. "Economics is about *what individuals do*: not classes, not 'correlations of forces', but individual actors. This is not to deny the relevance of higher levels of analysis, but they must be grounded in individual behavior. Methodological individualism is of the essence."
2. "The individuals are *self-interested*. There is nothing in economics that inherently prevents us from allowing people to derive satisfaction from others' consumption, but the predictive power of economic theory comes from the presumption that normally people care about themselves."
3. "The individuals are *intelligent*: obvious opportunities for gain are not neglected. Hundred-dollar bills do not lie unattended in the street for very long."
4. "We are concerned with the *interaction* of such individuals: Most interesting economic theory, from supply and demand on, is about 'invisible hand' processes in which the collective outcome is not what individuals intended."

Evolutionary biologists share with economists three of the above described concerns.

Where they differ, Krugman argues, is that economists assume self-interested rational actors, while evolutionists can accept notions of behavior not always consistent with one's self-interest. Krugman terms this "myopic behavior," and he characterizes myopia as the essence of the evolutionists' viewpoint. Myopia, in this sense, is behavior where individuals act with little thought to the longer term implications of their immediate actions and reactions and how these may ultimately affect outcomes, perhaps to their

disadvantage. Where traditional economists have embraced models of maximization and equilibrium, evolutionists recognize these models as just that - models or metaphors that can help promote understanding and contribute to explanation - but they recognize the real process of evolution is more complex, more nuanced. Krugman believes the quality of economic analysis would be much improved if more economists understood the evolutionists' approach and perspective.<sup>8</sup>

The reason an evolutionary economic theory has value for this research is that it helps situate the behavior and motivation of those who develop and market open source and proprietary Learning Management Systems and those who help decide which one to select on behalf of their institutions. Higher education information technology leaders, like those who lead open source LMS foundations and commercial LMS companies, are actors concerned about innovation, and they are impacted by economic and marketplace influences.

In his work on the evolutionary theory of economics, Nelson (2006) observes that the economy is always in a dynamic process of change that involves economic actors, in this case inventors, taking actions that break from previous behavior, and interacting in an environment in continuing flux caused by change. These actors act rationally, presumably with the goal of maximizing profits. The evolutionary theory adds value by considering different models which may apply to the invention process, e.g., where

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<sup>8</sup> Krugman's ideas about rational and irrational behavior and its impact on the marketplace are presented in his 1994 book, *Peddling Prosperity* (see, for example, pp. 206-214). For a more recent update on Krugman's thinking in this area, and for an historical perspective on where this fits within competing schools of economic thought, see Krugman (2009), *How Did Economists Get It So Wrong*, <http://www.nytimes.com/2009/09/06/magazine/06Economic-t.html?pagewanted=all>. This article also considers the efficacy of Krugman's ideas within the context of the current world economic crisis. See also, Krugman (2011), *Golden Oldies (Wonkish)*, <http://krugman.blogs.nytimes.com/2011/04/11/golden-oldies-wonkish/>.

inventors are competitive with one another; where monopolies are imposed, thereby restricting competition; etc. Merges & Nelson (1994) believe evolutionary theory is especially useful when studying contexts in which today's inventions open up prospects for "follow-on inventions" tomorrow. This is the situation with open source software development, including software-based technologies like Learning Management Systems, which has historically occurred in a cumulative and collaborative environment.

Based on the evolutionary theory, Merges & Nelson (1994) consider the *impact of patent scope on innovation*. Among their conclusions:

- Allowing and enforcing broad patent claims tends to hinder technical progress.
- As a general rule, if allowed patent scope is broad, inventors can proceed without fear of encroachment by outsiders. Other inventors are deterred from participating out of a concern that their invention may be held infringing.
- By contrast, if allowed scope is narrow, outsiders are less deterred from competing in the next round of inventing.
- In the case of cumulative systems technologies, empirical evidence appears to support the hypothesis that the granting of broad pioneer patents, rather than making subsequent invention and development more orderly and productive, actually complicates and blocks development.
- For products based on cumulative systems technologies, superior design, production, and marketing, rather than strong patent protection, are the principal drivers of profit.

With regard to prior art, and within the context of the evolutionary theory, Merges & Nelson (1994) take the position that:

“...where a strong case can be made that an invention basically amounts to following out leads that have been provided by a prior scientific breakthrough, and represents a ‘first bringing to practice,’ there are double reasons for limiting

the patent to just what the inventor did, and not allowing it to effectively privatize the broad use of that public science. It is bad policy as well as unjust to allow an inventor to claim for private use the fruits of what were largely other people's work. And it is a far better social policy bet to keep inventing in the field pluralistic and rivalrous" (p. 22).

From their 1994 study, Merges & Nelson conclude:

"It is important to recognize that the empirical record supports what an evolutionary theory of individual and organizational behavior and cognition, and of technical advance, would predict. Thus, the arguments for pluralism and rivalry, and against more centralized control, as the preferred context for invention and innovation are not simply empirical, but are analytically well grounded. In our view they are compelling" (p. 23).

Another useful perspective relative to the thinking and research around intellectual property rights legal enforcement and its effect on future innovation is provided by Murray & Stern (2007) in their work on the anti-commons hypothesis. According to these authors, the anti-commons hypothesis proposes that:

"If protected by IPR, the impact of an individual piece of knowledge on follow-on research by others is diminished, potentially resulting in a lower equilibrium level of on-going cumulative research productivity. Overall, the anti-commons theory therefore suggests that while individual researchers have strong incentives to take advantage of the protections afforded by formal IP rights, the scientific community as a whole benefits from the free dissemination and diffusion of knowledge" (p. 654).

In a research paper published in the *Journal of Economic Behavior & Organization*, Murray & Stern (2007) present both sides of the IPR-innovation debate, where some argue that legal enforcement of IPR creates a "chilling effect" on future innovation and impedes follow-on work based on earlier inventions, while others maintain that protections like patent and copyright actually help create a climate more conducive to future innovation. Researchers who advocate this latter position (Kitch, 1977, and

Hellman, 2007, are cited by Murray & Stern) believe, for example, that IPR enforcement, when applied to inventions emanating from publicly-funded research, can provide an important incentive for moving new discoveries from the less visible university research lab to the more visible and competitive commercial marketplace. According to Murray & Stern (2007), those supporting this position suggest that “IPR may enhance the ability of society to realize the commercial and social benefits of a given discovery.” Considering both sides of this debate, and the empirical research that has been conducted, including work by Heller & Eisenberg (1998), Argyres & Liebskind (1998), and David (2001), Murray & Stern conclude that “a more recent anti-commons perspective argues that the expansion of IPR (in the form of patents and/or copyrights) is ‘privatizing’ the scientific commons and limiting scientific progress.” Pertinent specifically to the IPR-related issues explored in this dissertation, Murray & Stern observe that “the anti-commons hypothesis states that IPR may inhibit the free flow and diffusion of scientific knowledge and the ability of researchers to build cumulatively on each other’s discoveries” (Murray & Stern, 2007, p. 649). According to respondents in this study, and reported in Chapter 6, this idea of innovation based on a cumulative and collaborative process is how the majority of them understand the history and evolution of modern Learning Management Systems.

### *2.5 Groupthink and Decision-making by Organizational Leaders*

While the Groupthink theory had not been a part of the original literature review for this dissertation, Irving L. Janis’ work in this field was familiar from earlier graduate school research. As coding and analysis from the interviews with IT leaders progressed, it became increasingly evident that some “groupthink-like” behavior might be a cause for

the closely aligned opinions and highly consistent narrative expressed by the respondents in this study, especially regarding their perspectives on the *Blackboard v. Desire2Learn* patent infringement suit (see Chapter 5), and their views about Blackboard Inc. as a company. Chapter 6 investigates groupthink as a possible partial explanation for this consistency in perceptions (Section 6.2, subsection entitled *Higher Education IT Leaders, Blackboard, and Groupthink*, pp. 128-131).

Janis's theory, presented in his book, *Victims of Groupthink* (1972), and later expanded in the revised edition, *Groupthink – Psychological Studies of Policy Decisions and Fiascoes* (1982) establishes the groupthink phenomenon as “a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise alternative courses of action” (Janis, 1982, p. 9).<sup>9</sup> The groupthink theory was originally developed to explain how reasonably well-qualified and experienced decision-makers in the government policy arena could arrive at sometimes catastrophically bad decisions. Janis' research identified case studies which provided examples of policy “fiascoes” like the Kennedy Administration's 1961 invasion of Cuba (Bay of Pigs), the escalation of the Korean War, U.S. military leaders' misreading of risk prior to the bombing of Pearl Harbor by Japan, and escalation of the Vietnam War. Contrasting cases from Janis' research provide examples (what he calls “Counterpoint”) of good decision-making processes that resulted in positive outcomes, like the Cuban Missile Crisis, also during the Kennedy Administration (and with largely the same group of decision-makers who had been

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<sup>9</sup> Deek & McHugh (2008) in their work on open source technology and policy refer to this phenomenon as *cognitive inertia*, and they suggest it can be decreased by explicit process structures or countermeasures like “randomly exchanging sets of ideas among group members (Dennis, Easton, A. C., Easton, G. K., George, & Nunamaker, 1990), thereby expanding the range of discussion rather than contracting it” (p. 186).

involved in the Bay of Pigs invasion decision), and the development of the Marshall Plan for the reconstruction of Europe after World War II.

While Janis' research largely focuses on U.S. foreign policy decision-making, as the cases just listed indicate, his theoretical work has also been applied to other group decision-making processes and cases including decision-making and consensus behavior in industry and other large organizations. Janis emphasizes that two key contributors to groupthink are degree of group cohesiveness and insulation of the policy-making group (Janis, 1982, p. 176). As the findings in Chapter 6 will illustrate, the higher education IT leaders in this study represent both a cohesive and a fairly separate in-group of information technology professionals who frequently interact and share information within their professional community. It is important to note, within the context of groupthink theory and this study, that the findings discussed in Chapter 6 are not intended to imply that the IT leaders in this study reached the conclusions they reached *because* of groupthink, but rather, that the conformity of opinions around the topics under investigation may be examples of *groupthink-like* behavior. In conclusion, at least as a partial explanation for the alignment of attitudes on these issues by the IT leaders in this study, Janis' work offers a useful perspective.

The historical and theoretical literature from multiple disciplines reviewed in preparation for this study, combined with the specifics of the litigation surrounding *Blackboard v. Desire2Learn* and the developments which arose from it, described in Chapter 5, help establish the parameters and context for the data gathering and analysis which were undertaken in order to investigate and consider the research questions and related areas of inquiry upon which this work is based.

## CHAPTER 3

### METHODOLOGY

As noted in the Introduction (Chapter 1), this dissertation focuses on two interrelated areas of research inquiry which pertain to the decision-making process when selecting a Learning Management System for a higher education institution. Specifically, this study seeks to investigate the following research questions:

1. What are the principal characteristics of the decision-making process employed by institutions of higher education when selecting an institutional Learning Management System, and what is the role of senior IT leadership in that process?
2. What impact, if any, does the legal enforcement of intellectual property rights have on decision-making by IT leaders when selecting Learning Management Systems for their institutions?

In order to gather data to address these questions that are the focus of this study, interviews were conducted with fifteen Chief Information Officers and Learning Technology Directors, the higher education information technology leaders who traditionally help guide the LMS selection process at colleges, universities, and state higher education systems.

#### 3.1 *University of Illinois Institutional Review Board (IRB)*

At the University of Illinois, two conditions must be met before beginning a research project involving the use of human subjects, which this study planned to do. The first condition requires successful completion of an online *Course in the Protection of Human Subjects*. This training consists of several modules designed to educate and sensitize

principal and co-principal investigators about issues and regulations regarding human subjects research, including definitions of IRB terminology, concepts related to informed consent, and principles of ethical behavior. Specifically, the following modules were studied and completed:

- Belmont Report and CITI Course Introduction
- History and Ethical Principles
- Defining Research with Human Subjects
- Informed Consent
- University of Illinois at Urbana-Champaign IRB Regulations
- Internet Research

A certificate of course completion (reference # 1844681) was generated on June 21, 2008.

The second IRB requirement is completion by the Responsible Principal Investigator and project Co-Investigator of a set of application forms outlining the proposed research protocol and any requested procedural waivers. For this dissertation, an IRB-1 form, *Application for Review of Research Involving Human Subjects*, and a 45CFR46.116(D) form, *Waiver or Alteration of Informed Consent*, were submitted to the University of Illinois' Institutional Review Board. The purpose for the waiver was to request an exception to the normal requirement of having to obtain a signed informed consent form from each interview participant prior to conducting his or her interview. Four rationales were provided to the IRB for requesting this waiver:

1. *The research involved no more than minimal risk to the subjects.* All participants were adults, all responses were to be anonymized, and questions asked and topics discussed would be no different in these telephone-based interviews than those which information technology professionals would normally discuss in conversations with their peers.

2. *The waiver or alteration would not adversely affect the rights and welfare of the subjects.* At the beginning of all telephone interviews (which were recorded with the permission of the subjects), participants were to be presented with a consistent set of information about the interview process. Specifically, they were informed that their participation was entirely voluntary, that they could end their participation at any time with no adverse consequences, and that all of their responses would be anonymized (i.e., no comments they made would be attributed to them in any personally identifiable way). All subjects were to be asked if they understood these provisions, and if they were agreeable to continuing with the telephone interview. This method constituted an audio-based informed consent, which was included in all telephone interview recordings.

3. *The research could not practicably be carried out without the waiver or alteration.* All study participants were highly busy, working institutional IT leaders, all had already volunteered in advance to participate in the research interviews, and all interviews were to be scheduled based on the subjects' availability and convenience. Having required each respondent to first receive, complete, and return an informed consent form for an interview they had already agreed to participate in would have added an extra and unnecessary burden for the subject.

4. *Whenever appropriate, the subjects would be provided with additional pertinent information after participation.* All telephone interview subjects were to be informed that results from this dissertation research would be made readily available to them, upon request, as soon as the project was completed.

On September 3, 2008, the Institutional Review Board approved the research protocol and Waiver or Alteration of Informed Consent for this dissertation, IRB Protocol Number: 09005.

### *3.2 Process for Selecting Interview Participants, and their Characteristics*

Once IRB approval was received, the recruitment process for identifying and scheduling interview subjects began. The goal for this study was to interview Chief Information Officers and Learning Technology Directors from a variety of Carnegie Classification institutions<sup>10</sup> and from a cross section of the United States and perhaps from other countries as well. A letter requesting voluntary participation in this study<sup>11</sup> was developed, briefly describing the nature of this research, and providing the required IRB background and informed consent information. This letter was distributed in the following manner:

- An announcement containing an electronic copy of the letter was posted to the EDUCAUSE Chief Information Officers Constituent Group listserv. This is the major communication instrument for the EDUCAUSE Chief Information Officers Constituent Group, an active professional community to which most higher education IT leaders belong, both from U.S. and non-U.S. higher education institutions. Membership in the constituent group is not limited to CIOs, and any EDUCAUSE member with an interest in IT leadership and management may join. The EDUCAUSE CIO Constituent Group listserv has over 3,000 subscribers.
- An electronic copy of the letter was posted to the Frye Leadership Institute Alumni listserv. The Frye Leadership Institute is a training program for future IT leaders, sponsored by EDUCAUSE. Acceptance into the program requires nomination from a senior administrator at the applicant's home institution, and financial support for fees and lodging, currently \$5,000. Many influential IT leaders in higher education are Frye Institute alumni.
- An e-mail, with a copy of the recruitment letter, was sent to a targeted group of higher education IT leaders, either because they had previously expressed an interest in this study, or because they represented a Carnegie Classification

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<sup>10</sup> The Carnegie Foundation for the Advancement of Teaching produces a classification of colleges and universities which is widely used by researchers, administrators, and others when analyzing or describing different types of higher education institutions. Examples of these classification categories include "Publicly-controlled Doctoral/Research – Extensive" which includes major public research universities that award degrees up to the doctoral level; and "Privately-controlled BA – General," which describes private liberal arts colleges where the highest awarded degree is the Baccalaureate.

<sup>11</sup> See Appendix B for the text of the letter which was posted to the CIO/Learning Technology Director listservs.

institutional category not yet included among those who had already volunteered to participate.

From this process, an initial group of 12 higher education IT leaders volunteered to be participants in the study. Since each of these individuals met the criteria of being either a Chief Information Officer or a Learning Technology Director from a college, university, or state higher education system, telephone interviews with each of them were scheduled. By the conclusion of the twelfth interview, and from initial and axial data coding already underway, it began to appear as if saturation around the themes being investigated had been reached (see Section 3.4, *Sample Size and Saturation*). In order to develop further confidence about this, follow-up postings for additional study volunteers were placed on the EDUCAUSE CIO and Frye Leadership Institute Alumni listservs, and three additional interviews were scheduled and conducted.

Seven of the fifteen participants in this study were Chief Information Officers. The CIO is the senior level information technology official at an institution or state system, usually reporting directly to a President, Chancellor, or Senior Vice President (of academic affairs, administration, or finance, depending on the institution's structure). Where academic and administrative information technologies are combined, the CIO provides leadership over both; at institutions where academic and administrative IT are handled as separate entities, there are usually CIO level leaders who manage each independently. The other participants in this study were Learning Technology Directors who supervise IT units supporting instruction, and at some institutions, faculty development in the use of IT for pedagogy, like "Centers for Teaching Excellence." Two of the Learning Technology Directors in this study were responsible for providing online education

leadership for large state higher education systems. While many Learning Technology Directors report to a Provost or other senior academic official, in some institutions these IT professionals may be members of the CIO's staff. Whether the Learning Technology Directors report to the Provost, the CIO, or another institutional administrative unit, they are often key participants, if not leaders, in the LMS selection process. Since this dissertation focuses on the LMS selection process and the factors affecting IT leaders' decision-making, Learning Technology Directors with institution-wide responsibility were included in this study.

Table 3.1, on the following page, provides an anonymized list of the individuals interviewed, the Carnegie Classification category for their current institution, and the interview date. Respondent numbers (e.g., R-01; R-02) are included in the table, and will be used when referring to specific interview perspectives or quoted statements. This method protects the privacy of the information technology leaders who participated in this study. As noted earlier, an assurance of anonymity was given to each participant in exchange for their willingness to be interviewed and to speak candidly; and this stipulation was included as a component of the dissertation research plan approved by the University of Illinois Institutional Review Board (IRB-1 form, page 4). As Table 3.1 indicates, these IT leaders were affiliated with a wide range of Carnegie Classification institutions. Respondents in this study also represented geographical diversity, working at institutions on both U.S. coasts, in the Midwest, the South, New England, and the Pacific Northwest. Two of the respondents were from institutions outside of the United

Table 3.1 Interview Respondents by Carnegie Institution Classification

<b>Respondent</b>	<b>Position</b>	<b>Carnegie Institution Classification</b>	<b>Date Interviewed</b>
R-01	Chief Information Officer	Privately-controlled BA - General	12/19/2008
R-02	Learning Technology Director	Publicly-controlled MA2	12/20/2008
R-03	Learning Technology Director	Privately-controlled Organization	12/22/2008
R-04	Chief Information Officer	Privately-controlled MA1	12/23/2008
R-05	Learning Technology Director	Publicly-controlled Doctoral/Research - Intensive	1/5/2009
R-06	Learning Technology Director	Privately-controlled MA1	1/9/2009
R-07	Learning Technology Director	Privately-controlled MA1	1/21/2009
R-08	Learning Technology Director	Publicly-controlled State Community College System	1/23/2009
R-09	Chief Information Officer	Publicly-controlled State Community College System	2/17/2009
R-10	Chief Information Officer	Publicly-controlled State Community College System	2/17/2009
R-11	Chief Information Officer	Privately-controlled Doctoral/Research - Intensive	2/18/2009
R-12	Learning Technology Director	Publicly-controlled Doctoral/Research - Extensive	2/24/2009
R-13	Chief Information Officer	Publicly-controlled Doctoral/Research - Extensive	2/25/2009
R-14	Chief Information Officer	Publicly-controlled Doctoral/Research - Extensive	2/26/2009
R-15	Learning Technology Director	Publicly-controlled State University System	3/16/2009

States – one from Canada, and one from Lebanon.<sup>12</sup> Of the IT leaders interviewed, five were female and ten were male.

All of the interview subjects, senior level IT leaders, described significant years of work experience in similar leadership roles across multiple institutions. One Learning Technology Director, for example, spoke of her experiences with LMS selection and implementation at three different institutions she had led over the past 15 years (R-05). During the interviews, respondents were encouraged to draw from their breadth of experience, describing and reflecting on the decision-making process and LMS selection issues they have encountered, not only at their present institution or state system, but across the trajectory of their careers.

### *3.3 Interviews and Data Analysis Process*

A set of interview questions was developed to elicit data from the study participants about the research topics that form the focus of this study, and those questions are provided in Appendix A.

Objectives for the interviews with the CIOs and Learning Technology Directors included:

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<sup>12</sup> While country-based differences in IT leaders' perspectives on the effect of legal enforcement of IPR on LMS selection decision-making was not an area of specific inquiry for this study, and would have required a larger sample to be meaningful, two comments from these respondents are notable. The Canadian respondent (R-13) said that the IPR policies he and his Canadian colleagues follow are largely consistent with how intellectual property rights are managed in the United States. The Lebanese respondent (R-03) emphasized that: "It's true that we are a third-world country, and we've been in war for 30 years, but we still have laws and rules, and we implement them, and we enforce them, you know. And we try in this country to also follow Fair Use and intellectual property, and all that, to protect any thinking and any patents."

Regarding selection of an LMS, both international respondents described decision-making processes similar to those reported by the U.S.-based IT leaders in the study.

- Collection of data about the Learning Management System selection process used at their institutions and their role in that process.
- Collection of data about these IT leaders' relationships and experiences with proprietary LMS manufacturers; the impact *Blackboard v. Desire2Learn* may have had on their thinking and decision-making; and their perspectives about the potential impact IPR legal enforcement may have on future LMS innovation and marketplace viability, both for proprietary and open source solutions.
- Collection of data about these IT leaders' perceptions of the efficacy of current intellectual property rights laws and protections as they're being applied to software-based products and services like Learning Management Systems.

The IT leader interviews were structured into two parts, the first of which focused on the process of selecting an institution-wide Learning Management System. This area of discussion generated data about the rationale for considering a new LMS, what kinds of criteria contributed to choosing a product, how the selection process was structured at the institution where the respondent worked, and the specific decision-making role the IT leader had in the selection process. The second part of the interviews focused on the impact of legal enforcement of intellectual property rights on the IT leaders' decision-making process. Data generated from this portion of the interviews related to their attitudes and beliefs regarding Blackboard's patent infringement suit, their views about proprietary and open source LMS solutions and the marketplace, and their perspectives on the efficacy of current IPR protection mechanisms like patent and copyright as they're being applied to software-based products and services like Learning Management Systems.

Interviews with the IT leaders were conducted between December 19, 2008 and March 16, 2009. Duration of the interviews ranged from 26 minutes to 1 hour, 26 minutes. The average time for all interviews was 52 minutes, with five running one hour or longer. All

respondents were asked if they would be comfortable with the interviews being recorded for note-taking and transcription purposes, and all were agreeable to this. The interview recordings were transcribed using a two column method so that interviewer and interviewee dialogue appear in the left column, and analytical codes and research notes appear adjacent to what is being said in the right column.

The approach to data analysis used in this study followed guidelines established by Strauss (1987) in his book, *Qualitative Analysis for Social Scientists*. Interview transcripts were read and re-read, and the audio recordings of the interviews were listened to multiple times, with a focus on nuance and inflection which often added to the analysis of what respondents were communicating - beyond what they were *saying*. Developing a deep familiarity with this data was essential for employing the constant comparative method which was used throughout the data analysis process. Charmaz (2006)<sup>13</sup> defines the constant comparative method as:

“A method of analysis that generates successively more abstract concepts and theories through inductive processes of comparing data with data, data with category, category with category, and category with concept. Comparisons then constitute each stage of analytic development” (Charmaz, 2006, p. 187).

Data generated from the qualitative study framework employed in this study - interviews framed to gather data to address the research questions - was analyzed using techniques characteristic of the grounded theory mode of analysis. All interview transcripts were read individually with initial coding performed for each interview. In order to verify that

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<sup>13</sup> Kathy Charmaz was a doctoral student of Barney Glaser, and her approach to qualitative analysis is patterned on Glaser’s work and on Glaser’s earlier collaboration with Anselm Strauss (Glaser and Strauss, 1967).

the coding and code categories were being developed at an appropriate level of analysis, representative copies of two of the interview transcripts were provided to Professor Caroline Haythornthwaite and Professor Lori Kendall, members of the Dissertation Committee, who provided comments and guidance on how best to proceed with the coding. As the coding process continued, themes and dimensions began to emerge, axial coding rounds were conducted, and analytical memos were written identifying prevalent themes, areas of agreement and disagreement among respondents, and ideas and concepts in need of further analysis and consideration. Through these repetitive and iterative steps, a clearer perspective emerged around what the respondents' understandings were of "what was going on" regarding the two major areas of inquiry being investigated in the interviews. Findings from the first area of inquiry, *institutional decision-making when selecting a Learning Management System, and senior IT leadership's role in that process*, are reported in Chapter 4. The second area of inquiry, *the impact of legal enforcement of intellectual property rights on IT leadership's decision-making when selecting an LMS*, is the topic of Chapter 6.

### 3.4 Sample Size and Saturation

As noted in Section 3.2, telephone interviews were conducted with fifteen higher education IT leaders from a variety of Carnegie Classification institutions located across the United States and in two foreign countries. In response to the first round of requests for study participants, 12 IT leaders responded that they would be willing to participate, and having met the criteria to qualify as subjects, each was interviewed. As coding progressed from the transcripts and recordings of these interviews, it began to appear as if a level of saturation around the themes being investigated had been reached. Writing

about the concept of saturation in the *Forum Qualitative Sozialforschung / Forum:*

*Qualitative Social Research*, Mason (2010) notes:

“Samples for qualitative studies are generally much smaller than those used in quantitative studies. Ritchie, Lewis, & Elam (2003) provide reasons for this. There is a point of diminishing return to a qualitative sample - as the study goes on, more data does not necessarily lead to more information. This is because one occurrence of a piece of data, or a code, is all that is necessary to ensure that it becomes part of the analysis framework. Frequencies are rarely important in qualitative research, as one occurrence of the data is potentially as useful as many in understanding the process behind a topic. This is because qualitative research is concerned with meaning and not making generalized hypothesis statements” (see also Crouch & McKenzie, 2006).

Mason goes on to observe:

“Within any research area, different participants can have diverse opinions. Qualitative samples must be large enough to assure that most or all of the perceptions that might be important are uncovered, but at the same time if the sample is too large, data becomes repetitive and, eventually, superfluous. If a researcher remains faithful to the principles of qualitative research, sample size in the majority of qualitative studies should generally follow the concept of saturation (e.g. Glaser & Strauss, 1967) - [data collection can end] when the collection of new data does not shed any further light on the issue under investigation” (Mason, 2010, p. 2).

In the case of this study, by the twelfth interview, the data had generated 107 initial common codes, and while a diversity of opinions, beliefs, and perspectives had been expressed by the respondents regarding the research topics under investigation, it appeared that little more useful information would be obtained by expanding the size of the interview pool. In an effort to verify this, three additional interviews were conducted, and data from those interviews was initially and axially coded. This information yield was consistent with the earlier interviews, and provided a level of confidence that further interviewing about these topics with additional IT leaders from similar backgrounds and institutional affiliations would not add appreciable information or insights to the study.

With regard to sample size and saturation, it is worth noting that for this particular study, the interview questions and discussions didn't focus on the respondents' institutional affiliation as the point of the research investigation (although a cross-section is represented), nor was the goal to reach conclusions about the larger population of higher education IT leaders. Rather, this research sought to probe these respondents' opinions, beliefs, and perspectives as IT leaders within the context of their responsibilities in helping select their institutions' Learning Management Systems, and how, if at all, IPR legal enforcement affected their decision-making process.

### *3.5 Reliability and Validity of Interview Data*

In order for the findings from a study to have value and legitimacy, the data from which they are drawn must be both reliable and valid. Kvale & Brinkmann (2009) suggest that some qualitative researchers, Lincoln & Guba (1985) for example, "have reclaimed ordinary language terms to discuss the truth value of their findings, introducing concepts such as trustworthiness, credibility, dependability, and confirmability to qualitative research" (Kvale & Brinkman, 2009, p. 244).

#### *3.5.1 Reliability*

Reliability, as described by Kvale & Brinkmann (2009), "pertains to the consistency and trustworthiness of research findings; it is often treated in relation to the issue of whether a finding is reproducible at other times and by other researchers. This concerns whether the interview subjects will change their answers during an interview and whether they will give different replies to different interviewers" (Kvale & Brinkmann, 2009, p. 245). In terms of the responses from the IT leaders who participated in this study, it is likely that

the data generated from their interviews, within the parameters of the definition of reliability just presented, was reliable. As noted earlier, all respondents were given a guarantee that their responses would be kept confidential, and during several parts of the interviews, especially when touching on controversial or sensitive topics, respondents would make comments like “Okay, a couple of things... this is definitely confidential, right?” (R-15); and “I started the process of strategic planning around Learning Management Systems that is now culminating in some contracts being signed, and one of the things going on was... I mean this would be the kind of thing you’d need to make anonymous... but there was a tremendous sense of being burned by the vendors” (R-05). As a result of this assurance of anonymity, the IT leaders in this study were often candid and blunt in sharing their beliefs, opinions, and perspectives, and there is little reason to believe that they weren’t being honest in reporting their views. For the same reasoning, and assuming a similar guarantee of privacy, it is likely that these respondents would have shared consistent information with a different researcher. Also, and this will be discussed further in Section 3.7, *Role of Both Doctoral Student and Professional Peer*, most respondents in this study related to the interviewer as a professional colleague, and, therefore, may have been particularly comfortable sharing views, concerns, and areas of frustration in a frank and honest manner. Several respondents made this connection during the interviews, commiserating with the interviewer about IT leadership challenges, and framing their remarks with comments like “However, I have no plans of adding resources to do open source alternatives. You know, we’re very financially focused now, as I’m sure you are” (R-11). Interview data generated by the IT leaders in this study appears to have been at a good level of reliability.

### 3.5.2 *Validity*

“Validity refers in ordinary language to the truth, the correctness, and the strength of a statement. A valid inference is correctly derived from its premises... validity has, in the social sciences, pertained to whether a method investigates what it purports to investigate” (Kvale & Brinkmann, 2009, p. 246).

The original framing of the interview questions, the conducting of the interviews themselves, and the subsequent coding and analysis of data, both within and across interviews, through the use of techniques characteristic of the grounded theory mode of analysis, were designed to generate valid research findings about the topics under investigation. The two major core categories of this study map directly to the data obtained from the interviews with the CIOs and Learning Technology Directors who participated. From the range and depth of their responses, it appears that the wording and organization of questions asked were understandable and appropriate for what was being investigated, and the findings which emerged from the data contributed a useful framework for considering the research questions around which this study is focused.

Golafshani (2003), in her work on reliability and validity in qualitative research, notes that validity in qualitative studies can be better assured through the use of triangulation (cross verification) and through an assessment of the generalizability (Stenbacka, 2001) of a study's findings. During the course of this research, the *EDUCAUSE CIO Constituent Group listserv*, LMS user forums (Angel Learning, aTutor, Blackboard, Desire2Learn, LON-CAPA, Moodle, and Sakai), eLearning and Open Source blogs and Wikis, and

articles in the *Chronicle of Higher Education*, *THE Journal* (Technical Horizons in Education), and other publications were regularly monitored for discussions and articles pertinent to the topics under investigation. In addition, regional, national, and international higher education IT meetings were attended, with participation at sessions and presentations focusing on areas connected to this study. Information obtained from these multiple and varied sources aligns in scope of concerns and range of perspectives with what was generated from the interviews with the IT leaders in this study. These additional data points help contribute a level of confidence in the validity of the findings (and saturation of the interview data) from this research.

### *3.6 Interview and Follow-up with Matthew Small, Blackboard Inc.*

In order to obtain additional knowledge about the issues involved in Blackboard's litigation, and in an effort to try to balance the perspectives about these issues provided by the IT leaders who participated in this research and what had been reported in the press, a request was made to Blackboard Inc. for an opportunity to interview a representative from their company. In response to this request, Matthew Small, Blackboard's General Counsel (the chief architect of the *Blackboard v. Desire2Learn* patent infringement suit), and at the time, Chief Business Officer and Secretary for the company, agreed to participate in a telephone interview. That interview, lasting about one hour, was conducted on March 20, 2009.

At the beginning of the interview, Mr. Small was presented with the same University of Illinois IRB guidelines that had been presented to the other respondents in the study, including a request for permission to record his interview along with the same guarantee

of anonymity. Mr. Small responded by saying that he preferred that his interview not be recorded, since he said he didn't know the topics that might be included in the interview. He said that he was agreeable to hand written notes being taken, and he stated that it would be permissible to refer to his specific remarks directly by name. "Use my name, there's nothing I will say here that I wouldn't mind your attributing to me," Small said. At that point in the conversation, the recording device was turned off, and hand written notes were taken for the duration of the interview. Professor Jay Kesan at the University of Illinois College of Law, an advisor for this dissertation, had suggested a number of questions in advance pertaining to the Blackboard lawsuit and related IPR legal enforcement issues that he felt would add insight to this research. Those questions, plus several others used with the IT leaders in this study, were asked of Matthew Small, and his interview provided original source data about the historical, philosophical, and legal reasons for Blackboard's having pursued the course of action they chose with regard to their patent and their response to its alleged infringement by Desire2Learn. A follow-up communication with Mr. Small was held via e-mail on 11/24/2010 in order to confirm some information for the update provided in Chapter 6 (Section 6.2.3, *Update on Blackboard's Patent Pledge, Commitment to Increasing Interoperability, and Company's Acquisition in 2011*).

### *3.7 Role of Both Doctoral Student and Professional Peer*

"Those who are working on a topic within their own field of expertise, and especially connected with their own job or professional work, face just the opposite problem [to those researching a topic with which they are less familiar and must labor to gain background and technical expertise]: being flooded with masses of personal experiences and memories" (Strauss, 1987, p. 299).

Being a doctoral student researcher and an active state system higher education Chief Information Officer provided both benefits and challenges in conducting this research.

Among the benefits were:

- *Access* - it was not too difficult finding CIOs and Learning Technology Directors agreeable to being interviewed regarding the topics being investigated for this research. These senior level administrators, despite busy schedules, were all willing to commit an hour or more for the telephone-based interviews, and all were agreeable to participating in follow-up calls or e-mail correspondence if additional information or further clarification proved necessary.<sup>14</sup>
- *Candor / Comfort Level* - with the assurance of anonymity, all of the IT leaders in the study were forthcoming, at ease, and candid in their conversations, observations, and emotional responses to the topics discussed. As noted earlier, all agreed to have their interviews recorded for note taking purposes; and also, as already noted, many of the respondents related to the interviewer as a professional peer - as someone who, as a fellow IT leader, could understand their goals and challenges, and could commiserate with their concerns and frustrations.
- *First-hand knowledge of the topics* - as a higher education IT manager with considerable experience in IT leadership positions, the topics being investigated in this research were familiar, as were the debates related to them from historical, economic, pedagogical, and political perspectives. This was beneficial in framing the questions to be asked in the data gathering phase, and in interpreting and contextualizing the data in the analysis and development of findings phase.

The dual role of researcher and working IT professional also required a conscientious commitment to try to remain unbiased and detached from the issues under investigation.

Considerable research has been conducted on the dynamics associated with being an “insider participant-observer.” Labaree (2002) in his study of this phenomenon observes:

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<sup>14</sup> In a few cases, during the coding process, respondents were contacted by telephone or e-mail to clarify statements they had made during the interviews.

“A common assumption made about participant observation is that being an insider offers a distinct advantage in terms of accessing and understanding the culture. However, these advantages are not absolute and the insider must be aware of ethical and methodological dilemmas associated with entering the field, positioning and disclosure, shared relationships and disengagement” (Labaree, 2002, p. 97).

From the planning stages of this research, a decision was made to have the researcher remain outside of the study, to not be a data source, and that has largely been achieved. While respondents sometimes viewed the researcher as a professional colleague, and this was helpful in gaining entrée and gathering detailed data (since respondents assumed the interviewer was already familiar with the technological and administrative issues), a conscious effort was made to conduct the interviews in the same way they would have been conducted by a researcher with no connection to the field. Equally important, at the coding and analytical stage, and throughout the findings development stage, the researcher endeavored to be appropriately critical, both in a positive and in a negative sense, if that was the conclusion the data revealed. In retrospect, having completed the study, being an “insider” did not prove to be a significant obstacle in reaching critical assessments about the topics this research has sought to investigate. In summary, the above listed advantages of being an insider were maximized, while the level of risk was mitigated to the best of the researcher’s ability.

### *3.8 Limitations of this Research*

In planning a research project, one tries to think about objectives to be achieved and ways in which obstacles to successfully investigating the topic of study can be avoided or reduced. It is important to be clear about how much a study can realistically encompass, and in reporting findings and drawing conclusions, to not “overreach,” to only report

what the data shows. Identifying a research study's limitations provides an important context for accurately assessing its findings.

Even with reasonable confidence in the saturation around the focal topics of this research (see Section 3.4, *Sample Size and Saturation*), the information generated from the interviews reflects only the opinions, beliefs, and perspectives of those individuals who participated in the study. While it is possible to extrapolate some findings from this group to the larger community of higher education IT professionals, this should only be attempted to a limited extent, cautiously, and with the caveat that this research does not purport to represent a statistical sampling of the higher education IT leader community. Also, all participants in this study *volunteered to be interviewed* for this research. Since they already knew the areas planned for investigation from the recruitment communications they received (see Appendix B), it is likely that they volunteered because they had a particular interest in these issues. The sometimes strong opinions and emotional responses expressed during the interviews and the fact that respondents had self-selected to participate is noteworthy, and probably not coincidental. IT leaders with little or no interest in these topics, had they been interviewed, could possibly have produced quite different research data than the engaged group of CIOs and Learning Technology Directors who chose to be a part of this study.

Another limitation of this research was its "time boundedness." Both of the phenomena with which this study is concerned - Learning Management Systems and the marketplace in which they are developed and distributed; and legal enforcement of intellectual

property rights, especially with regard to software-based products and processes - are dynamic topics which are constantly undergoing change. Assessment of developments in these areas and how they affect the thinking and decision-making of IT leaders would benefit from ongoing and longitudinal research similar to that employed by *The Campus Computing Project*, and the *Center for Higher Education Chief Information Officer Studies*, managed by Kenneth C. Green and Wayne A. Brown, respectively.<sup>15</sup>

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<sup>15</sup> *The Campus Computing Project* (<http://www.campuscomputing.net/>), developed in 1990, and administered by Kenneth C. Green, conducts ongoing national studies which assess and analyze trends and issues related to the use of information technology in higher education. Available through published reports, and summarized annually at the national EDUCAUSE Conference, current *Campus Computing Project* topics include institutional investment in IT, concerns over IT-based security threats, status of online education, growth in mobile computing, and highlighted in the 2010 survey, developments in the higher education market for Learning Management Systems (see <http://www.campuscomputing.net/sites/www.campuscomputing.net/files/Green-CampusComputing2010.pdf>).

The *Center for Higher Education Chief Information Officer Studies*, or CHECS (<http://www.checs.org/index.htm>), provides information about higher education CIOs' attributes, education, experience, and effectiveness. Initiated in 2004, CHECS research considers CIO leadership and perceived effectiveness within six professional role contexts: as Business Partner, Classic IT Support Provider, Contract Oversight Manager, Informaticist and IT Strategist, IT Integrator, and IT Educator. Like *The Campus Computing Project*, CHECS findings are reported annually at the national EDUCAUSE conference, at other professional meetings, and through published reports.

## CHAPTER 4

### INSTITUTIONAL DECISION-MAKING WHEN SELECTING A LEARNING MANAGEMENT SYSTEM, AND SENIOR IT LEADERSHIP'S ROLE IN THAT PROCESS

“[Innovation is] an idea, practice, or object that is perceived as new by an individual or another unit of adoption. An innovation presents an individual or an organization with a new alternative or alternatives, as well as new means of solving problems. However, the probability that the new idea is superior to previous practice is not initially known with certainty by individual problem solvers. Thus, individuals are motivated to seek further information about the innovation to cope with the uncertainty that it creates” (Rogers, 2003, p. xx).

This chapter describes findings from the data generated by this research regarding the decision-making process used to select an institutional Learning Management System (the “innovation”) by Chief Information Officers, Learning Technology Directors, and their colleagues (the “problem solvers”).

#### 4.1 *Diffusion of Innovations and the LMS Selection Process*

What emerged from an analysis of the interview data is that the process for selecting an institutional Learning Management System (LMS), and the decision-making role of campus and system IT leaders and their colleagues, the subject of this chapter, can appropriately be situated within *Diffusion of Innovations* research, as developed and articulated by Everett Rogers (2003); and fits well with the conceptual framework of *Integrating Models of Diffusion of Innovations* suggested by Barbara Wejnert (2002). In her framework, Wejnert organizes Rogers’ diffusion variables into three major components:

1. “Characteristics of the innovation itself, within which two sets of variables are defined concerning public versus private consequences and benefits versus costs of adoption.”

2. “Characteristics of innovators (actors) that influence the probability of adoption of an innovation.”
3. “Characteristics of the environmental context that modulate diffusion via structural characteristics of the modern world.”

As innovation, Learning Management Systems have both public and private consequences: public for the end users - faculty and students who will be expected to adopt the selected product for teaching and for learning; and private for the information technology and faculty development professionals who will be required to help manage the LMS's implementation and successful integration into their institution's academic environment. Another private consequence relates to the professional reputation of the CIO, Learning Technology Director, and others who help select the Learning Management System. If their decision turns out to have been a good one, and the selected LMS is perceived to add value to the learning enterprise, then the credibility of the decision-makers is enhanced. If, on the other hand, the selected product is not perceived as being beneficial, this will likely have a negative effect on an IT leader's reputation and future institutional effectiveness.

Benefits associated with selection of an LMS include its ability to help promote and enhance learning, accommodate a variety of student educational and scheduling needs, and provide a platform for distance learning and blended learning classes.<sup>16</sup> LMS adoption costs include product licensing, LMS hosting (see Section 4.2), faculty training, and end user support.

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<sup>16</sup> *Blended learning* refers to a combination of face-to-face classroom instruction, supplemented by additional content and, sometimes, out-of-class-time exercises, supported by the Learning Management System. Some institutions refer to these as “hybrid courses.”

Actors or “adopters,” as Wejnert also calls them, are defined as any social entity, including individuals, groups, organizations, or national polities engaged in the process of innovation diffusion. Within the context of this study, the actors include the committees that participate in LMS selection, the IT leaders who help guide the selection process, end users including faculty and students who use the system, other institutional stakeholders<sup>17</sup> like finance officers who help negotiate vendor contracts, and the campus or system information technology department which has responsibility for integrating the LMS into the institution’s IT infrastructure. At institutions where the hosting of the Learning Management System is not outsourced, the IT department often has responsibility for managing the LMS hosting servers and storage systems, and at some institutions, for providing end user support, including operation of an LMS Help Desk.

From an environmental perspective, diffusion of an LMS among adopters is affected by institutional culture and institutional information technology policy and practice. At some institutions, and usually in state systems, a single Learning Management System is selected and deployed, and faculty are required to use that product to support their technology-based teaching needs. Rogers (2003) refers to this type of innovation adoption as *authority innovation-decision*, since individual members of the organization have to adopt an innovation which was selected by others in positions of authority, and over which they had little or no influence. At the other end of the innovation adoption spectrum, are institutions and systems that support multiple commercial and/or open

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<sup>17</sup> The term, *stakeholder*, as used in this dissertation, can be defined as any individual or group who has an interest in, or may be affected by the selection and deployment of an institutional Learning Management System.

source LMS solutions, and faculty can choose the one (or ones) they prefer to use. This is consistent with Rogers' *optional innovation-decision* model.<sup>18</sup>

For institutions and state systems where faculty are represented by collective bargaining, the diffusion environment may involve such aspects as providing overload compensation to instructors for the time it takes to learn a new technological system or skill set; or additional payment for the time it takes to design and develop a new online course.

In the sections which follow, data from the interviews with CIOs and Learning Technology Directors will be presented, providing evidence that the institutional LMS selection process, and decision-making by the IT leaders who participated in this study, align closely with Rogers' (2003) conceptualization of the innovation-decision process, and Wejnert's (2002) framework based on Rogers' work, and demonstrates that what is going on is *diffusion of innovations theory* in practice.

#### *4.2 Learning Management System Selection Process and IT Leader Decision-Making*

While there were a number of areas of interview questioning where the IT leaders differed in their perspectives and management strategies, all were unanimous in their belief that changing an institution's Learning Management System, commonly referred to as "migration," is an expensive and largely disruptive process. They believe that migration is something best avoided unless the benefits for changing are significant and substantial. One respondent described his attitude about LMS migration:

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<sup>18</sup> See Section 4.2.4, *Role of Senior IT Leadership in the LMS Selection Process* (pp. 94-97) for a description and discussion of Rogers' (2003) innovation decision-making typology.

“We’ve certainly invested millions over the last couple of years in terms of getting the institution and the structures up to speed using the Blackboard product, and I think we’re sort of at the point where people are using it fairly effectively. So, there are certainly a lot of imperatives not to move to something new and so, if the product wasn’t going to change, I don’t think there would be any receptivity on the part of the institution towards moving” (R-02).

Another IT leader recounted several version changes with the LMS his institution had been employing over the past 10 years, suggesting that each major change represented a significant learning curve which put faculty and staff through “change stress” (R-06). Interestingly, several respondents observed that the actual migration process at their institutions turned out to be considerably less painful than had been anticipated. As the Learning Technology Director from a large research university that went through the migration process in 2002 explained:

“I remember faculty actually saying, like, you, know, ‘you can take Blackboard from my cold dead hands,’ one of them said to me, but actually in the end, the conversion was not that difficult... it was difficult, but a lot of the burden was borne by the support people much more than the faculty, because stuff was transferred, and it ended up being a fairly smooth transition, and like I think with any product, there are issues in terms of support and, you know...” (R-05).

The “burden to support people” during and after the migration is largely determined by two factors: the way an institution structures the hosting of their Learning Management System, and the way end user support is provided. In terms of LMS hosting, three models are prevalent:

- Vendor Hosting – the manufacturer of the LMS sets up and manages all Learning Management System operations. This includes hosting the software application itself, updating and patching the application whenever necessary, and providing

storage and storage back-up for all course shells<sup>19</sup> and course content. The vendor works with institution personnel to interface the LMS with other campus level enterprise systems like a student information management system or university portal.

- Third Party LMS Hosting – this model is similar to Vendor Hosting, except all services are outsourced to a company that specializes in supporting LMSs for institutions that don't have the resources or desire to host the LMS themselves, and/or have chosen an open source product that does not offer a vendor hosting solution, like Moodle or Sakai. A variation on the third party model is where a consortium of institutions (R-06) or a state agency (R-10) provides fee-based LMS hosting services for its members.
- Self-Hosting – as the name implies, in this model, the institution using the LMS manages all Learning Management System support services in-house. This arrangement requires purchasing the LMS software license, installing the software on institution owned and managed servers, and maintaining a staff of trained technical personnel, usually available 24x7x365. If an LMS is already in place, or a determination has been made about which product they will be purchasing, an institution may seek to hire technicians and faculty trainers with specific experience supporting that LMS product (R-02). Self-hosted Learning Management Systems are often found at larger research universities where a sophisticated, well-equipped, and extensively staffed campus computing environment exists (R-02, R-05, R-11, R-12, R-14). Some smaller, private institutions also self-host their LMS (R-01, R-04, R-07).

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<sup>19</sup> A course shell is the structure for housing a specific course within an online LMS environment.

For end user support, a Help Desk provides assistance to students and faculty experiencing difficulties logging into or using the LMS. Usually, a variety of communication media are offered for support, including telephone, live chat via the Internet, and e-mailed questions and answers. A number of help desks also offer knowledgebase and frequently asked questions (FAQs) sections where end users can attempt to resolve their own problems. As with hosting, end user support can be outsourced to an LMS vendor or third party user support service (where the institution is billed for each support incident or “ticket”), or provided as an in-house, institution-based service.

As will be described in the section on the LMS Selection Process (see 4.2.3, subsection entitled *How Decision-makers Evaluate LMS Products*, pp. 79-85), a number of institutions conduct product research by speaking with or visiting colleagues at other universities or state systems already deploying a particular LMS under consideration.

One issue that always arises is how well (or badly) the migration went:

“...most of our references indicated that the faculty adoption and student adoption to Desire2Learn was pretty quick, and we did have them [Desire2Learn] run a couple of courses through a conversion process and they came out pretty whole. During our ‘Sandbox Period,’ faculty found it pretty easy to use and pretty intuitive” (R-09).

What emerged from the interviews was that several variables contribute to an LMS change being viewed by adopters as what Rogers (2003) calls *a desirable consequence*. These variables include how easily and accurately course content can be moved from the old LMS to the new one, how easily faculty, students, and technical staff can learn the

new system, how well the new LMS integrates with other institutional enterprise systems, and the ease with which instructors can employ applications and services they use for teaching which exist outside the LMS (e.g., videos from iTunesU, WebEx and Skype conferencing/communication tools, external Wiki and Blog products, etc.). This last variable, interoperability of the LMS with other eLearning tools, services, and systems, was cited by several respondents as being a key concern and a good predictor of the future efficacy of specific LMS products, and by extension, raises the question of the future of LMS products based on the earlier, all encompassing, single solution LMS model (R-13, others).

#### 4.2.1 *Rationale for Selecting a New LMS*

As noted above, the move to a new LMS, or a major upgrade of an institution's current LMS, is a large and involved undertaking. Like most innovation decision-making, the decision to consider purchasing a new Learning Management System or to change an existing one usually occurs in response to a perceived need, or the desire to resolve a particular issue or problem. From the interviews with the IT leaders, it became evident that there are a number of circumstances which can act as key decision time points precipitating an institution's consideration of an LMS adoption or change. Respondents in this study were asked to discuss the rationale for engaging in this process. In other words, *what were the circumstances that led their institution to seriously consider adopting a new LMS or changing their present one?*

- *The Institution Had No LMS.* The modern Learning Management System, as a consolidated set of educational tools (syllabus, reading assignments, discussion

board, quizzing tool, gradebook, etc.) within a course shell framework, and delivered over the Internet, experienced rapid and widespread adoption by higher education institutions throughout the 1990s. Interview respondents described their institutions' early experiences with Learning Management Systems and related eLearning tools as having evolved along four, not always clearly delineated paths. At some institutions, faculty built their own set of eLearning tools out of emerging technologies they themselves were learning about and experimenting with, such as personal Web pages where they could post content for their students (R-07, R-11). Other institutions created homegrown Learning Management Systems of their own (R-12). Some institutions, and especially state systems, purchased commercially available LMS products like CourseInfo (which later merged with Blackboard - see Chapter 5) or WebCT (R-10). In a fourth model, some colleges resisted, and some still continue to largely resist, any significant implementation of LMS technologies, since their philosophies of education heavily favor face-to-face teaching:

“Here at -----, we're a relatively small, private, primarily undergraduate college, with almost no online, no fully online programs at all. So, the Learning Management System is used only in a blended sense. As far as the involvement of faculty in terms of the Learning Management System, and pushing its functionality... nobody is pushing its functionality very much. They use it primarily for a lock box, for turning in homework, for the syllabi. And this again... part of this is culture. The culture here is there is very significant value in that face-to-face experience. Liberal arts colleges like ours see their mission and their role more than just teaching someone how to do something... there's a context and a set of values that are also delivered and shared and debated and engaged with here” (R-01).

- *The Current LMS Contract Was Expiring.* Proprietary Learning Management Systems are procured through a software licensing agreement usually specified for a multiple year term with annual renewals. For example, in one state system, the contract with the LMS vendor is established for a period of up to nine years, with annual renewals at a pre-established rate of increase, and with provisions for early termination by either party (R-10). The decision time point then, is whether or not to renew the expiring contract. Several respondents viewed the end of contract as an opportunity for reassessment. As one Learning Technology Director for a state system of community colleges expressed it:

“The [Blackboard] contract was coming up, service was going down, everybody was upset about the patent lawsuit ongoing. The combination of those three, and we hadn’t done an RFP for I want to say, six years. So we hadn’t really looked at the market. And in that time, Angel had come on strong, Desire2Learn had come on strong, and Moodle and Sakai had become viable options. So, it was time to relook at it” (R-08).

- *The Current LMS Product Was Being Discontinued.* The process by which a manufacturer decides to end future development and support for a software product, often referred to as “sunsetting” (e.g., Microsoft discontinuing the Windows XP operating system and encouraging clients to move to Windows 7), creates another opportunity for institutions and their IT leadership to consider their options. This is similar to the considerations described above, but different in the sense that the option to renew a contract and continue with the existing LMS is no longer available. The decision facing institutions in this scenario is whether to migrate to the next product their current vendor is offering, or to move to something entirely new. This particular decision point is currently being faced by many institutions and educational systems world-wide as the predominant

commercial LMS vendor, Blackboard Inc., has announced the “end of life” in 2013 of their Blackboard Vista 8 product (the successor to WebCT after Blackboard acquired it in 2005). Blackboard Vista institutions are being encouraged by the manufacturer to move to Blackboard’s “Next Generation” LMS product, now called Blackboard 9.1.

- *Cost Increases by the LMS Vendor.* As commercial businesses, proprietary LMS manufacturers regularly increase the cost of using their products. As with other institutional purchasing decisions, and in an effort to define benefits versus costs of adoption (Wejnert, 2002), colleges, universities, and state systems may decide to consider whether or not the expense of licensing and operating their current LMS, usually several hundred thousand to several million dollars per year, continues to be worth the investment. This creates a decision point for an institution about its future course of action regarding its Learning Management System. Related to cost increases, but outside the scope of this research, follow-on investigation around how the present severe economic crisis is affecting institutions’ assessments of the value of their LMS and other eLearning product investments would be valuable.
- *Decision to consolidate multiple LMS products into one campus solution.* Institutions and state higher education systems, especially those that adopted LMS technology early in its evolution, sometimes find themselves managing and supporting multiple products across campuses and system-member institutions –

and sometimes multiple LMSs within the same campus or institution. As one interview respondent observed:

“And so budget, and the cost of these things, was very core to our going forward. We couldn’t [continue to] support five separate ones [LMSs] for cost reasons, and we couldn’t support five separate applications because of the password problems, and integrations [with other campus enterprise systems], and the growth in all of these systems. It seemed like it was too difficult to have that many choices, and to put our resources into one enterprise system that most people could get on, that there would be a base for the whole campus, that we could address password reduction and data integration with other institutional data sources – that would make our jobs easier” (R-12).

Another respondent reiterated this point:

“Before we consolidated [to a single LMS], we were supporting at least four different Learning Management Systems. It was killing us” (R-13).

- *Desire for newer features / increased capabilities.* A number of IT leaders discussed the changes in eLearning technology they have witnessed over the years they have “been in the business.” Such applications as streaming video, Web conferencing which supports collaboration at a distance, and more recently, social networking tools and services like Facebook, Second Life, Twitter, blogs, and Wikis have had a transformative effect on how people teach, learn, and communicate (R-13). Learning Management Systems were judged by many interview respondents based on how well these features are integrated and supported. The decision time point is whether or not capabilities of competitive LMS products are compelling enough to warrant a major change in an institution’s Learning Management System (R-02).

- *Desire to move from a proprietary LMS product to an open source solution.* A major finding which emerged from the interviews was that a particular institution's consideration of whether or not to adopt an open source LMS like Moodle or Sakai, was very much a function of the timeframe over the past 10 years in which the LMS selection decision was being made. For institutions that selected their Learning Management System early (e.g., mid-1990's), respondents explained that either open source LMS products didn't yet exist, they weren't aware of them, or the products were considered too experimental, too much in their infancy to be deployed on an institution-wide basis (R-10). For the early adopters, the final LMS selection decision mostly came down to a choice between two commercial products: Blackboard or WebCT.

Open source LMSs, during the early stage of their development, were considered more viable and manageable at larger research universities where significant programmer, computing capacity, and other IT resources existed (R-05). These institutions were already deploying open source solutions in other parts of their IT enterprise, most notably the LAMP software solution stack (Linux, Apache, MySQL, and PHP). Sakai, one of the major open source LMS solutions, was the product of a programming and investment partnership between four major research universities: Indiana, MIT, Stanford, and the University of Michigan, with initial funding from the Mellon Foundation. Over time, open source LMS products have matured to the point where a number of institutions represented in this study have migrated to those solutions, most notably to Moodle, which has

evolved into the world's largest deployed LMS - open source or commercial. According to the Moodle stats page (<http://moodle.org/stats/>), Moodle currently has a user base of over 55,000 registered and verified sites, serving almost 46 million users in over 4 million courses. Blackboard, by comparison, the largest commercial LMS, has about 12,700 licensed sites.<sup>20</sup> A number of the IT leaders interviewed described conversations that had taken place at their institutions around the topic of what exactly the concept of “open source software” meant. The distinction between “free to use” (i.e., not requiring payment of a license fee), and free as in “at no cost,” was alluded to by almost all of the respondents. The point was that even though an open source LMS may be downloaded and used without paying a vendor fee, there are still considerable costs attached to its installation, management, and support. This concept was memorably summarized by one respondent:

“You know, I’ve heard it a couple of times, but you know it’s said that open source is ‘free’... but that’s free as in ‘free puppy,’ not as in ‘free beer’” (R-09).

Acknowledging that any Learning Management System, commercial or open source, represents a significant and ongoing investment decision, a Learning Technology Director at a private institution described the benefits of open source being enjoyed by a sister school that had recently migrated to Moodle from their commercial LMS product:

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<sup>20</sup> Blackboard Inc. 2010 Annual Report: <http://investor.blackboard.com/phoenix.zhtml?c=177018&p=irol-SECText&TEXT=aHR0cDovL2lyLmludC53ZXN0bGF3YnVzaW5lc3MuY29tL2RvY3VtZW50L3YxLzAwMDA5NTAxMjMtMTEtMDE1Nzc3L3htbA%3d%3d> .

“We are kind of similar in resources and organizational structure to -----, they’re a little different [though], they’re more of a ‘roll your own’ culture. They’ve gone to Moodle from Blackboard Vista, and my peer over there will tell me they’re probably spending more now on Moodle than they had been spending on Vista. On the other hand, they’re getting more of what they want, and less of what they didn’t like. So, it’s a good solution for them... I’m not so sure that we could work that here” (R-06).

From the interviews, what emerged regarding this decision point was a degree of ambivalence on the part of the IT leaders (alluded to in the comment just presented) about the inherent value of open source as a principle, versus the need to help their institutions avoid risk (see Chapter 6) by “going with” a proven, and hopefully trouble free LMS decision (R-11). For institutions interested in considering an open source LMS, but not having the staffing and IT infrastructure to self-host it (see Section 4.2, p. 57), the emergence, in recent years, of third party hosting companies like Moodlerooms, rSmart, and Unicon have made this a more viable decision option for them.

- *Dissatisfaction with the current LMS product or the way it was being hosted/supported by the vendor.* Another key decision point is reached when an institution determines that the quality of their Learning Management System has significantly deteriorated. According to some IT leaders interviewed, the most common manifestation of this is unreliability of the LMS, with periodic outages during which time the system is either unavailable: instruction can’t proceed, quizzes and assignments need to be rescheduled, and fully online courses need to be cancelled; or the system becomes so slow as to be almost unusable. In either case, the result is disruption of the academic program. A related concern, expressed by a number of respondents, pertained to the LMS vendor’s behavior

when performance problems arose: lack of timely response to requests for assistance, a seeming resistance to allow serious issues to escalate to higher levels of management, and an overall sense of indifference to the institution as a valued customer (R-09). If disruptions and poor customer relations continue over a period of time, and especially if large numbers of students and faculty are affected, changing the LMS may become an institutional preference (R-08, others).

- *Dissatisfaction with the LMS Vendor.* Virtually all respondents had a strong and largely negative emotional reaction to the legal action Blackboard Inc. had undertaken in suing one of its major competitors, Desire2Learn, over alleged patent infringement (see Chapter 5, *Blackboard v. Desire2Learn - Context of Patent Infringement Case*). The CIOs and Learning Technology Directors interviewed for this study also had strong beliefs about the corporate culture embodied by Blackboard Inc., and to a somewhat lesser extent, exhibited by other commercial LMS manufacturers, and questioned the appropriateness of its fit with the values and institutional culture of higher education. To the extent that identification with the manufacturer of an LMS influences an IT leader's perception of that product's value and efficacy, "Dissatisfaction with the LMS Vendor" may be, for some, an additional key decision point in the LMS selection process. This topic will be investigated more fully in Chapter 6, *Impact of Legal Enforcement of IPR on IT Leadership's Decision-making When Selecting an Institutional Learning Management System*.

#### 4.2.2 LMS Selection Criteria

According to Rogers (2003), the innovation-decision process is “the process through which an individual (or other decision-making unit) passes from first knowledge of an innovation, to the formation of an attitude toward the innovation, to a decision to adopt or reject, to implementation and use of the new idea, and to confirmation of this decision” (Rogers, 2003, p. 20). Rogers observes that the first step in this process, *knowledge*, occurs when the decision-maker learns of an innovation’s existence, and develops an understanding of how it functions. The knowledge step in the decision-making process associated with selecting an institutional Learning Management System, whether conducted through a formal Request for Proposals (RFP), or a more ad hoc procurement process (see Section 4.2.3 for a discussion of these models), begins with identification of the “product requirements” - key features, functions, and capabilities that the selected LMS will need to provide. Interview respondents were asked to prioritize and discuss the product requirements that their institution’s selection process identified as being pivotal to their LMS purchasing decision. While this is what the respondents were asked, what emerged was an additional finding from the data. The answer to the question, “*When it comes to selecting a Learning Management System for your institution, what do you consider when making your decision?*” depends on *who* is being asked. CIOs, Learning Technology Directors, and faculty – the major players in most institutional LMS selection decision-making (see 4.2.3, *Structure of the LMS Selection Process*) – have different criteria for, and definitions of what constitutes the “best LMS choice.” While this phenomenon may seem obvious, the data generated by this study helps to confirm, at least for the respondents interviewed and their institutions, that this is a significant

dimension of the Learning Management System selection process. Product requirements for the LMS are defined less by what an institution is looking for, and more by what the individual stakeholder representatives charged by the institution to assist in the LMS selection process deem important. This is likely one explanation for why decision-making by a selection committee, as described in the next section, is the process of choice at most higher education institutions and state systems, according to the individuals interviewed for this study. By evaluating LMS products in a committee setting, the likelihood increases that the selected product will better satisfy the various constituencies who are invested in an institutional Learning Management System – those who rely on it for instruction; and those who have responsibility for its installation, integration, and ongoing support.

Product requirements the CIOs in the study described as being important to their selection decision included an LMS's ability to integrate with their institution's or system's enterprise resource planning (ERP) environment (e.g., Datatel, PeopleSoft, SunGard Banner); the purchase cost and total cost of ownership (TCO) to provide the LMS service institution-wide; and the scalability and sustainability of the Learning Management System selected. These last two requirements relate to the LMS's ability to properly function as the number of active users increase (scalability); and the product's ability to run reliably with little or no downtime except for scheduled maintenance (sustainability). Several CIOs expressed concern over LMS capabilities related to IT security: could a particular LMS product under consideration be configured to meet their campus, system, or state IT security policies and requirements, including properly

protecting confidential identity information, and being U.S. Department of Education (e.g., FERPA, Peer-to-Peer File Sharing) and Federal Trade Commission (e.g., GLBA, Red Flags) rules compliant? CIOs from public universities and state education systems emphasized that a selected Learning Management System and its vendor would need to meet their state's contracting and procurement rules and regulations, often an arduous process (R-08, R-09). Consideration of an open source LMS, some CIOs noted, adds additional decision criteria including whether or not an institution has the technical resources and expertise to manage a mostly vendorless service in-house (R-05, others); or in the case of outsourcing the hosting of an open source LMS, concerns about which of several third party vendors can best adapt the selected product to their institution's educational needs and technological infrastructure. As with commercial LMS products, the ongoing cost associated with third party hosting of an open source LMS becomes another decision point for CIOs engaged in the selection process.

Of the Learning Technology Directors interviewed for this study, half have senior administrative oversight responsibilities related to their institution's or state system's LMS, including a major role in procurement and in ongoing LMS operations (R-02, R-06, R-08, R-15). For these individuals, the product requirements described as key were consistent with what the CIOs had identified. The remaining Learning Technology Directors are more involved with the pedagogical aspects of the LMS, leaving its financial and technical management to the campus or system CIO and information technology department. As a stakeholder group, the Learning Technology Directors in this study, both those with LMS administrative duties, and those primarily concerned with teaching and learning support, were largely in agreement on what LMS

product requirements were important from their perspective. A major aspect of the Learning Technology Director's role is helping to make their institution's Learning Management System a user friendly and productive environment for faculty and students. The preferred LMS, according to these IT professionals, is one which offers ease of adoption by teachers and learners and a well-designed and properly functioning set of learning and administrative tools, including discussion boards, communication capabilities like e-mail and instant chat from within the LMS, good quiz design and administration, a reliable gradebook, and effective management of course content and student assignments. Additionally, a good LMS needs to support multi-media content like videos and virtual environments, and it should provide useful Wiki and blogging features. If their institution were considering selection of a *new* LMS, which would likely require a major migration of course content (as opposed to upgrading an existing LMS, where content migration is often unnecessary or less complex), a key decision point for the Learning Technology Directors interviewed was the accuracy and speed with which course content could be moved from the old system to the new one – and survive the move reasonably intact. Regarding this product requirement, the new LMS's course migration capabilities, some Learning Technology Directors described migration experiences where the content had moved to the new system through the vendor-provided automation process, but then required major reformatting to become usable. This problem, where it occurred, required considerable labor hours by faculty and technology staff, and was viewed as a significant product deficit (R-10).

Other product requirements deemed important by the Learning Technology Directors in this study, and therefore, factors that entered into their decision-making process, included

the ease with which their staff could learn to operate and support a selected LMS product, the quality of vendor technical assistance available to the learning technology support staff, the LMS's accessibility features for disabled users, and, as already noted, how well a particular LMS could interface with third party eLearning tools and services. This capacity for interoperability often requires a software interface between the Learning Management System and the other service. In the case of the Blackboard LMS, these interfaces are called "Building Blocks," while in Vista (the successor product to WebCT), they are known as "PowerLinks."

While faculty members were not among those interviewed for this study, several respondents described the role of faculty representatives in the selection process, and discussed the kinds of LMS product requirements the faculty LMS selection committee members identified as being important. This knowledge of faculty preferences goes beyond second-hand information, since many of the CIOs and Learning Technology Directors interviewed either currently teach or have done so in the past. The predominant concern for faculty is the student's learning experience and the selected LMS's ability to enhance teaching and learning (R-06, others). Establishing a single, institution-wide LMS that a student learns once, and then uses throughout his or her academic career, rather than having to master multiple LMSs for different courses, was considered an important improvement which directly benefits students. As one CIO expressed it, faculty at his university see their single, institutional LMS as "a common good," which enhances their students' ability to "go to one place in order to get all of their course information, and scheduling, and that sort of thing..." (R-11). Some respondents observed that certain faculty members on their campuses are *innovators or early*

*adopters*<sup>21</sup> with regard to LMSs and other eLearning technologies (R-07, R-12). Perhaps as a result of their interest in innovative approaches to the facilitation of learning, these professors tend to gravitate toward participation on bodies like a Learning Management System selection committee. Faculty selection committee members were largely characterized as progressive instructors with a campus reputation for being proponents of instructional technology. Product requirements that have begun to factor into these innovators' and early adopters' decision-making process include an LMS's ability to support mobile computing technologies like Smartphones, iPads, and iPods; and an LMS's ability to integrate with electronic textbooks and some of the textbook publishers' Web-based pedagogical tools developed to support a given textbook. Respondents also noted that faculty on LMS selection committees place a high value on how well an LMS product under consideration interfaces with their library's reference and research services.

A recurring finding from the research, applicable to both learning technologists and faculty, was a concern that LMS decision-making be based on how well a Learning Management System supports learning, rather than on how well it fits with an institution's existing technological infrastructure, or the ease with which campus or system IT personnel can manage it. Some respondents expressed this by suggesting that they didn't want to get "swallowed up" by their campus IT department, or have their LMS selection preferences "overruled" by campus IT leaders (R-12, R-13, others). An innovative approach to resolving this tension was identified by one Learning Technology

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<sup>21</sup> Innovativeness, according to Everett Rogers, is "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system." Innovators are the first group in a system to adopt an innovation, followed next by early adopters (Rogers, 2003, p. 280).

Director (R-15) who noted that their CIO decided to make the Learning Management System “a fourth module” of their institutional ERP, thereby giving it equal stature with the other enterprise level IT systems – finance, human resources, and student information management services.

#### 4.2.3 *Structure of the LMS Selection Process*

As a result of one or more of the LMS selection decision points outlined in Section 4.2.1., *Rationale for Selecting a New LMS*, an institution or state system may decide they need to obtain an institutional Learning Management System, upgrade their current LMS, or replace it with a new one. The decision-making process for obtaining, upgrading, or replacing an institutional or state system LMS involves several key dimensions. These dimensions, which were described and discussed by the CIOs and Learning Technology Directors in response to the question, “*Tell me how your institution went about selecting your current Learning Management System?*” include who participates in the decision-making process, how decision-makers evaluate the various LMS products available, the ways in which purchasing rules and guidelines can shape the selection decision-making process, how long the process takes, and who makes the final LMS selection decision. In the sections that follow, each of these dimensions will be considered, informed by the experiences and perspectives of the IT leaders interviewed for this study.

- *Who Participates in the Decision-making Process.* In the early stages of the evolution and adoption of Learning Management Systems in higher education, it was not unusual, according to some respondents, for the LMS to be selected by a single individual, often the CIO; or by a small group of individuals, like the CIO,

Learning Technology Director, Provost, or a Dean (R-01, R-11, R-13). These early implementations tended to be on a relatively small scale, and often did not involve a significant financial or staffing investment. Rather than being “rolled out” as an institution-wide, enterprise level service, these early applications of LMS technology were considered experimental or pilot efforts, often used by a single academic department or college within a university. One CIO described this early implementation on his campus:

“We first selected a learning management system in 2001, and we did not have a learning management system prior to 2001. What was in use at that time was pretty much professors that were using technology were using their own Web pages, and they were putting content on the Web pages, and therefore, there was no consistency across the university in that regard, and then that’s when Learning Management Systems were becoming more popular and more affordable and being marketed more, and I examined at that time two possible solutions - one was WebCT and the other one was Blackboard, and I had used WebCT as an adjunct professor. And so, I was familiar with that, and then on my own educational process, taking a course where I became a certified online instructor, Blackboard was used as the primary medium, and that course got into other types of authoring systems as well. So, I concluded at that time that Blackboard was much easier to learn, it was much more intuitive from a faculty perspective.... Being the CIO, of course, I had significant influence. There was a team that consisted of an assistant provost, a pilot administrator from one of our colleges within the university, and me. And we were the team deciding which direction we should go, and we decided on Blackboard... I agreed to provide the hardware and tech support resources, and the pilot college agreed to fess up I think it was a \$5000 license initially. And they came up with the money... and we went forward with it” (R-11).

Later in this chapter, within the section entitled *Role of Senior IT Leadership in the LMS Selection Process* (Section 4.2.4), a description is provided of Everett Rogers’ typology of innovation decisions. The LMS selection process just described closely fits Rogers’ definition of an *authority innovation-decision*: “choices to adopt or reject an innovation that are made by a relatively few

individuals in a system who possess power, status, or technical expertise” (Rogers, 2003, pp. 28-29). While authority innovation-decisions may be an expedient way to select a Learning Management System, it can meet with resistance or resentment:

“Now, I was not here for that decision, but I can describe *the lack of process*, quite frankly. It was a single individual’s decision. The college had been using a very old, unsupported version of Angel, and it was becoming increasingly fragile, and the individual responsible for academic IT at the time, simply made a decision - really without discussion - that they would adopt Moodle. So there was *no process*” (R-01).

As Learning Management Systems have continued to grow in popularity, complexity, and cost over the past decade or so, fewer selection decisions are made by individuals or small groups of top level administrators. A significant majority of the respondents interviewed for this study described LMS selection committees (known by a variety of institution-specific names like the “Faculty LMS Selection Committee,” the “LMS Vendor Review Team,” etc.) as the prevalent and preferred model for evaluating and selecting an institution’s or state system’s Learning Management System. The extent to which LMS selection decision-making follows a broader and more inclusive model, or is more of a “top down process,” appears to be, at least from the respondents interviewed, a function of an institution’s overall culture of governance. For example, at large research universities, where academic senates and shared governance are the norm, the LMS selection process tends to involve multiple individuals representing a diverse base of stakeholders. Properly investigating the correlation between an institution’s culture of governance and the extent to which the LMS selection decision-making process follows that tradition would require a larger

sample than is represented in this study, but this observation appears valid and would be an appropriate area for follow-on research.

The rationale for most institutions' employment of an LMS selection committee closely follows Rogers' (2003) observation that, at the decision-making stage, an individual or group of individuals look for innovation-evaluation information in order to reduce uncertainty around an innovation's potential. At this stage, decision-makers want to learn about an innovation's advantages and disadvantages. "Interpersonal communication networks with near peers are particularly likely to convey such evaluative information about an innovation" (Rogers, 2003, p. 21). Most respondents expressed the belief that having a representative group of stakeholders involved in the selection process not only improves the likelihood of reaching a more informed and well-considered decision, it also makes the ultimately selected LMS more acceptable to the community being asked to adopt it (R-08, others). This is consistent with Rogers' observation that diffusion of innovations is a social process, as well as a technical matter, and that successful diffusion requires "buy-in"... a more likely outcome if innovation advocates are "insiders" within their respective groups (Rogers, 2003, pp. 4-5).

Campus LMS selection committees, according to the IT leaders interviewed, usually consist of faculty representatives, Learning Technology Directors (and sometimes members of their staff), the campus CIO or a representative of the CIO's office, and at some institutions, a purchasing officer or other business area representative. Some respondents mentioned that, at their institutions, librarians

were also active participants (R-03, others). At institutions where LMSs under consideration might have legal implications (like the future viability of Desire2Learn - see Chapter 5, *Blackboard v. Desire2Learn - Context of Patent Infringement Case*, and Chapter 6, *Impact of Legal Enforcement of IPR on IT Leadership's Decision-making When Selecting an Institutional Learning Management System*), a college, university, or state system legal counsel may participate on, or provide guidance to the LMS selection committee (R-09). State system LMS selection committees are composed similarly to campus selection committees, but more often include a purchasing director or business officer (since procurement rules can be complex and more stringent), and IT leaders and faculty representatives from each of, or most of, the system member institutions (R-08, R-09, R-10, R-15). All respondents with LMS selection committees were asked if student representatives were included. Most said they were not, but acknowledged that participation by students would be a valuable addition to their process. Reasons for not actively engaging students usually centered around the already significant demands on most students' time and the duration of the LMS selection process, which can often take up to a year or more. Some institutions and state systems do make a concerted effort to involve students, if not directly on selection committees:

“We did involve the students. We involved them in the sandbox process. When we got it down to four vendors, they put up sandboxes for us, and we did involve students in that. But we just didn't feel as a community college system, that we could ask a student, you know, to spend close to a year with us [laughs]” (R-09).

Nomination and appointment of individuals to serve on an institutional LMS selection committee are usually made by the Provost or other high level academic officer.

- *How Decision-makers Evaluate LMS Products.* The major focus of a Learning Management System selection committee's work, consistent with others who seek to reach a decision around innovation selection and adoption, is assessing the relative value and efficacy of competing choices. The ways in which institutions manage this process vary across colleges, universities, and state systems, but often follow a fairly well established set of steps and procedures. Participants in this study were asked to describe the strategies they employ to help differentiate among competing products. Virtually all agreed that whether or not their procurement process required a formal Request for Proposals, or followed a less formal approach (see *Purchasing Rules and the LMS Selection Process*, below), a necessary first step is development of an agreed upon list of key product requirements (Section 4.2.2). Once that has been established, information can be gathered to assess how well or poorly an LMS under consideration meets those criteria. Many respondents described employment of a weighted process where spreadsheets were developed and points were awarded based on adherence to the list of product requirements. At most institutions represented by study participants, this scoring of products resulted in three or four finalist vendors who were invited to campus to provide demonstrations of their products. These demonstrations were usually half or full day public events (though one respondent reported vendor demonstrations lasting two days each - R-05), where any

interested campus or system stakeholder could attend and observe. Direct participation (i.e., interaction with the vendors) was sometimes limited to members of the LMS selection committee, depending on procurement rules. Non-committee attendees were encouraged to provide feedback to the LMS selection committee afterward. A variation on this process was reported by two respondents where the campus learning technology department, rather than the product vendor, presented demonstrations to the campus community of LMS products under consideration (R-06, R-12). Some IT leaders described the use of faculty focus groups as another method for obtaining LMS selection decision data. Other institutions, as already noted, established LMS product “sandboxes,” where faculty, students, and interested administrators could experiment with LMS products and share their impressions with the selection committee. The use of demonstrations, “sandboxes,” pilot projects and site visits (see below) as important contributors to the innovation evaluation process is consistent with Rogers’ discussion of the role of *change agents*.<sup>22</sup>

“Potential adopters of a new idea are aided in evaluating an innovation if they are able to observe it in use under conditions similar to their own. Such observation often occurs naturally, when one individual views another’s experience in using the innovation. Change agents may try to increase the observability of an innovation, and thus speed its rate of adoption, by organizing a demonstration of the innovation” (Rogers, 2003, p. 389).

Two Learning Technology Directors described evaluation processes at their institutions where faculty were paid stipends to teach courses with LMS products

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<sup>22</sup> “A change agent is an individual who influences clients’ innovation-decisions in a direction deemed desirable by a change agency [or organization]. The change agent usually seeks to obtain the adoption of new ideas but may also attempt to slow down diffusion and prevent the adoption of undesirable innovations” (Rogers, 2003, p. 27).

under consideration for institution-wide use (R-02, R-08). One of these pilot projects involved five faculty volunteers who were paid stipends of \$1500 each and were required to provide detailed feedback to the LMS selection committee about their and their students' experiences:

“As Learning Technology Director, I coordinated the LMS pilot project... it wasn't like the faculty were going to initiate this themselves. It's incredibly difficult to engage the faculty on this, at least on our campus” (R-02).

Although only two respondents reported paying stipends as an incentive for faculty involvement and experimentation, several of the other CIOs and Learning Technology Directors expressed concerns similar to the one just cited about what they perceived to be general faculty apathy toward instructional technology issues and campus decision-making relative to future technology planning and investment:

“We did focus groups of faculty, and I can't remember if students... I think we did some town hall meetings for students, too. We did lots of town hall meetings for faculty, for the whole campus, and we had questionnaires that people did... people weren't that active... in fact, it was very very difficult to get people engaged in the process” (R-12).

“At our university, we had a group vetting the whole LMS selection process... at that time there was no student representation because, quite frankly, all this stuff was so new. And we had enough trouble getting faculty to participate in this, let alone students” (R-13).

About a third of the IT leaders interviewed reported that part of their LMS evaluation process included contacting colleagues they knew, didn't know very well, or didn't know at all at other institutions to learn about experiences they had had with migration to and deployment of a particular Learning Management System under consideration (R-02, R-04, R-06, R-08, R-09, R-11). This

innovation information seeking behavior is consistent with the theory of the strength of weak ties developed by Granovetter (1973), and suggests that IT leaders and LMS selection committees improve the quality of information about competing products they are considering by venturing outside their normal circle of colleagues and contacts. Rogers refers to this as “heterophilous communication,” and he observes that heterophilous interpersonal links (called “bridges”) are especially important in conveying information about innovations (Rogers, 2003, p. 306). Wejnert expands on this point, noting that “familiarity with the outcome of an innovation can also be acquired by observing the outcomes of other actors, depending on the connectedness of actors in a network. Learning through such observation lowers the risk of adoption by eliminating novelty or uncertainty of outcome” (Wejnert, 2002, p. 304). For the IT leaders interviewed, this information seeking process took multiple forms including site visits by selection committee members to other institutions where they observed the LMS under consideration in situ and met with learning technology staff and faculty; e-mail-based inquiries; and telephone or Web conference-based conversations with appropriate individuals at the other institutions. Some respondents described employing a similar investigative process where other institutions were contacted or visited so IT leaders and selection committee members could learn how those institutions had structured *their LMS selection decision-making*, thereby developing a set of “LMS selection process best practices” (R-11, others).

At some institutions represented by study participants, selection committee

members visited the headquarters of LMS vendors to meet with management, system designers, and support technicians. This model was more prevalent when an institution was considering not only an LMS product license, but also LMS vendor-provided hosting services. In those cases, the “vendor tour” usually included a visit to the LMS Hosting Operations Center to see the kinds of equipment, back-up power, and data back-up systems the company employed on behalf of its hosted clients:

“Yeah, we actually sent our technical team off to do site visits because it was a hosted solution. And we wanted to see, you know, that there weren’t extension cords running down the halls, and things like that” (R-09).

The quality of a hosted solution’s operations center, whether vendor-owned, or third party hosting company-managed, is a key factor for ensuring scalability, sustainability, and overall customer satisfaction.

A few of the IT leaders interviewed explained that their institutions had employed an outside LMS selection consultant who guided and assisted the LMS selection committee in their work, and helped facilitate the final decision-making or recommendation process. This model is analogous to the relationship some higher education institutions establish with executive recruiting firms to work with their search committees when filling high level management positions. Notably, although the respondents in this study were widely dispersed geographically, of those who employed outside LMS selection consultants, several mentioned having used the same individual. These findings about the use of external LMS selection consultants suggest two areas for possible follow-on

research: (1) exploring the question of whether institutions that employ executive recruiting firms to fill managerial positions also tend to hire consultants to assist with their institutional LMS selection process, and what are the results from that “pro-outside consultant” strategy; and (2) do different institutions that hire the same LMS selection consultant tend to implement the same Learning Management System solution, or do the LMS consultants custom tailor their analysis and guidance to the unique needs of each individual client?

The last step in the LMS selection committee’s product evaluation process, after all input has been gathered and assimilated, is to make a recommendation as to which of the Learning Management Systems under consideration should be adopted as their institution’s LMS. The IT leaders interviewed were asked to describe how their selection committee reached their final product recommendation. As noted in Section 4.2.2, *LMS Selection Criteria*, representative stakeholders on an LMS selection committee often have differing perspectives and criteria as to what constitutes a “best choice.” The decision-making process around a final recommendation, therefore, involves considerable negotiation, and what several respondents described as “consensus building” around which product can best fulfill the different, though usually not mutually exclusive, needs and goals articulated by selection committee members. As one respondent, a Learning Technology Director from a private, Masters Degree granting institution expressed it:

“This is actually consensus based. There’s no ‘Electoral College.’ Basically, it’s ‘This is the direction we’re going; these are the reasons why.’ We have discussion about it. Then, ‘Is everybody okay?’ ‘Okay, this is what we’re doing’” (R-06).

In contrast, other respondents explained that at their institutions, voting by selection committee members was a key component of the final LMS recommendation process (R-12, others). A few of the IT leaders described a hybrid model which included both consensus building *and* voting (R-05, others). An advantage of the hybrid approach, one CIO explained, was that, by the end of the process, even committee participants whose preferred product lost out in the voting, still felt they had had an opportunity to be heard, and that the process had been a fair and open one. As a result, these “minority members” were more inclined to actively endorse and support the LMS product being recommended, even though they, themselves, had voted for a different one (R-09).

- *Purchasing Rules and the LMS Selection Process.* Findings from this research reinforce the distinction that exists between procurement policies and processes at private versus public institutions and the corresponding effect that can have when selecting an institutional Learning Management System. Summarized briefly, private institutions, at least those represented by respondents in this study, have considerable flexibility and freedom in how they identify LMS products for consideration, the kinds of interactions they’re permitted to engage in with vendors, and the ways in which they decide on, and act on purchasing or obtaining their preferred product. LMS selection committees at private institutions are required to follow their institution’s purchasing guidelines and to comply with contracting policies established by their institution’s Board of Trustees (R-07). Publicly funded institutions of higher learning, including state education systems, function more like other government agencies in their

procurement policies and practices. These institutions are required to conform with established, quite rigorous purchasing rules specified by state law<sup>23</sup>, and enforced by the state Attorney General (R-08, R-10, others). Some examples of government mandated purchasing policies, described by the IT leaders from public institutions, include:

- Development and public advertising of detailed RFPs (Requests for Proposals) which specify the features of the LMS product and services being sought. A reasonable timeframe is required so that vendors have ample opportunity to develop and submit their proposals. This can add several weeks to several months to the selection process.
- Any questions from vendors must be submitted in writing, and the selection committee's answers must be provided in writing, and made available to all of the vendors who have submitted proposals. Informal conversations with vendors are not permitted while the RFP review process is underway.
- All selection committee members must be present for all vendor demonstrations, ensuring that the decision they reach has been equally informed by having seen and interacted with all prospective vendors.
- To be fully considered, vendors must agree to comply with all state and/or local government purchasing and contracting requirements. In some states, this may include the signing of affidavits attesting to the company's non-discrimination in employment policies, their policies about purchasing products and subcontracting services from minority vendors, etc.
- Selection committee members with a relationship or immediate familial relationship with any of the vendors, regarding either employment or investment, may not participate in the LMS selection decision-making process.
- The RFP review and LMS selection process must be documented in writing so that the final selection decision can be reviewed, and if necessary, defended, should one of the unsuccessful bidders launch a legal challenge to the institution's selection decision.

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<sup>23</sup> In the case of city or other municipally managed public higher education institutions, compliance with local government purchasing rules may apply as well.

For both private and public institutions engaged in the purchase of a Learning Management System, the financial cost of this investment, depending on the product selected and institution's size<sup>24</sup>, can be substantial, and therefore, transparency and accountability must be maintained throughout the selection and purchasing process, according to most of the IT leaders interviewed. One CIO from a state system of community colleges said the contract for their LMS, which includes vendor-provided hosting and third party end user support, is valued at \$6 million for a nine year term (R-10). As a result of the potential costs associated with this innovation, both financial, as just noted, as well as the costs associated with adoption, most LMS selection committees follow a fairly similar and strenuous procurement process, even though selection committees from private institutions are less required to do so. A number of respondents pointed to a stringent procurement policy as having actually enhanced and improved their LMS decision-making process by requiring committee members to establish carefully written and well considered criteria, investigate how well proposed solutions address them, and deliberate on a final recommendation that can demonstrate due diligence and be defensible if challenged – either legally by a vendor, or pedagogically by a peer (R-08).

- *How Long the LMS Decision-making Process Takes.* A key element in any innovation diffusion process is *time*. According to Rogers (2003), the time

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<sup>24</sup> Most commercial LMS licenses are priced according to the number of active student and faculty users. Third party hosting for commercial and open source products follow a similar formula.

dimension plays out in three important ways: in the innovation decision-making process; in the timeframe for innovativeness of potential adopters (i.e., innovators, early adopters, early majority, late majority, and laggards); and in the time it takes for an innovation to be adopted into a system (Rogers, 2003, pp. 20-23). The first of these dimensions, the time it took to complete the LMS selection decision-making process, was an area of inquiry in this study. The Chief Information Officers and Learning Technology Directors were asked, “*How long did the selection process take?*” The “time it took” was defined to include the period from when an institution first determined that a new LMS was needed or the current LMS needed to be replaced, through establishment of a selection committee (or a charge to the individuals who would lead the process), the identification of product requirements, writing the RFP (if required), reviewing proposals and demonstrations, receiving stakeholder feedback, deliberating on finalist products and vendors, and making a procurement recommendation to the institution’s administration. For the institutions represented by respondents in this study, the LMS selection decision-making process ranged from two months to three years, with the average time being about one year. The time the process took did not appear to be affected by whether or not an institution was private or public, nor whether or not a formal RFP process was employed, except in the case of the two fastest LMS selection processes - two months (R-11), and four months (R-13). In both of those cases, no RFP process was used. One respondent, a Learning Technology Director for a large state system of community colleges, summarized the experience and intensity of their 16-month long engagement:

“Yeah, it was a big process. Lots of time building the RFP, the functional specs, lots and lots of time testing multiple systems with faculty – paying stipends for them to do that. Lots of great data, very solid process. The RFP vetted by the Attorney General’s office. It was rock solid, nobody could complain about it. And that has actually served us well, because the outcome of that RFP is not only that people like the LMS selected, but it is viewed as having been a legitimate process. And committee members said, “Gee, we would never run a process like that just for our own college.” (R-08).

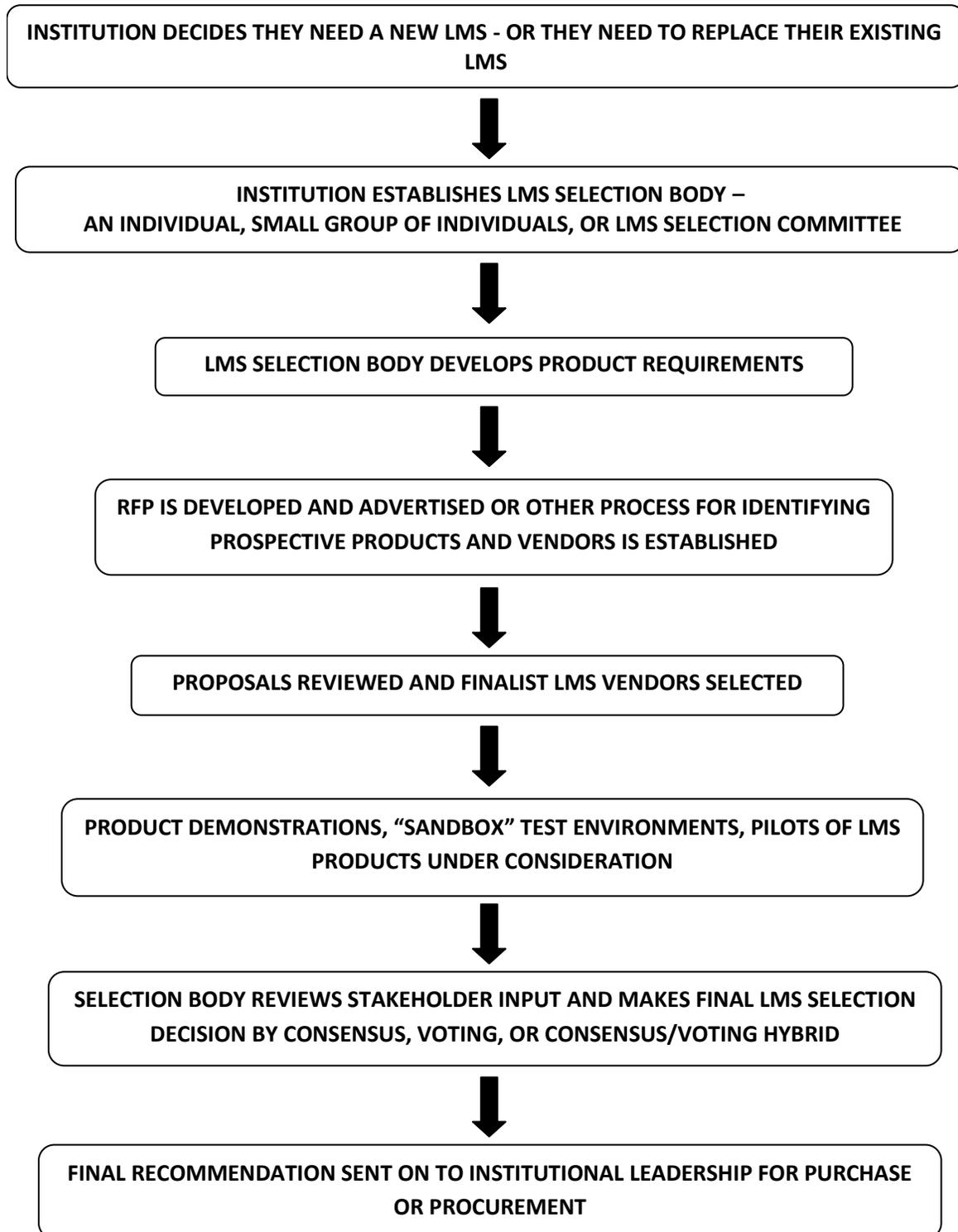
These comments suggest a promising area for future research around this topic of the time dimension in the innovation decision-making process: for institutions that make an LMS selection decision relatively quickly, how satisfied are the end users and other stakeholders with their institution’s Learning Management System say, three to five years after selection; and how does that level of satisfaction compare with institutions who took a year or more to select their LMS?

- *Who Makes The Final Decision?* The last step in the LMS selection process is reaching a final decision on which of the Learning Management System products under consideration will be recommended for purchase, or in the case of open source, recommended for procurement. At all institutions represented by respondents where an LMS selection committee managed the process, a final decision was reached by consensus of the committee. That recommendation was then forwarded to the person with institutional purchasing authority - usually the Provost and Chief Academic Officer, Chief Financial Officer, or other senior level administrator - along with a request to purchase or procure the LMS product and related services the committee had determined to be the best choice. In the few institutions where individuals, rather than a committee, had conducted the LMS product evaluation, the final path was the same as just described. For

institutions where the CIO has authority over the enterprise level information technology budget, and where the LMS is managed as a service under the Office of the CIO, the final recommendation was forwarded to him or her for appropriate action. At all institutions represented by respondents in this study, the final LMS recommendation from the selection committee or LMS evaluating individual was accepted, and their recommended Learning Management System was obtained and implemented.

Figure 4.1, on the following page, provides a diagram summarizing the process the higher education institutions and state college systems represented by respondents in this study followed in selecting an institutional Learning Management System. The process followed for selecting an institutional LMS appears to be consistent with the process most colleges, universities, and state education systems employ for selecting their other enterprise level services and systems like an ERP (e.g., PeopleSoft, SunGard Banner), or an Emergency Notification System (e.g., FirstCall, Siemens Alert System). The selection committees for these other products and services presumably include individuals with a direct stakeholder interest in those procurements: financial officers and registrars in the case of an ERP; and campus public safety officials, deans of students, and residence hall directors in the case of an Emergency Notification System. This observation is anecdotal, and further research would be required to validate the accuracy of this perception.

Figure 4.1 The Learning Management System Selection Process for Higher Education Institutions and State College Systems Represented by Respondents in this Study



#### *4.2.4 Role of Senior IT Leadership in the LMS Selection Process*

IT leaders engage in the Learning Management System selection process in a number of important and different ways. As already noted, CIOs and Learning Technology Directors are often direct participants in the LMS selection process itself, working individually, as members of a small group of product evaluators, or as members of an LMS selection committee, to help reach a final decision on an institutional Learning Management System. In this section, based on data from the interviews, consideration is given to the other ways in which IT leadership contributes to and affects the LMS selection process.

As a professional group, Learning Technology Directors in colleges, universities, and state education systems tend to have had the majority of their work experience in an academic setting. They work closely with faculty, and often share their values and interests in pedagogy and its advancement (R-02, R-07, R-12). Higher Education Chief Information Officers, on the other hand, are a more diverse group, and while many have spent their entire careers in academia, others come to the role of academic CIO after having served in information technology leadership capacities in private industry, the not-for-profit sector, government agencies, and the military<sup>25</sup> (R-10, R-11, others). The ways in which these senior IT leaders participate in, manage, and help direct the Learning Management System selection process, therefore, is influenced by a combination of their professional experience and leadership style, coupled with the way IT management is

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<sup>25</sup> While beyond the scope of this study, a promising area for follow-on research would be to examine the range of professional experience of higher education CIOs in order to learn how their varied backgrounds and training contribute to their leadership characteristics and institutional effectiveness.

structured at the institutions where they work. The fifteen individuals who participated in this study were a good reflection of this mix of work experiences and leadership styles, and their employment spans a number of different types of higher education institutions and state systems. While the Learning Technology Directors interviewed here tend to focus virtually all of their attention and efforts on matters of instructional technology, the CIOs have a broader portfolio, with instructional technology being but one of several areas for which they have managerial and leadership responsibility. The Chief Information Officers who participated in this study were largely a pragmatic group. Their approach to technological change is quite conservative. If an LMS is working well, they're inclined to say, "don't change it." From their perspective, change can be *expensive* (integrating a new LMS with other existing institution-level IT systems; staff training; need to purchase new equipment or increase service capacity) and *disruptive* (migrating course content; transitioning students, faculty, and technical staff to the new Learning Management System):

“Essentially, what you're looking at – and this is true with the enterprise business systems as well – these are not systems you change in a year. We went through the thought process before we engaged SunGard for a long-term support contract, and we were negotiating with them about when we could have some opt out alternatives, with prices attached to them... we basically said, you know, if we were to decide to change our Finance and HR and Student Systems, we would have to make that decision a minimum of three years prior to implementing it. Yes, it's a risky proposition, and you develop a huge investment in these things with all the kinds of tweaking you do, and the staff training. So it's not just like buying a new PC or something” (R-14).

As noted earlier, this dimension of “avoiding risk,” was a phenomenon articulated by several of the IT leaders interviewed, and will be examined in Chapter 6.

In higher education institutions, as in other organizations, the leadership style of senior management influences how innovation is approached and decided. This was reflected in the comments, perspectives, and attitudes of the IT leaders interviewed when they discussed their role in the decision-making process around selection of an institutional Learning Management System. The Chief Information Officers and Learning Technology Directors who participated in this study represent both the extremes and the mean of leadership styles. Everett Rogers (2003) identifies three types of innovation-decision making. He observes that two criteria determine what type a particular decision is: (1) whether the decision is made freely and implemented voluntarily; and (2) who makes the decision. The three decision-making types are optional innovation-decisions, collective innovation-decisions, and authority innovation-decisions:

*Optional Innovation-Decision.* The decision to adopt or reject an innovation is made by an individual, independent of the decision of others in an organization or system. The individual is the unit of decision-making, rather than the social system in which he or she is situated.

*Collective Innovation-Decision.* The decision to adopt or reject is made by consensus among the members of an organization or system.

*Authority Innovation-Decision.* The decision is made by relatively few individuals in an organization or system who possess power, status, or technical expertise (Rogers, 2003, pp. 28-29).

The comment by the CIO at the beginning of the subsection in this chapter on *Who Participates in the Decision-making Process* (see p. 75), indicates an authority innovation-decision type of management style. This individual, who leads IT for a private research university, spoke about making major IT decisions on behalf of his institution based on his position, years of experience in information technology, and background as a college instructor. At the institution where he works, he exercises

significant budgetary control, and has considerable discretion over how IT investments are made. At another point in the interview, he was asked whether other LMSs were used on his campus, in addition to the “official” institutionally adopted one:

“I would not allow other products to be used, from a standard point of view and primarily it was for the benefit of students. We did not want a student to go to one class and learn one system, and then go to another class and have to learn a different one. So we would not, therefore, support any resource allocation into technology, and fortunately, before there would be any academic type of technology adopted, it would come through my area, and we meet frequently with the different areas, so we would know if something was being considered” (R-11).

Later in the interview, this IT leader somewhat softened his position, describing an example where he had supported an exception to this policy for one specialized science program that required services and capabilities not available through the institutionally adopted LMS. Also noteworthy is that even though this individual initially set the direction and made the final decisions for his institution’s early involvement with Learning Management Systems, as the initial pilot (originally a single college) grew to become a widely adopted, enterprise level campus service, he helped transition future decision-making about the LMS into a more collegial and collaborative model, involving stakeholder representatives from across the university community (R-11). Another respondent, a CIO from a large public research university, described a leadership style toward the opposite end of the innovation-decision spectrum:

“So the LMS selection decision was an integrated decision at the time [between learning technology interests and institutional IT interests], but, you know, surprisingly, the faculty development group wanted to keep themselves separated from the technology side, because they didn’t want to have technology overtake them. They were worried. The guy who was in charge at the time... we had a very, very nice arrangement where he did the pedagogy stuff, and then we did the technology stuff, and that was that. So the rule we had was ‘pedagogy first, and then we’ll worry about the technology’” (R-13).

Overall, the majority of respondents in this study favor a leadership style and approach to decision-making that is inclusive, transparent, and collegial. Several remarked that they seek to build coalitions of interest across their institution, with decisions arrived at through consensus. For these IT leaders, collective innovation-decision is their predominant and preferred innovation decision model.<sup>26</sup>

Innovation-decision types also pertain to how decision-making is institutionalized for a specific college, university, or state education system. One Learning Technology Director, responsible for a state system of community colleges, characterized differences in LMS selection decision-making based on institution type, noting that four-year colleges and universities tend to follow a collective innovation-decision process, while community colleges and state community college systems are more likely to employ authority innovation-decision making:

Interviewer: “So, now that you’ve selected a statewide Learning Management System, do you anticipate departments using other solutions as well? Are there some that are going to be ‘hold-outs,’ or is everybody pretty much going to come on board, do you think?”

Respondent: “You know, in universities, that’s more common. I was at ----- [a large land grant university] for about 10 years, and you saw a lot of that there. At community-technical colleges, not so much. There is no real decentralized IT in the community-technical colleges mainly because the expertise isn’t there and the money’s not there. And there’s much stronger command and control structure in community-technical colleges than there tends to be in larger R1 universities. And so, when a decision is made to use a particular application, it’s pretty widely accepted that that’s the one they’re going to use. Does that mean that there’s not

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<sup>26</sup> Rogers’ first innovation-decision type, *Optional Innovation-Decision*, did not apply to the innovation diffusion of LMSs described by respondents in this study, with one notable exception. The RFP process at one large state university system resulted in approval of three proprietary and two open source LMS solutions. Individual universities within that state system are free to choose the Learning Management System they feel is most appropriate for adoption on their campus.

the odd Moodle server out there? No, sure there will be. But not to the extent that you're going to see at, say, the University of -----" (R-08).

Other respondents in this study, relative to this area of inquiry, described how their specific role in the LMS selection decision-making process was affected by prevailing institutional culture and expectations. At one state system, for example, the IT leadership was proscribed from visibly or strongly leading system initiatives where information technology has a major role. Rather, they are expected to participate as members of a cross-functional decision-making team, add their technical expertise as appropriate, but always "drive from the back of the bus" (R-10). In contrast, another IT leader said that at her institution, senior IT management are expected to be proactive and assertive on all matters pertaining to IT projects and policy, and their system level CIO led the LMS selection committee and process for their state (R-05).

At the institutions and systems where they work, many of the IT leaders who participated in this study described themselves as having served as *change agents* for information and instructional technology innovation. In this respect, they influence the LMS selection process by their engagement in IT strategic planning, their in-depth knowledge of emerging technological developments, and their advocacy for the use of information technology in support of learning. The importance of this "expert-advocate" role and the influence it can have on the innovation selection process is emphasized by Wejnert (2002), who, citing the research of Dennis Normile (2000), notes that the personal characteristics of an actor in the innovation diffusion process "...will modulate both the process of information intake and the process of decision making about whether to adopt

an innovation” (Wejnert, 2002, p. 320). Higher education Chief Information Officers and Learning Technology Directors, as a professional group, are well-networked with peers nationally and internationally, and all fifteen respondents in this study reported being active members of EDUCAUSE, a 16,500 member association of more than 2,000 higher education institutions, whose mission is "to advance higher education by promoting the intelligent use of information technology." These IT leaders regularly attend EDUCAUSE annual and regional meetings, participate in interest groups and working committees, are active in other information technology associations and consortia, and regularly read and occasionally contribute to the leading journals which report on developments in information technology and eLearning.

A role related to change agent, which many of the CIOs and Learning Technology Directors reported playing at their institutions, and which contributes to the innovation diffusion process, is that of *information technology champion*.

“The literature on strategic uses of information technology suggests that a very important, and sometimes the *most* important, antecedent to a successful implementation of a mission-critical information system is a “champion” for the new system (Lockett, 1987; Reich and Benbasat, 1990; Runge, 1988; Vitale and Ives, 1988). According to these researchers, information technology champions are managers who actively and vigorously promote their personal vision for information technology, pushing the project over or around approval and implementation hurdles. They often risk their reputations in order to ensure the innovation’s success” (Cynthia Mathis Beath, 1991, *Supporting the Information Technology Champion*, p. 355).

Even when an active decision-making process around selection of a Learning Management System is not underway, as change agents and information technology champions, the CIOs and Learning Technology Directors play a pivotal role by

continuing to build the IT infrastructure and the online learning environment, respectively, thereby positioning their institutions to effectively adopt future learning technology innovation. Prior to beginning the process of selecting a new institutional Learning Management System, or replacing an existing one, these IT leaders are often consulted by presidents, provosts, deans, and others for their advice about where they think eLearning technologies are headed, what makes good investment sense, and how proposed changes may affect other mission-critical campus services and systems. One of the study respondents spoke about his role as a change agent and information technology champion:

“Yeah I guess to oversimplify it, I would offer the following. For people like me whose job it is at a policy level to try to find technologies that everybody can use and we all hold hands and save some money and share content on a common platform, my broad perspective is that, ‘Hey these things are probably good decisions for two or three years, and then who the hell knows what’s going to be out there, so let’s stay flexible and then write another RFP, and we’ll move forward, and we won’t migrate anymore than we absolutely have to, because that’s a real pain.’ And generally speaking, that’s my framework. And my job is to keep reading all those EDUCAUSE bulletins and read the new books as they come out, and all the EDUCAUSE Reviews and the New Media Consortium stuff - pay attention, so that I’m six months, 18 months, 24 months ahead of the rest of the system in my thinking so that I can translate the good ideas of the craziness that is happening out in the blogosphere and in the literature. And then to help us, help our system stay ahead so that we can stay competitive. That’s my job, but generally speaking, who knows what’s going to happen with technology?” (R-08).

Another IT leader described the visioning process she was currently heading at her large public university:

“Well there’s actually a question [on campus right now] about what model should we be providing the campus in terms of supporting? And getting us closer to supporting innovation on the campus... faculty innovation, basically. And the question of whether a large enterprise system like Blackboard is fostering innovation, or diminishing innovation... not allowing it to happen. And so there’s that. So, we’re trying to figure out what our belief as a campus is – and what works best for the campus. And if the belief is that the large Blackboard systems actually do nothing for innovation, and are actually keeping people from

being innovative, and moving into the 21<sup>st</sup> century, then time for something new... and what will that new model be?" (R-12).

The role of Chief Information Officers and Learning Technology Directors in an institution's Learning Management System selection process is a multi-faceted one where these IT leaders influence the process in direct and indirect ways. They participate in decision-making around selection of a specific Learning Management System product, and they serve as change agents and information technology champions for the applied use of information and instructional technologies in support of their institutions' educational mission.

#### *4.3 Concluding Thoughts from this Chapter and What the Research Shows*

The decision-making process involved in selecting an institutional Learning Management System consists of several dimensions. At the beginning, a determination is made about the value of obtaining and installing an institutional Learning Management System, or if one already exists, the rationale for considering an update to a later version, or replacement of the current LMS with an entirely new product. As with any innovation, potential adopters consider the benefits and costs associated with these technology-based products, and a knowledge-seeking effort is undertaken to identify product requirements and to then determine which of several competing LMS solutions can most closely satisfy them. An institutional selection process is initiated, usually consisting of the establishment of an LMS selection committee, review of product proposals from vendors, and on-site demonstrations and sometimes pilot projects where "finalist products" under consideration are tested and evaluated. The institutional Chief Information Officer and/or

Learning Technology Director plays both a direct and indirect role in the LMS selection process, with the specific nature of that role varying based on the leadership style of the incumbent IT leader, and an institution's or state system's established IT management structure, procurement rules, and institutional culture. The data generated from interviews with Chief Information Officers and Learning Technology Directors in this study shows that, at least for these individuals and the present and past institutions they represent, the decision-making process around selection of an institutional Learning Management System closely follows the *Diffusion of Innovations* schema conceptualized by Everett Rogers in his work (2003), and Barbara Wejnert's framework (2002) based on Rogers' principles.

## CHAPTER 5

### **BLACKBOARD v. DESIRE2LEARN - CONTEXT OF PATENT INFRINGEMENT CASE**

#### *5.1 Introduction*

Blackboard Inc.'s lawsuit against Desire2Learn, alleging patent infringement, served as a topic of focused questioning with the IT leaders in this study regarding their views on IPR-related issues and the LMS selection process. *Blackboard v. Desire2Learn* represents several distinct aspects of the legal enforcement of intellectual property rights, each providing a useful lens through which to view, examine, and analyze the research questions being investigated in this study. At its basic level, *Blackboard v. Desire2Learn* is a legal case, with the plaintiff, Blackboard Inc., seeking relief against one of their principal competitors, Desire2Learn, for alleged infringement of several of their patent claims. At a macro level, it is a case that tests the appropriateness of patent as an IPR protection for computer software-based technology developed cumulatively and collaboratively. It can also be viewed as an instance of conflicting institutional cultures, between the higher education community and the way that community functions and the values it deems important, and the business community of commercial Learning Management System manufacturers and the practices they engage in and decisions they make in order to remain viable and profitable. Finally, and important for purposes of this dissertation study, it presents an opportunity to investigate how an LMS manufacturer's IPR-related behavior and actions can affect the decision-making and thinking process of higher education IT leaders when considering the purchase of an institutional Learning Management System.

During the early planning for this research, some colleagues expressed concern about selecting an as yet undecided legal case as part of the framework for this study. “What if it is ultimately settled in a way that contradicts points you have raised, hypotheses you have developed, or conclusions you have reached?” they asked. The response to this question is that the final outcome of this particular legal case is not as important for purposes of this research as is the development of an understanding of the impact that *bringing such litigation* has on decision-making by IT leaders, and on innovation and the marketplace viability of Learning Management Systems and similar eLearning technologies. There will likely be other similar and dissimilar software patent infringement suits in the future, so what is important here is to learn how, in generic terms, those who are considering the purchase of these products and those who are involved in their future development react to such attempts at IPR legal enforcement. The Blackboard lawsuit and similar ones seek to define exactly how much IP protection a computer software producer can claim, and over what.

Use of the Blackboard infringement suit and ensuing reaction to it as an area of investigation with the IT leaders in this study proved to be an effective device and common point of reference for examining the impact of IPR enforcement on their LMS selection decision-making, and on their thinking about these kinds of issues. One area of exploration facilitated by the use of the Blackboard lawsuit during the interviews pertained to concerns these IT leaders had about the future viability of certain open source and proprietary LMS products due to uncertainty about the possible outcome of *Blackboard v. Desire2Learn*. If an IT leader thinks that a particular product under

consideration may be discontinued as a result of IPR enforcement, or that royalties or some other remedies may be imposed, he or she may be less inclined to invest (or reinvest) in that product. This, in turn, can negatively affect that product's future development and viability in the marketplace.

The *Blackboard v. Desire2Learn* lawsuit helped to focus and stimulate discussion on issues like the one just presented. It also helped facilitate an exploration of the respondents' views on alternative IPR protection mechanisms for software-based technologies like Learning Management Systems.

### *5.2 Context of Blackboard v. Desire2Learn*

The timeline for modern systems and tools developed to help facilitate remote learning extends back at least 50 years to the development of PLATO (Programmed Logic for Automated Teaching Operations) at the University of Illinois at Urbana-Champaign. The use of television as a means for taking college credit courses at a distance goes back even further to the 1950s, and examples include instructional television programming at the University of Houston, and the University of Chicago's Sunrise Semester. This perspective is important when considering claims relative to prior art in the context of the applied use of technology and technological methods for the support of learning.

At certain times, commercial interests, along with a proprietary definition of what constitutes intellectual property, operate in conflict with the marketplace of ideas and invention, and this, according to Weber (2004), can have a serious and negative impact on innovation and productivity. In the early 1990s, for example, Unix System

Laboratories (AT&T) sued Berkeley Software Design Inc. (BSD) and the University of California over alleged improper use of AT&T owned code. As the case progressed through the courts, the threat of a court finding of patent or trademark infringement seriously disrupted innovation in the community of open source and commercial software developers. Weber observes: “BSD was mired in a legal quagmire that made its future uncertain for several critical years.”<sup>27</sup>

Blackboard’s claim of invention of “Internet-based education support system and methods,” (see Section 5.4, *Blackboard’s Patent, and Infringement Case Against Desire2Learn*) shares a number of interesting historical and patent-based similarities with the Unix case, and may be producing a similar effect in the marketplace and on innovation. In order to assess this effect, in-depth interviews were conducted with CIOs and Learning Technology Directors. Specific information about the methods employed to gather and analyze this empirical data is provided in Chapter 3, and the findings from this research are reported in Chapters 4 and 6.

### 5.3 Blackboard Inc.

Blackboard was founded by Robert Alcorn, Mike Petit, and Udo Schuermann in 1997<sup>28</sup> with “a vision to transform the Internet into a powerful environment for the education experience.”<sup>29</sup> The three founders had each served as consultants to the IMS

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<sup>27</sup> Weber, p. 53. Weber suggests that this unsettled climate created the opportunity for Linux to evolve and to ultimately surpass Unix to become the preeminent enterprise level operating system.

<sup>28</sup> There is some dispute about this date, important to prior art contentions, since Blackboard began as an LLC, but didn’t become Blackboard Inc. until 1998 when it merged with CourseInfo LLC, a small LMS company which had originated at Cornell University.

<sup>29</sup> Blackboard Web site, *Where We Have Been*, <http://www.blackboard.com/company/history.aspx> .

(Instructional Management Systems) Global Learning Consortium - a group of universities seeking to develop standards for online learning applications. IMS/GLC operated under the auspices of Educom, forerunner to the present day EDUCAUSE. Matthew Serbin Pittinsky and Michael L. Chasen, Blackboard's Board Chairman and President/CEO, respectively, were also involved in the IMS Project. In 1998, Blackboard released its first eLearning product, Blackboard CourseInfo, an online application originally developed at Cornell University.<sup>30</sup> The company went public in 2004 (their LMS was renamed Blackboard in 2000), and trades on NASDAQ under the stock symbol BBBB.<sup>31</sup> In October, 2005, Blackboard purchased its largest competitor, WebCT, a Canadian company, for \$180M. While both Blackboard and WebCT (now called Blackboard Vista) Learning Management Systems continue to be supported, the company has announced plans to merge the two LMSs into one product called Blackboard Learn, Release 9, and this initiative, entitled "Project NG" (Next Generation), is already underway. Blackboard's total sales revenue for 2010 was \$447.3M, a one year growth of 18.7% over 2009.<sup>32</sup> The company has over 5,700 higher education, K-12, corporate, and government customers with 12,700+ LMS licenses currently registered. The Blackboard Learning System (including WebCT and Angel Learning<sup>33</sup> products and customers) is the

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<sup>30</sup> Ibid.

<sup>31</sup> On July 1, 2011, Blackboard announced that it had been acquired by Providence Equity Partners, a privately owned investor group, for \$1.64B plus the assumption of approximately \$130 million in net debt. This all cash transaction paid Blackboard Inc. shareholders \$45.00 per share, a 21% premium over the stock's April 18, 2011 closing price of \$37.16 (the day before Blackboard publicly announced they were entering into acquisition negotiations). Blackboard's press release announcing this development is available at <http://www.blackboard.com/About-Bb/Media-Center/Press-Releases.aspx?releaseid=1581633>.

<sup>32</sup> Blackboard Inc. 2010 Annual Report: <http://investor.blackboard.com/phoenix.zhtml?c=177018&p=irol-SECText&TEXT=aHR0cDovL2lyLmludC53ZXN0bGF3YnVzaW5lc3MuY29tL2RvY3VtZW50L3YxLzA wMDA5NTAxMjMtMTEtMDE1Nzc3L3htbA%3d%3d> .

<sup>33</sup> Blackboard acquired Angel Learning in 2009.

most widely used commercial Learning Management System at colleges and universities in the United States.<sup>34</sup>

#### *5.4 Blackboard's Patent, and Infringement Case Against Desire2Learn*

On January 17, 2006, Blackboard Inc. filed its patent application US6988138 with the U.S. Patent and Trademark Office for their invention, "Internet-based education support system and methods." This document incorporated three earlier provisional applications that had been filed on June 30, 1999, July 1, 1999, and March 8, 2000. On July 26, 2006, Blackboard announced that their patent had been granted, and on the same day, they filed suit against one of their major competitors, Desire2Learn (D2L), citing patent infringement.

The Blackboard patent, including an abstract, listing of claims, and drawings is available at the U.S. Patent and Trademark Office Web site:

<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&col=AND&d=PTXT&s1=6988138.PN.&OS=PN/6988138&RS=PN/6988138>

The abstract for Blackboard's patent states:

"A system and methods for implementing education online by providing institutions with the means for allowing the creation of courses to be taken by students online, the courses including assignments, announcements, course materials, chat and whiteboard facilities, and the like, all of which are available to the students over a network such as the Internet. Various levels of functionality are provided through a three-tiered licensing

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<sup>34</sup> Moodle, by comparison, an open source and free to use LMS, had, in 2011, over 55,000 registered sites with almost 46 million users in over four million courses worldwide, according to Moodle's September, 2011 statistics: <http://moodle.org/stats>.

program that suits the needs of the institution offering the program. In addition, an open platform system is provided such that anyone with access to the Internet can create, manage, and offer a course to anyone else with access to the Internet without the need for an affiliation with an institution, thus enabling the virtual classroom to extend worldwide.”<sup>35</sup>

The 44 claims contained in the patent describe the Blackboard invention as a “course-based system for providing to an educational community of users access to a plurality of online courses...”<sup>36</sup> The claims provide general and specific information about client and server machines configured in the Blackboard system; the three user roles - student, instructor, and administrator; access levels to, and administration of data files by various categories of users; various tools like class rosters, quizzing/testing, and grading instruments; and student discussion and collaboration tools.

Blackboard’s original *Complaint for Patent Infringement*, dated July 26, 2006, a four page document filed with the U.S. District Court for the Eastern District of Texas, contends that their patent, US6988138 (often shortened in the filings to “the ‘138 patent”), is valid and enforceable, and that Desire2Learn “uses, offers to sell, and sells within the United States, and/or imports into the United States, products and services that infringe the ‘138 patent, including, but not limited to all D2L products based on the D2L learning system or platform, such as the D2L eLearning Technology Suite, which includes the D2L Learning Environment, Learning Repository and LiveRoom, and all services supporting these D2L products, such as hosting services, training services, help desk support services, implementation and customization professional services, and

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<sup>35</sup> In U.S. Patent and Trademark Office publication number US6988138, Inventor: Alcorn et al., 1/17/2006.

<sup>36</sup> *Ibid.*, Section 30, Claim 1.

content services.” Blackboard’s complaint was that, as a result of D2L’s alleged infringement, they had suffered and were continuing to suffer damages. The remedies they sought included an injunction against further infringement, compensation for prior “wrongful acts,” and payment of their attorneys and court fees.<sup>37</sup>

In their counterclaim, Desire2Learn alleged that the patent awarded to Blackboard by the U.S. Patent and Trademark Office was invalid and unenforceable. This was their first affirmative defense. Their second affirmative defense was that Blackboard failed to disclose all non-cumulative, material prior art of which Blackboard was aware to the Patent Office during the prosecution of the ‘138 patent. Specifically, they provided the example of an IMS Specification that created user profiles allowing a user to be assigned multiple predetermined user roles (one of the patent claims Blackboard argues was infringed by Desire2Learn). Desire2Learn maintains that this predated Blackboard’s incorporation, yet Blackboard has claimed invention and ownership of this feature in their patent. During the ‘138 patent process, Desire2Learn asserts, Blackboard failed to disclose this information to the Patent Office, and this was “intentional and done with deceptive intent.” Since Blackboard violated the duty to disclose all information material

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<sup>37</sup>If Blackboard’s Complaint is upheld (an appeals process is underway), Desire2Learn will likely be responsible for payment of prior and future royalties. Early in the litigation process, members of the higher education community began voicing concerns about the risk this might represent. Would a precedent be set, they wondered, for royalties being expected from other “infringers” of Blackboard’s patent, including other commercial LMS providers, and possibly institutional users of open source solutions like Moodle and Sakai? Recognizing this, Blackboard, in February, 2007, developed the “Blackboard Patent Pledge,” which promised not to assert its patents against open source initiatives or against any school, library, or museum utilizing open source tools or open source learning management systems. See Chapter 6, Section 6.2.1, *Blackboard’s Patent Pledge*, for a discussion of the Patent Pledge and how it was perceived by the IT leaders who participated in this study.

to patentability required by 37 C.F.R. 1.56, Desire2Learn contends that Blackboard's patent is unenforceable.<sup>38</sup>

Section 1.56 states in part: "A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section."<sup>39</sup>

In many ways, the Blackboard infringement case is similar to, and typical of many other patent infringement cases. The plaintiff (Blackboard) alleges that the defendant (Desire2Learn) improperly used techniques and methods protected by their patent - the legal definition of infringement. The defendant, on the other hand, argues that the Patent Office improperly awarded the plaintiff their patent in the first place - the legal definition of invalidity. Much of the back and forth has involved claim construction issues,<sup>40</sup> evidence of prior art, a "Markman hearing" to determine specifically what is meant in the patent's claims (including examination of individual words used in a claim to determine their meaning), and so forth. There are also procedural challenges that arise and require resolution. At the time this summary and background were first being written (March,

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<sup>38</sup> Court Document from Desire2Learn – *Desire2Learn Inc. 's Answer, Affirmative Defenses, and Counterclaims*, Document # 19, Filed 9/14/2006.

<sup>39</sup> Ghosh et al., 2007, pp. 352-353.

<sup>40</sup> Analyzing how "a person of ordinary skill in the art" understands a claim term is the starting point of a proper claim construction with regard to the Blackboard case, the U.S. District Court has said.

2009 - revised in September, 2011), Blackboard was winning in the courts, but losing at the U.S. Patent and Trademark Office (USPTO). The U.S. District Court in Texas, in March, 2008, awarded Blackboard \$3.1M in damages, finding that Desire2Learn had, in fact, violated their patent. That decision was appealed, and Desire2Learn subsequently modified its software. At the same time, in response to the challenge from Desire2Learn, the USPTO began a reexamination of Blackboard's patent, and, in an initial finding, disallowed all 44 claims contained in the '138 patent. Blackboard responded in November, 2008 by filing suit against the U.S. Patent and Trademark Office in an effort to end their reexamination of the '138 patent. Blackboard's position was that any Patent Office reexamination should end once a court issues a ruling on a disputed patent's validity. The Patent Office countered with the position that it was appropriate to continue reexamining a patent until a *final* verdict is reached – meaning until the appeals process has been completed.

*Blackboard v. Desire2Learn* has been a controversial issue, and it has generated high levels of interest and often deeply felt emotions across a diverse spectrum of higher education administrators, college faculty, and instructional IT professionals. It has also captured the attention of the business and legal communities. As is often the case with relatively complex topics, there has been some degree of misinformation about what issues are actually being litigated, and some degree of mischaracterization about the arguments and positions of plaintiff and defendant. For example, one perception expressed by several respondents in this study was that “Blackboard claimed to have invented online learning,” and some respondents believed that Blackboard intended to “go after” any others seeking to use the Internet as a means of instruction. In response,

Blackboard has repeatedly emphasized that there are only **two key claims** in their patent, and another 38 or so *dependent* claims that depend on one or another of these two *independent* claims. Specifically, these independent claims are the ability to assign multiple roles to the system's users so that a student in one class can be a teacher in another; and the ability to manage permissions and privileges differently for different courses as those roles change.<sup>41</sup> These are the functional areas Blackboard says were infringed, and the functional areas Desire2Learn alleges were improperly awarded when the '138 patent was issued.<sup>42</sup> In public presentations, on their Web site, and in other settings, Blackboard has maintained that their legal actions are restricted solely to protecting what they perceive to be their intellectual property rights against commercial competitors whom they believe are using their invention without permission and/or without providing proper compensation. Blackboard says, and this is made explicit in their *Patent Pledge*, that they have no intention to threaten or restrict higher education institutions or others if they choose to consider or employ competing proprietary products or open source LMS solutions like Moodle and Sakai.

The debate about the significance of *Blackboard v. Desire2Learn* has taken place at professional higher education IT meetings like the regional and national EDUCAUSE conferences, on Wikis authored by educators and those who follow educational technology, and perhaps most notably in the communications environment popularly referred to as the "blogosphere." A Google search using the search terms "Blackboard

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<sup>41</sup> Cox, John, Software Patent Ignites Firestorm in Higher Education, *Computerworld*, 11/13/2006.

<sup>42</sup> See Chapter 6, Section 6.2, *Blackboard Inc. and Blackboard v. Desire2Learn*, for a presentation of respondents' views on the Blackboard legal case, and examples of how the case was presented in the press at the time.

lawsuit” in October, 2007, returned 370,000 items. In March, 2009, that same search yielded 106,000 returns... an indication, perhaps, that as the suit and its appeals reached into the third year, interest in the case had waned, or there had not been any major developments to reignite public attention.

As Professor Jay Kesan, a legal scholar in the area of intellectual property rights law at the University of Illinois observes (personal conversation, October 8, 2007), information on Internet blogs, and, to some extent, in the press, often represents views and opinions by individuals with little or no training in the law, and particularly no experience reading patents, understanding patent claims, or evaluating alleged patent infringement – all areas within the specialized practice of IP law. Kesan makes the distinction that there is “the actual property right,” and the “perception of the property right.” As Chapter 6, Section 6.2 will illustrate, the opinions and assessments of the Blackboard legal case expressed by many of the IT leaders in this study were largely influenced by popular opinion (expressed in blogs, Wikis, articles in the press, and discussions with peers), rather than by informed legal opinion, and represent this latter phenomenon of the “perception of the property right.”

Regardless of the infringement case’s final legal disposition, *Blackboard v. Desire2Learn* has important implications for the higher education community and for the future of Learning Management Systems development, investment, and adoption. There continues to be, for example, and as evidenced from comments by the CIOs and Learning Technology Directors in this study, a growing dissatisfaction with Blackboard and its

business practices, and this will likely have an impact on the LMS marketplace, both commercial and open source. Whether Blackboard's complaint has legal standing (or in Kesan's words, "actual property right"), and whether or not it is upheld on appeal, popular perception may speak to a different reality. Some IT leaders interviewed for this research described serious consideration on their campuses for severing their institution's relationship with Blackboard, or at least considering alternatives, when their LMS contract comes up for renewal. EDUCAUSE, the largest professional higher education IT organization, has been critical of Blackboard's lawsuit against Desire2Learn, and, in an open letter to Blackboard CEO Michael Chasen in 2006, expressed the opinion that Blackboard's actions had gone "beyond competition to challenging the core values and interests of higher education." The letter identified two "core tenets" underlying the higher education IT community's concern:

"One [tenet] deals with co-creation and ownership; the other deals with innovation. Course management systems<sup>43</sup> were developed by the higher education community, which includes academics, organizations, and corporations. Ideas were freely exchanged, prototypes developed, and refinements continue to be made. The new EDUCAUSE Catalyst Award, given to course management systems this year, celebrates that course management systems 'were conceived and developed among faculty in pockets of innovation throughout the world. They originated simultaneously at a number of institutions,' as stated in the award announcement. One of the reasons course management systems were singled out for this award is because of the 'fluid movement of ideas and initiatives between academia and the commercial sector as individual limited-use efforts evolved into enterprise-wide systems.' Our community has participated in the creation of course management systems. A claim that implies this community creation can be patented by one organization is anathema to our culture." (EDUCAUSE letter to Blackboard CEO Michael Chasen, 10/9/2006. For the full text of this letter, see Appendix C).

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<sup>43</sup> "Course Management System," or "CMS," was the earlier term used to describe what are now more commonly referred to as Learning Management Systems, or LMSs. This change in terminology reflects the broader set of technologies and wider range of tools incorporated in the modern LMS as compared to what had been included within the scope of the earlier Course Management Systems.

Throughout the course of their patent infringement litigation, in such actions as establishment of the *Patent Pledge*, in interactions with the higher education community publicly, and when meeting with institutional clients, Blackboard has engaged in public relations efforts aimed at increasing public awareness and support, while attempting to control damage (i.e., loss of customers) and reduce risk to their reputation to the extent possible. For their part, Desire2Learn has done the same, and in an effort to be what the company calls “transparent,” regularly posts on their Web site all of the patent infringement case materials they can publicly disclose, along with commentary as the legal case progresses.

Blackboard has also begun speaking publicly about interoperability with a number of open source and commercial products (see Chapter 6, Sections 6.2.2 and 6.2.3), and a Blackboard representative now regularly attends and actively participates in the Sakai open source LMS annual membership conference. This relaxation of Blackboard’s proprietary product stance, detailed in Chapter 6, Section 6.2.3, reflects a continuing and growing awareness within the eLearning community of the necessity for open systems and tools to support learning, and a moving away from the earlier single product LMS model. The importance of this new direction toward interoperability, and away from monolithic, single LMS solutions, was emphasized by several of the IT leaders in this study.

##### *5.5 Blackboard v. Desire2Learn within the Context of this Dissertation Research*

The Blackboard lawsuit raises a number of questions regarding the design, development, and IPR protection of Learning Management Systems and related eLearning

technologies. How does legal enforcement of IPR affect the future innovation of these systems and tools? Can basic learning functions, now enabled by technology, like quizzing and testing modules, student discussion boards, class rosters, grading tools, and digital content repositories be patented?<sup>44</sup> Should they be? What will the likely impact be on competition and innovation in the Learning Management System marketplace, both commercial and open source, if the Blackboard infringement suit is upheld? In order to accurately and fairly weigh the issues being raised by Blackboard's litigation, one must attempt to understand, in as objective a manner as possible, both the defendant's and the plaintiff's positions about what they perceive to be at stake. Desire2Learn bases their counterclaims on prior art, patent invalidity, and patent unenforceability. They believe that Blackboard's lawsuit is an attempt to control the marketplace and to weaken or eliminate any serious competition. In Merges' and Nelson's dichotomy, the Blackboard '138 patent is overly broad in its construction and inappropriate for technology based on prior cumulative and collaborative work. Many in the education community have tended to side with Desire2Learn throughout this dispute. On the other hand, as the findings from the interviews with IT leaders in this study will show, there were respondents who acknowledge that Blackboard, as a commercial business, has invested millions of dollars in research and development, is accountable to their investors, and has a large and diverse base of institutional customers relying on them to continue to make improvements, solve problems, and develop new and innovative technological solutions for their faculty and

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<sup>44</sup> As noted in the Literature Review (Chapter 2, Section 2.3, *Intellectual Property Rights, Patents, and Computer Software*), the question of the appropriateness of patent for business methods software continues to be an area of legal disagreement, as yet unsatisfactorily resolved. Software-based versions of these basic learning functions, it can be argued, may fall into this category.

students. As a for-profit business, they ask, isn't Blackboard entitled to fair compensation as a return on investment?

Another set of questions involves Blackboard's *Patent Pledge*. Before this was announced, the controversy in the eLearning community over Blackboard's lawsuit was emotional and intense. Has this change in policy and philosophy improved Blackboard's relationship with the education community? If Blackboard is sincere about the commitment represented by their *Pledge*, will this actually help encourage innovation and new partnerships between the commercial and open source LMS communities? In recent years, interesting hybrid software models have begun to emerge - products that are *both* open source *and* commercial - such as the Confluence Wiki and JIRA issue tracking and project management systems from Australia-based Atlassian Software; and Sun Microsystems' OpenSolaris operating system and acquisition of the MySQL database product. The Sakai Project continues to have a growing number of commercial partners, from major corporations to third party value-added resellers. SunGard, the parent company of Banner, a widely used commercial suite of enterprise level higher education administrative systems, recently announced their emerging support and developing relationship with Liferay, an open source/commercial portal product. Developments such as these have the potential to spark innovation and can lead to the development of superior products and services.

As the marketplace continues to develop a more sophisticated understanding of the value of open source, and as new and innovative approaches to licensing, commercialization, and partnerships continue to evolve, the intellectual property-related issues being debated in *Blackboard v. Desire2Learn* grow in importance and significance. Use of *Blackboard*

*v. Desire2Learn* as an area of focus during the interviews with CIOs and Learning Technology Directors helped contextualize discussion pertaining to the impact legal enforcement of IPR may have on decision-making by these IT leaders when helping to select Learning Management Systems for their institutions. The topic of Blackboard's litigation also served to help facilitate inquiry into questions regarding the appropriateness of patent as an IPR protection for software-based products and processes developed cumulatively and collaboratively like Learning Management Systems. Findings from these research areas are reported in the next chapter.

NOTE: For an update on the *Blackboard v. Desire2Learn* patent infringement lawsuit (settled in 2009), and Blackboard's legal action against the U.S. Patent and Trademark Office (settled in 2010), see Chapter 6, Section 6.2.3, *Update on Blackboard's Patent Pledge, Commitment to Increasing Interoperability, and Company's Acquisition in 2011* (pp. 136-140), and Section 6.2.4, *Blackboard v. Desire2Learn – IT Leaders' Perspectives on the IPR Litigation* (pp. 141-145).

## CHAPTER 6

### IMPACT OF LEGAL ENFORCEMENT OF IPR ON IT LEADERSHIP'S DECISION-MAKING WHEN SELECTING AN INSTITUTIONAL LEARNING MANAGEMENT SYSTEM

This chapter reports findings from the research about how enforcement of intellectual property rights (IPR) affects decision-making by the Chief Information Officers and Learning Technology Directors who participated in this study when selecting, or considering a change in their institution's Learning Management System. Respondents were asked (see Appendix A) to discuss their perspectives on issues related to intellectual property rights and Learning Management Systems. Questioning and discussion focused on Blackboard Inc. as the predominant proprietary Learning Management System manufacturer and their lawsuit against a competitor, Desire2Learn, alleging patent infringement (see Chapter 5, *Blackboard v. Desire2Learn - Context of Patent Infringement Case*); the IT leaders' views about commercial LMS manufacturers and perceptions they had about cultural differences between these companies and the higher education community; and their consideration of open source solutions within the context of IPR issues. The CIOs and Learning Technology Directors were also asked to discuss their concerns about the effect of enforcement of intellectual property rights on innovation, and their perspectives on the validity of IPR protections like patent and copyright as they're being applied to software-based products and services like Learning Management Systems.

#### 6.1 *Intellectual Property Rights within the Context of this Study*

As Strauss (1987) and others have noted, "good analysis is predicated on good data." In order to ensure that the data generated from the interviews would provide clear and useful

information about what was being investigated, it was important that terms used in the interview questions be clearly defined and mutually understood. This included clarifying what was meant by “intellectual property rights issues and enforcement,” within the context of the areas of inquiry the respondents were asked about and which they discussed during the interviews. A finding from the research is that when asked to consider issues related to intellectual property rights and Learning Management Systems, most respondents thought first about *faculty content* being placed in the LMS, and about their institutions’ policies regarding *who owned the rights to the online courses*. During the interviews, these individuals explained that when they first saw the announcement (Appendix B) requesting volunteers to participate in a research study on the enforcement of intellectual property rights and its impact on the Learning Management System selection process, they assumed the discussion would be about whether articles, videos, and other materials posted by faculty on an institutional LMS had the appropriate copyright clearances; how compliance with the Teach Act, Digital Millennium Copyright Act, Fair Use guidelines, and other regulations was managed; and who actually owned the online courses - the so-called “work for hire” debate. Respondents commented that these aspects of IPR, rather than IPR as it pertained to the patenting or copyrighting of Learning Management Systems themselves, were issues they more regularly dealt with and thought about.

Following, are two representative observations from respondents relative to this interpretation of LMS intellectual property rights issues as being largely about faculty content and online course ownership:

“Most of our conversations beforehand [prior to the Blackboard lawsuit against Desire2Learn] were about faculty intellectual property, and ownership of different things, and when you’re creating content... I don’t think it really had dawned on us anything about the... what Blackboard is claiming now... and that would never have crossed our minds” (R-12).

“Intellectual property rights issues were certainly a topic within our state system, as they were in colleges across the country. But that type of concern and issue was really being addressed by our legal counsel. Copyright - who owned the course if it was developed by a professor at the time being employed by our colleges – that issue of who owned the course, etc., was taken up by our legal counsel and by our chief academic officer. So, IPR was an issue of concern, but that was kind of being raised and discussed regardless of whatever Learning Management System we were using. So, it wasn’t a WebCT issue; it wasn’t a Blackboard issue. It was about faculty content, and that would have been an issue regardless of what Learning Management System we chose. So it was being discussed within the system, but really wasn’t paramount to what package we chose” (R-10).

Comments from other respondents largely followed these themes for the general introductory interview questions about IPR and IPR enforcement. One respondent said he had expected the interviews to probe faculty members’ intellectual property rights for materials they placed in the Learning Management System and how that affected *other people’s intellectual property rights* - the copyright owners of some of those materials (R-06); and another respondent described how his institution had debated and developed policy around the intellectual property rights of *students* when faculty wished to use student-authored original content as part of their future online courses (R-13).<sup>45</sup> In summary, when the IT leaders who participated in this study think about matters of intellectual property rights relative to Learning Management Systems, they tend to view them as faculty content and course ownership issues, rather than as legal matters pertaining to the IPR legitimacy of the Learning Management System itself.

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<sup>45</sup> The policy adopted required written releases from the students permitting faculty to post their original materials online.

## 6.2 *Blackboard Inc. and Blackboard v. Desire2Learn*

The areas of discussion and data generated from the interviews around topics related to Blackboard's litigation against Desire2Learn (Chapter 5) provided an opportunity to investigate how these IT leaders felt about Blackboard as a company; about Blackboard's intellectual property rights enforcement activities - including the patenting of their Learning Management System and their patent infringement lawsuit; and how these actions have influenced decision-making by the CIOs and Learning Technology Directors in this study when helping to select a Learning Management System for their institution.<sup>46</sup>

The relationship between most of the respondents in this study and Blackboard Inc. can best be described as ambivalent. This was evident during the interviews, whether respondents were speaking about Blackboard as a company, expressing their views about the Blackboard Learning Management System as a product, or sharing their perspectives on Blackboard's legal activities and acquisition of other eLearning companies and technologies. Data generated from the interviews indicates that these higher education IT leaders have a more negative attitude toward Blackboard Inc. since the company patented their LMS, initiated the lawsuit against Desire2Learn in 2006, and began acquiring competing Learning Management System companies and companies that provide related eLearning tools and services.<sup>47</sup> Specifically, several of the IT leaders expressed the belief

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<sup>46</sup> *Blackboard v. Desire2Learn* was selected as a framework in which to contextualize this part of the research because it provided a well known and common point of reference, thereby helping to focus issues and generate data around the impact of IPR enforcement on the LMS selection decision-making process by the higher education IT leaders who participated in this study.

<sup>47</sup> Blackboard's purchase of competitor LMS companies and manufacturers of other eLearning-related products and services began in 2005 with the acquisition of WebCT, their largest LMS competitor, and continues to be a prominent feature of their current business trajectory. In 2009, Blackboard purchased

that Blackboard's leadership is overly aggressive and predatory. As one respondent observed:

“You know, even Michael Chasen [Blackboard's CEO] being at the top of the organization, to me, is so disconnected from higher education, and while he schmoozes and, you know, is around at EDUCAUSE, and talks to people, he is such a hmmm... you know, in my mind, it would be a snake - in the sense of thinking he's a Microsoft, and that he's going to go buy up anybody who gets in his way and intimidate anybody who's going to be a competitor or whatever... as one CIO in our state system said, 'Blackboard is hubris.' They just have no sense about how arrogant they are about themselves, and that's too bad because, you know, in some sense, their breadth and depth of the product they have appears to be the best, but their support stinks, and paying attention to their clients stinks. WebCT did a much better job at that than Blackboard ever did. I've heard things in the past about Blackboard being made up of just a bunch of frat boys who are sales people and aren't loyal and dedicated to higher education” (R-15).

This idea, that a disconnect exists between Blackboard's corporate culture (and that of other proprietary LMS manufacturers) and the institutional culture prevalent in higher education, was a perception widely expressed by study participants, and, therefore, represents another finding from the interview data. This will be explored further later in this chapter (6.3 *Differences in Culture between Higher Education and Commercial LMS Manufacturers*).

As already noted in Chapter 5, the awarding of Blackboard's patent and accompanying legal case against Desire2Learn, like other widely reported and controversial topics,

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Angel Learning, Inc., manufacturer of the Angel Learning Management Suite, Angel ePortfolio, and related services for \$95 million. In the summer of 2010, Blackboard announced their acquisition of two major online communication companies - Elluminate, Inc., manufacturer of Elluminate Live!, a web conferencing and social networking communication service; and Wimba, Inc., a virtual learning environment that supports real time audio, video, application sharing, and content display. The combined cost for these two companies was \$116 million. Elluminate and Wimba are being integrated into a new synchronous platform within the Blackboard suite of products, branded *Blackboard Collaborate*. This is an important development for Blackboard, and significantly expands the range of services they offer, since the Blackboard family of LMS products (Blackboard, Blackboard Vista [formerly WebCT], and Angel Learning) largely function as asynchronous online environments. In July, 2011, as noted earlier (see footnote #31), Blackboard itself was acquired by a privately owned investor group for \$1.64B.

generated strong opinions among those who believed they had a stake in the outcome - in this case, members of the higher education community. These opinions were sometimes accompanied by a mischaracterization of the facts and issues surrounding the actual patent claims and lawsuit complaints. In order to understand the role the press may have had in portraying these issues and perhaps shaping the opinions of those who were following them, a number of articles from that time period, appearing in publications like *USA Today*, *The Washington Post*, *Inside Higher Ed*, and the *Chronicle of Higher Education* were reviewed. In general, the information about the issues surrounding the legal case and the higher education community's reaction to it was presented accurately, and from a balanced perspective.

Excerpts of two articles from the Summer of 2006 illustrate how this issue was reported both in the popular and higher education press:

“... It may seem self-evident that virtual classrooms should closely resemble real ones. But a major education software company contends it wasn't always so obvious. And now, in a move that has shaken up the e-learning community, Blackboard has been awarded a patent establishing its claims to some of the basic features of the software that powers online education.

The patent, awarded to the Washington, D.C.-based company in January but announced last month, has prompted an angry backlash from the academic computing community, which is fighting back in techie fashion - through online petitions and in a sprawling Wikipedia entry that helps make its case.

Critics say the patent claims nothing less than Blackboard's ownership of the very idea of e-learning. If allowed to stand, they say, it could quash the cooperation between academia and the private sector that has characterized e-learning for years and explains why virtual classrooms are so much better than they used to be...

Blackboard, which recently became the dominant company in the field by acquiring rival WebCT, says the critics misunderstand what the patent claims. But the company does say it must protect its \$100 million investment in the technology. The day the patent was announced, Blackboard sued rival Desire2Learn for infringement and is seeking royalties.

‘It just wouldn't be a level playing field if someone could come onto the scene tomorrow, copy everything that Blackboard and WebCT have done and call it their own,’ said Blackboard general counsel Matthew Small...

- Who Invented eLearning? A Patent Dispute Shakes Up Academic Computing, *USA Today*, 8/27/2006

“Al Gore has yet to live down reports that he claimed to have invented the Internet. Now Blackboard is facing criticism from those who say the giant of the course management industry claims to have invented chat rooms. (If you are wondering, Blackboard says it never made such a claim.)

On Thursday, leading advocates for open source systems of course management announced that they were linking up with the Software Freedom Law Center to try to prepare legal and other defenses for attacks they fear will be coming from Blackboard.

‘The recent announcement by Blackboard that it is attempting to assert patent rights over simple and longstanding online technologies as applied to the area of course management systems and e-learning technologies, and its subsequent litigation against a smaller commercial competitor constitutes a threat to the effective and open development of software for higher education and the values underlying such open activities,’ said the announcement from the Sakai Foundation, which helps dozens of colleges and universities run open source course management systems.

Blackboard's general counsel, Matthew Small, said in an interview Thursday that he was glad that the Sakai Foundation was getting legal advice because it might find out that Blackboard was in no way threatening the open source movement. ‘There's a lot of misinformation out there,’ Small said. ‘There's a fundamental misunderstanding of what [the patent] represents and what it doesn't represent.’

In the interview, Small said repeatedly that Blackboard has no plans to challenge open source projects on patent issues, and he said that such challenges ‘wouldn't make good business sense’ for the company. At the same time, Small declined to directly answer whether Blackboard believes that open source projects are infringing on the company's patent rights. ‘No patent holder is under obligation to go out and find infringement wherever it may be,’ he said. ‘We are not focusing on the open source community or the education community.’”

- Blackboard: Bully or Misunderstood? *Inside Higher Ed*, 8/18/2006

The excerpts provided above help furnish context for a finding that emerged from an investigation of the interview data: that while articles like these, and many others from that time period provided a reasonably objective description of the two countervailing positions in the Blackboard patent debate (those in the higher education community who thought that Blackboard had “overreached,” and Blackboard’s position that they were simply asserting their legitimate right to protect their product and the interests of their investors), the CIOs and Learning Technology Directors in this study, like many in the higher education community, and particularly IT professionals and faculty engaged in online learning, came to embrace a narrative of Blackboard as a predatory and anti-competitive company. One respondent, a CIO from a large research university, described his view of Blackboard’s actions at the time:

“You know, the issue to me seemed kind of nonsensical. I just didn’t think... and I’m not a lawyer... I just didn’t think there was any merit in the whole thing. I mean, how do you patent a course management system? I mean, I really didn’t understand it. I didn’t understand the patent laws, and I thought if that were the case, it was stupid. And I think it really kind of opened our eyes to what kind of company Blackboard was. We really didn’t understand what the point was. At least I didn’t understand it, so it seemed to me it was mostly to try to scare people away from the competition, to [get them to] use their particular product, and create the ‘FUD factor.’<sup>48</sup> We went to a couple of EDUCAUSE sessions about it, and I never did understand what Blackboard thought they were going to get out of it. I mean, obviously, I understand their strategy. But I think if that was their strategy, they’re idiots” (R-13).

Another IT leader, a Learning Technology Director from a private college, reached this conclusion:

“Their idea is that there should be a Blackboard-centered universe. You know, Blackboard would like to be everything on your campus which is not your ERP, or your desktop operating system” (R-06).

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<sup>48</sup> Fear, Uncertainty, and Doubt – a marketing strategy aimed at restricting competition.

One of the study participants, a state university CIO, found Blackboard's IPR enforcement activities perplexing:

“So, I keep saying to myself, ‘How is this helping them? What is their business model?’ They’re basically being antagonistic to their customer base and their business. Knowing that Blackboard will take this kind of aggressive corporate position makes me far less likely to want to collaborate with them on any kind of development ...unless I have the lawyers fully engaged” (R-14).

While also expressing disapproval of Blackboard's actions, a Learning Technology

Director from another state university provided a somewhat more nuanced assessment:

“I think now, when we’re looking at things, I know that it has left a bad taste in a lot of people’s minds and mouths, and they would like to leave Blackboard just because of that. I think the whole thing is pretty ridiculous. Also, on one hand I understand that Blackboard wants to protect their... I mean this is their livelihood, and perhaps they did come up with some great concept that they patented at the time. But it doesn’t make a whole lot of sense to me to say they created role-based access or whatever. I think that concept has existed forever – well, I guess forever in my lifetime. I feel sorry for Blackboard because they were just trying to do what’s in their best interest as a company, and I think any company – Moodle, Sakai, Angel, Desire2Learn – every single company would love to be a Blackboard, because they are making money, and they’re a leader, and they have resources that I think others would die for” (R-12).

A question that arises from this area of the interview data is how this group of information technology leaders, individuals from diverse types of institutions, working in locations across the United States and Canada, came to develop such a highly similar and consistent narrative relative to their perspectives and beliefs about the Blackboard company, its LMS patent, and the patent infringement suit. Two possibilities which may help explain this phenomenon are a “groupthink-like” set of variables which characterize how higher education IT leaders are socially organized, including how they obtain and share professional information; and the first-hand experience these CIOs and Learning Technology Directors have had working with Blackboard, its products, and its services.

- *Higher Education IT Leaders, Blackboard, and Groupthink*

Irving L. Janis' formulation of the *Groupthink* concept (1972) is most often applied to an analysis of decision-making by highly cohesive groups, usually individuals from similar occupational, educational, and social backgrounds, that results in a poor decision outcome due to the interplay of a set of group behavior characteristics which he defined as *groupthink* (see Chapter 2, *Literature Review*, for a more detailed description of the groupthink concept). While the IT leaders' consensus view of Blackboard as a company and their perception of the issues involved in Blackboard's legal actions does not constitute "a poor decision outcome" in the usual sense of how the groupthink concept is normally applied, there are a number of similarities between the IT leaders in this study as a group and the consensus conclusion they reached, and how decision-makers in government and business are sometimes affected by groupthink factors. As noted in Chapter 2, Janis defines groupthink as "a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise alternative courses of action" (Janis, 1972, p. 9). In terms of their behavior as members of the larger community of higher education IT leaders, the CIOs and Learning Technology Directors who participated in this study are fairly representative. They work as senior level administrators at their respective institutions, and as noted in Chapter 4 (see Section 4.2.4, p. 98), all are active in EDUCAUSE, the professional association for higher education information technology. These individuals

regularly and closely interact as members of *the EDUCAUSE CIO Constituent Group*, a subset of EDUCAUSE consisting of several hundred members, and they meet as a separate cohort during the EDUCAUSE annual meeting and at EDUCAUSE regional meetings to work on initiatives, solve problems, and share information about policy, services, and information technology products.<sup>49</sup> Most of them also regularly read and participate in the *EDUCAUSE CIO Constituent Group listserv*, a highly active IT leadership forum, updated daily. As already noted, these individuals have many years of IT management experience, most have worked at multiple higher education institutions, and they share homogeneity of work responsibilities, educational backgrounds, and experience.

Groupthink-like behavior in which these IT leaders engaged, and which may have contributed to their consensus narrative about Blackboard and its IPR enforcement activities, included a tendency to interact closely among themselves and their colleagues, thereby emulating and reinforcing each others' beliefs rather than being informed and challenged by "outsider" individuals with contrasting perspectives and interpretations of events;<sup>50</sup> and

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<sup>49</sup> At the 2010 annual EDUCAUSE conference in Anaheim, CA, a new model was adopted where CIOs were issued name badges with a different color than all other conference participants, they received materials at registration and electronically about specific conference sessions in a "CIO track," and a special "CIO lounge" was established in the Orange County Convention Center to encourage CIOs to interact and socialize. This development serves to underscore the continuing evolution of this segment of higher education leaders as a separate and cohesive in-group. The "CIO track" was a successful and popular feature at the 2010 conference, and is being offered again at EDUCAUSE 2011 in Philadelphia, PA.

<sup>50</sup> Business journalist and author James Surowiecki (2004) refers to this as the loss of "cognitive diversity" which is gained by interacting with individuals from different educational and occupational backgrounds (*The Wisdom of Crowds*, p. 183).

employing a selection bias when collecting information about these issues. In other words, they attended the same meetings with the same people, and they tended to read the same literature, including professional IT journals, Wikis, and blogs, many of which, and particularly the latter two, were critical of Blackboard's IPR activities. Several respondents spoke about participating in EDUCAUSE sessions which focused on Blackboard's patent and legal action against Desire2Learn, including sessions attended by Blackboard CEO Michael Chasen and Blackboard general counsel Matthew Small. CIO Constituent Group sessions at EDUCAUSE meetings also included this topic on their agendas. Some of the IT leaders interviewed alluded directly to the role that EDUCAUSE and other information technology based organizations had played in helping shape their opinions.<sup>51</sup> As one CIO said, "I'm basing a lot of what I feel on the EDUCAUSE analysis that was coming out" (R-14); while another respondent observed:

"You know, on the spectrum of familiarity, I'm no lawyer. I certainly know... I've tracked it mostly through... I subscribe to the Sakai discussion groups. And so, that's usually been the filter through which I've understood what's going on. Either that, or through *the Chronicle of Higher Education*, and the *EDUCAUSE Quarterly*" (R-02).

These responses and similar ones from other study participants provide a degree of evidence that groupthink-like behavior was at least a partial contributor to the shared narrative that evolved about Blackboard and its IPR enforcement activities. A related

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<sup>51</sup> A major and influential communication well known to the participants in this study and to the larger community of higher education IT leaders was the EDUCAUSE Board's October 9, 2006 *Open Letter to Blackboard CEO Michael Chasen* about Blackboard's patent and lawsuit against Desire2Learn. This document is reproduced in Appendix C.

finding from this study that correlates with the discussion here is that the EDUCAUSE organization was influential in helping shape public opinion in the higher education IT community around these issues.

- *Higher Education IT Leaders and their Experiences with Blackboard*

“You know, Blackboard was extraordinarily expensive, and we grew to kind of hate them as a company. They were kind of, you know, arrogant, provided poor service, and that was all kind of reinforced by the lawsuits that they started against their competitors like Desire2Learn, the kinds of issues your research is about. And last year at EDUCAUSE, they showed up and tried to take over the CIO meeting” (R-04).

“Well, we discussed quite openly the suit and our concerns that they [Blackboard] were out there acting like the 800 pound gorilla. We found that somewhat unbecoming, you know, of a vendor... to be dealing with a vendor that was appearing to be so insistent in trying to put somebody out of business. And it was just about at the time they were doing the product demos [for us] when they decided to sue the Patent Office (see Section 6.5, pp. 169-170), and so, we kind of said, ‘So why should this make us like you?’ Yeah, and we’ve had a very difficult relationship with Blackboard. It’s much better than it was, but it has taken a lot of work on our part to get it to where we felt it was at least a reasonable working relationship that we’re paying a million dollars a year to have” (R-09).

“I have said often to my colleagues here, some of whom have worried about me when I get off on Blackboard as a corporation instead of as a product, that, in fact, the product is working quite well, we have very good buy-in from the faculty, and we don’t want to mess with that. So, yes, I have to separate those two, and then I have a different feeling about them in terms of the product. Very favorable overall in terms of the product - it’s giving us what we need” (R-14).

These comments from three CIOs are representative of the relationship with Blackboard that IT leaders in this study recounted having, based on years of first-hand experience working with the company at their current and/or prior institutions. Like the last CIO’s comment, the sentiment expressed by almost all study respondents was that they generally liked the features and quality of

Blackboard's LMS products (Blackboard LMS and Blackboard Vista LMS<sup>52</sup>), but disliked Blackboard as a company largely because of their "arrogant and aggressive" business practices (the lawsuit against Desire2Learn being most often cited as an example); and because of Blackboard's predominately corporate business culture (see Section 6.3).<sup>53</sup> Additionally, those IT leaders whose institutions had purchased LMS hosting services directly from Blackboard (the first two comments on the previous page are from CIOs at Blackboard-hosted institutions) expressed dissatisfaction with that experience, describing poor reliability (service outages) and a lack of timeliness in getting problems resolved.

As noted in Chapter 5 (*Blackboard v. Desire2Learn - Context of Patent Infringement Case*), and evidenced in the comments just presented, after the announcement of their LMS patent, and the filing of the patent infringement suit against Desire2Learn, Blackboard faced significant criticism by the higher education community. In an effort to address growing concern about how their IPR enforcement actions might adversely affect higher education and particularly the rapidly evolving development of open source LMSs (most notably Moodle and Sakai), Blackboard, on February 1, 2007, announced their *Patent Pledge*. In the Patent Pledge, Blackboard promised not to assert their patents against open source initiatives or against any school, library, or museum utilizing open source tools or open source learning management systems. In a related development

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<sup>52</sup> At the time of the interviews, Blackboard had not yet acquired the Angel Learning Management Suite.

<sup>53</sup> This finding would have been unanimous except for two of the fifteen respondents, one of whom (a Learning Technology Director) said she wasn't really familiar with Blackboard as a company – others at her institution dealt with that aspect of the Blackboard-institutional relationship; and the other (a state system CIO) had purchased WebCT early in the 1990's and had had little engagement with Blackboard as a company since their state system's LMS contract and hosting services were managed by a statewide learning consortium.

during the same time period, Blackboard announced their commitment to a policy of greater interoperability between their products and other commercial and open source eLearning tools and services. The IT Leaders in this study were asked to comment about the value and implications of these two Blackboard initiatives, and the impact, if any, they had had on their LMS selection decision-making process, including their assessment of Blackboard Inc. as a potential institutional corporate partner.

### *6.2.1 Blackboard's Patent Pledge*

Reaction to Blackboard's Patent Pledge by respondents in this study was generally consistent with their overall attitude toward Blackboard as a company, and the Pledge did little to dissuade them from their previously shared narrative about Blackboard and its IPR enforcement activities. The IT leaders, in the portion of the interviews focusing on this topic, expressed skepticism about whether the Patent Pledge represented an honest commitment on Blackboard's part, or a marketing strategy. One CIO, when asked about the value of the Patent Pledge, commented: "I don't know... there's something about them I don't find very trustworthy" (R-04). Another remarked: "I viewed it as some movement on their part, but I still felt they were being cagey about it" (R-14). Several respondents noted that the Patent Pledge, when first announced, became a topic of discussion within the community of higher education IT leaders:

"I don't think that colleagues that I've talked to put any credibility at all into that type of an approach. It's like, you know, they have made some, I think, very major strategic mistakes in terms of how they've handled this overall situation, and it looks like damage control, and I'm not interested. I don't even listen to that stuff" (R-11).

While these comments reflect the general sentiment expressed by the IT leaders in this study, one respondent, a Learning Technology Director from a state university, saw the Patent Pledge announcement as an opportunity to consider the larger question of whether it was preferable to continue partnering with proprietary LMS companies, or to increase higher education's investment in, and support of open source alternatives:

“I think in general, in terms of trying to engage audiences here at my university, given all other things being equal, it's probably better for us to try to partner with communities that are devoted to the idea of open source in its broadest and most comprehensive definition. And while the Blackboard Patent Pledge, you know, helps to mitigate some of the concerns that institutions of higher education have had about Blackboard, it doesn't do so comprehensively. It's a step in the right direction, and it's addressing part of the concerns, but not all of them” (R-02).

For this IT leader, and some others in the study, Blackboard's Patent Pledge and the patent enforcement litigation that preceded it had an effect on their LMS selection decision-making in the sense that it helped justify and illuminate the benefits they believed would accrue from helping move their institutions to an open source LMS environment. Findings along this dimension of the interview data - how IPR enforcement can affect decision-making relative to consideration of open source LMS alternatives - will be further examined in Section 6.4.2, *IPR and Consideration of Open Source Options*.

### 6.2.2 Blackboard's Commitment to Increasing Interoperability

The IT leaders who participated in this study were more divided about Blackboard's announced commitment to increasing interoperability with other products and services than they had been about Blackboard's Patent Pledge. While some questioned the

likelihood of Blackboard's pursuing a more open and interoperable product development path, characterizing it as probably another marketing strategy, others viewed it more favorably, believing that it could represent an encouraging and progressive change of direction for the company and for the future evolution of LMS technology, both proprietary and open source. One of the respondents, a CIO for a small, private institution, had this perspective on the interoperability issue:

“I hope they *all* do that [pursue a more interoperable, standards-based approach]. You know, that's not just Blackboard's job... that's what the IMS Foundation they all belong to is supposed to encourage and support. That foundation has been in existence for years for interoperability, and it seems like there's some limited success, in terms like we had - transferring from one product to another. But, you know, I don't get the sense that they're really interoperable, in a *real time* sense, and that would be nice. You know, I hope that happens, but I think they would all have to work on that. It would be hard... you would think that that would be hard to pull off because somebody's going to feel like a winner, and somebody's going to feel like a loser; and if Blackboard is losing market share, which they probably are now, then how much cooperation are they going to give to make it easy for institutions trying to migrate off of their product, which might be a side effect of all of this” (R-04).

The significance regarding LMS selection decision-making for those CIOs and Learning Technology Directors who believed that Blackboard's announcement to increase interoperability was legitimate is that it made them more inclined to continue using Blackboard's products, or, if they were in the process of considering an LMS change, to view Blackboard as a still viable option (R-02, R-04, R-07, R-08, R-12). A finding that emerged from this area of the research is that all IT leaders interviewed felt strongly that open LMS standards are highly preferable to closed systems, and they were unanimous in their prediction that this will be a critical prerequisite for the successful future development of Learning Management Systems and eLearning tools.

### *6.2.3 Update on Blackboard's Patent Pledge, Commitment to Increasing Interoperability, and Company's Acquisition in 2011*

As noted in Chapter 3, *Methodology*, the interviews with the CIOs and Learning Technology Directors in this study were conducted in late 2008 through Spring, 2009. Blackboard's Patent Pledge and plans to increase interoperability with other commercial and open source products and services - the areas of research inquiry just reported - were announced in early 2007. Because the IT leaders' concern about open standards and interoperability emerged as a strong and consistent finding, and many respondents associated their thinking about LMS selection decision-making and IPR issues with Blackboard's legal activities at the time, and Blackboard's position as the predominant commercial LMS vendor, a brief update is provided here to connect these earlier perspectives with recent developments and outcomes in this area. This update information also has value when considering the applicability of Merges' and Nelson's (1994) hypotheses on the impact of broadly constructed patents on innovation (see Chapter 2, *Literature Review*); and Paul Krugman's work (1996) on the intersection of economics and evolutionary biology (see also Chapter 2), theoretical areas used in this research to help consider findings from the data relative to the impact of IPR enforcement on LMS selection decision-making by CIOs and Learning Technology Directors.

From the time of its announcement until the present (Fall, 2011), Blackboard has honored the Patent Pledge, and has not engaged in legal action against any school, library, or

museum utilizing open source tools or open source Learning Management Systems.<sup>54</sup>

In the years since the controversy over their patent and subsequent IPR litigation, Blackboard has emerged as a major Contributing Member of the IMS Global Learning Consortium (Contributing Members are the voting members and strategic partners of IMS who lead and ratify IMS standards), and Blackboard's CEO and President, Michael Chasen, currently serves as a member of the IMS Executive Strategic Council.

Indicative of Blackboard's move toward a new and more interoperable business model and technology strategy are recent assessments by two historically outspoken Blackboard critics, Charles Severance, Clinical Associate Professor in the School of Information at the University of Michigan, and former Executive Director of the Sakai Foundation; and Michael Feldstein, founder and editor of the *e-Literate* blog, and current Sakai Foundation Board member. Writing in his *Dr Chucks Blog*, on July 13, 2010, in an entry entitled Blackboard Announces Plans to Deliver IMS Common Cartridge and Learning Tools Interoperability 1Q2011, Charles Severance observes:

“I am pleased and excited because this is an important milestone in the progression of the market adoption of these standards that I am convinced will positively impact teaching and learning in ways we cannot begin to imagine. But in a sense I was not really surprised. Strong support for standards and interoperability is very much in Blackboard's best interest and for me it always felt like it was only a question of when it would fit into the Blackboard development cycle.

If you think about it for a moment, Blackboard has a pretty diverse customer base due to Angel and WebCT acquisitions and they would very much like to get to the point where they have a single overall learning product with the best features of Blackboard, WebCT, and Angel. That unifying product will naturally be a future version of Blackboard and one of the ways to get people to migrate to the latest

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<sup>54</sup> Communication with Matthew Small, Chief Business Officer and Chief Legal Officer, Blackboard Inc., 11/24/2010.

version is to give them something in the latest version that they do not have in their current version.

I think that support for IMS Common Cartridge<sup>55</sup> and LTI<sup>56</sup> will be just the right kind of draw (among others) to bring customers forward and together in a positive way.

Beyond Blackboard's customers, I hope that this is the beginning of Blackboard taking increasing leadership for the entire marketplace in terms of standards and interoperability. Even though Blackboard participated in both the working groups for Common Cartridge and Learning Tools Interoperability [Blackboard is co-chair of LTI], they were not the first to market for either standard. Now Ray [Ray Henderson, President of Blackboard's Teaching and Learning Division] has clearly made it a high priority to 'catch up' and yesterday's announcement was an indication that they will catch up pretty quickly."

Professor Severance discussed progress on common standards and interoperability during his October 15, 2010 EDUCAUSE Annual Conference session entitled: *New Opportunities for Teaching and Learning: Extending Learning Management Systems Using Standards*. In this presentation, Dr. Severance provided a chronological overview of the evolution of the IMS Global Learning Consortium and its progress in developing interoperable standards, including Common Cartridge and LTI. Specifically with regard to Blackboard Inc., he shared a press release from earlier that week:

Washington, Oct. 11 /PRNewswire/ - In an effort to support greater interoperability and technology choice for clients, Blackboard Inc. today announced new integrations that enable Blackboard Collaborate solutions (see footnote #47, this chapter) to be used seamlessly with a wide range of commercial and open source course management systems. One of the new integrations supports Wimba Classroom and Wimba Voice for Desire2Learn, and is the first for Wimba that meets the IMS Global Learning Consortium's standard for Basic Learning Tools Interoperability (LTI).

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<sup>55</sup> Common Cartridge is a standard agreed upon by publishers and LMS vendors which allows content files to be imported into any LMS with full functionality and without content loss or content transformation.

<sup>56</sup> LTI is the standard for Basic Learning Tools Interoperability developed by the IMS Global Consortium.

Dr. Severance commented on the significance of this, observing that “97% of the LMS market can now connect to Wimba.” Looking back on the Patent Pledge from a perspective of three years, Severance believes it was “a significant development” in the evolution toward open standards and increasing interoperability. He added that Blackboard and Pearson (another commercial LMS manufacturer) “have done a great job in the IMS Consortium,” and he noted that “Matt Small is a good friend of mine now.”<sup>57</sup>

Michael Feldstein concurs with Charles Severance’s assessment, writing in his *e-Literate* blog on November 18, 2010, in an entry entitled Blackboard, Ray Henderson, and Progress:

“When Blackboard acquired ANGEL back in May of 2009, there was a lot of noise about how the acquisition was going to change the company. I wrote a post then called Three Tests for the ‘New’ Blackboard, which outlined some indications I was going to be looking for to see whether there was substance behind the hype. The first sign I got that something was changing happened within days (hours?) of my publication of that post, when Ray Henderson publicly accepted my challenge on Twitter. How well have he and Blackboard done since then?

Really well, actually:

*Challenge 1, drop the patent suit:* Done. To be honest, I did not expect this to be the first one ticked off the list. But it was. Blackboard and Desire2Learn settled in December of 2009.

*Challenge 2, support IMS Common Cartridge, including export:* Done. I wasn’t following this too closely, so I don’t know exactly when this was released, but sometime this year Blackboard provided full support for IMS Common Cartridge, including export.

*Challenge 3, support IMS Learning Information Services:* In Progress. Yesterday, Ray Henderson declared in a blog post that Blackboard is “committed to supporting” LIS. To my knowledge, this is the first time that Blackboard has

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<sup>57</sup> Information and quotations from notes taken at EDUCAUSE 2010 Annual Conference, Anaheim, CA, 10/15/2010.

made an unequivocal, public commitment in writing to implement the standard. This declaration has been backed up by activity in the LIS working group that indicates Blackboard is actually taking steps to implement the specification.

If Blackboard succeeds in implementing LIS by the 2011 IMS Learning Impact conference, then Ray will have met all three challenges within 24 months of coming to Blackboard. That's pretty impressive."

An observation which emerges from the vantage point of time and hindsight is that Blackboard's LMS patent and subsequent IPR enforcement-related activities, major areas of concern and controversy when they were first announced and throughout the lawsuit and appeals process, may actually have helped establish the foundation for current advancements by the IMS Consortium and others in increasing the openness and interoperability of present and future Learning Management Systems. Whether the IT leaders who participated in this study overreacted to Blackboard's actions and announcements at the time, or whether Blackboard Inc. changed their business practices to be more collaborative and interoperable *as a result of* the higher education community's reaction to their IPR-related actions, is a promising area for future research.

Regarding Blackboard's acquisition by a privately owned investor group in July, 2011, questions have arisen about how the sale of the company might affect Blackboard's current customers and Blackboard's recent progress toward increased openness and interoperability as just discussed. While it is too early to know about future consequences, Blackboard's new owners and current management have assured that no changes in products, services, or pricing are planned, and current Blackboard leadership will remain in place. According to Blackboard Learn President Ray Henderson:

“It’s natural that news of this magnitude would raise questions for our clients. Will there be sudden changes to policy, pricing, or strategy? It is our plan that the key strategies that brought us here will continue to guide our path. Critical to our success in recent years has been our focus on Blackboard’s performance on the fundamentals, sustaining the steady improvements we’re making in support responsiveness, openness, transparency, and quality. I envision no change in our underlying commitment to these fundamentals. And I’ll reassure you that we expect our pricing practices to remain within historical norms for the foreseeable future.”<sup>58</sup>

#### 6.2.4. *Blackboard v. Desire2Learn – IT Leaders’ Perspectives on the IPR Litigation*

As indicated in the Update section (6.2.3) above, Blackboard and Desire2Learn settled their protracted legal dispute late in 2009. Following, is the joint press release issued by the two companies announcing their settlement:

*Blackboard, Desire2Learn Announce Patent Cross License Agreement and Settlement of Litigation*

Washington, D.C. and Kitchener, ON, Dec 15, 2009

Blackboard Inc. (NASDAQ: BBBB) and Desire2Learn Inc. (Desire2Learn) announced today that the companies have reached an agreement to license each other's worldwide e-learning patent portfolios and settle all outstanding litigation between them. Under the terms of the Agreement, the companies will dismiss their pending litigation.

"We are pleased to have resolved our differences with Desire2Learn," said Michael Chasen, President and CEO of Blackboard. "Bringing this matter to resolution is in the best interests of both of our organizations, our respective clients and the broader education community."

"We're pleased to enter this agreement, and believe it is in the best interests of the educational community," said John Baker, President and CEO of Desire2Learn. "We will continue to focus our attention on our clients, as well as the development of our products and services."

Additional details of the settlement were not disclosed.<sup>59</sup>

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<sup>58</sup> Ray Henderson’s Blog, 7/1/2011: <http://www.rayhblog.com/blog/2011/07/blackboards-next-chapter.html>

<sup>59</sup> Press release reprinted from Desire2Learn Web site: [http://www.desire2learn.com/news/newsdetails\\_154.asp](http://www.desire2learn.com/news/newsdetails_154.asp), 12/2/2010.

At the time of the interviews with the CIOs and Learning Technology Directors in this study, *Blackboard v. Desire2Learn* had not yet been settled, and the case was under appeal. The IT leaders interviewed for this research were asked to share their perspectives on the pending legal case, including its legitimacy, Blackboard's subsequent lawsuit (2008) against the United States Patent and Trademark Office (USPTO)<sup>60</sup> (see Section 6.5, *Patent, Copyright, and Alternatives for IPR Protection of Software-based Products and Processes*), how they believed the IPR enforcement lawsuit would be settled, and their thoughts on how they felt it *should* be settled. These areas of inquiry helped to elicit the respondents' larger views on the efficacy and appropriateness of traditional IPR protections like patent and copyright as they are being applied to software-based products and services like Learning Management Systems, the topic of Section 6.5.

As senior level information technology leaders, the participants in this study have been involved in the selection and administration of Learning Management Systems since their inception. As a result, they are highly knowledgeable about the history of this area of educational technology, including who the major individual and institutional contributors were to its invention and development. The consensus of these CIOs and Learning Technology Directors, as evidenced in the three representative responses which follow, was that the origins of all major commercial Learning Management Systems can be

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<sup>60</sup> In April, 2010, Blackboard ended its appeals at the USPTO, and the '138 patent was terminated. According to Blackboard spokesman, Matthew Maurer, "Blackboard chose to abandon the '138 patent in April and not pursue additional appeals. Upon its official termination by the USPTO earlier this month, we removed it from the Patent Pledge and stopped marking it on our products and Web site as required by law" (*Chronicle of Higher Education, Wired Campus*, [Online Edition], 12/2/2010).

traced to a few U.S. and Canadian higher education institutions, including Cornell University (CourseInfo, later Blackboard), and the University of British Columbia (WebCT).<sup>61</sup>

“You can go out on Wikipedia and there’s an entry on VLE’s, Virtual Learning Environments, sort of tracking the development of the VLE as a product, as a product category, and how much that development was done and initiated by institutions of higher education. So you know, there was – whether in fact attorneys agree with this – I think there’s the conventional sort of understanding within higher education that this has been technology and software that’s been produced by universities or other institutions of higher education, and that they’re in the public domain. I think there’s that legal term, what is it... prior art. There’s plenty of prior art, and it’s important to try to keep that stuff in the public domain so that we can continue to innovate in higher education. Partnering with organizations that are attempting to expropriate that and enclose it, works against at least the long term interests of higher education. I mean, I think that’s how I would characterize it in a nutshell” (R-02).

“Well, certainly the Blackboard patent itself is something I’ve been concerned with... and my sentiment is very much that some of what Blackboard is claiming to be uniquely theirs was, in fact, developed in a collaborative way within the higher ed technology community. So, I have a very negative view of their patent claim and the way they’ve used it” (R-14).

“You know, I’ve been in this business a very long time, and it really saddens me in some ways to see so many commercial products that, of course, had their history and their beginnings on the public side” (R-01).

Based on this conception that the original Course Management Systems, the basis for today’s commercial LMS products, were invented at universities, and later refined through a series of collaborative efforts and partnerships within and across higher education and the private sector, the IT leaders interviewed were in agreement that Blackboard’s patent had been improperly awarded. Consequently, any litigation resulting from that patent, they reasoned, like Blackboard’s patent infringement suit against

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<sup>61</sup> See Chapter 5, *Blackboard v. Desire2Learn - Context of Patent Infringement Case*, for a more detailed summary of this history.

Desire2Learn, was improper and without merit. With regard to the question of the likely outcome of *Blackboard v. Desire2Learn*, the IT leaders provided a range of responses. Several emphasized that they were not lawyers, and therefore felt unqualified to give an opinion, since they said they lacked an understanding of patent law and the intricacies of this particular lawsuit. Of those respondents who did express an opinion or prediction, they were largely split about whether Blackboard would win or lose. On their preferred outcome, however, there was greater alignment, with most of the IT leaders thinking that it was important that Blackboard's claims of infringement be disallowed. What emerged from a further analysis of the data in this area of inquiry was a strong consensus and concern that the outcome of this lawsuit would likely have significant implications for the future innovation and advancement of Learning Management Systems. The CIOs and Learning Technology Directors were emphatic that the case be resolved in a way that would encourage, rather than restrict, innovation. One Learning Technology Director expressed this succinctly: "I don't think Blackboard should get a patent for this. I think they should drop it and just move on... move on to the next innovation" (R-12). Another respondent, one of the CIOs in the study, observed: "Ultimately, I think Blackboard has a good product. They should compete in the marketplace with any other player who has a similar software. You know, fight it out in the marketplace, not in court and in the patent office" (R-01).

Finally, responding to the question of how the lawsuit might turn out and how he thought it *should* turn out, a third study participant, also a CIO, managed to summarize the prevailing beliefs of the IT leaders in the study, while simultaneously predicting with good accuracy the outcome of the *Blackboard v. Desire2Learn* case:

“You know, to me, I think the best protection for the vendors... I mean clearly they don’t want other vendors to be able to come along and steal their proprietary stuff or their techniques. But you know, it’s like, how do you protect stuff that goes up on the Web? I think, to me, the best protection for a company is to provide the support, the hosting, and also be able to have the interoperability features to allow faculty to be innovative and create new things, and keep up with the times – which means that you have to have something, first of all, that accepts materials from all kinds of places. Secondly, you have to have a system that if somebody wants to move their material out, it’s not that hard to do. Now, that may sound counter to being proprietary and locking people in, but I think that’s the way vendors are going to survive. They’re going to have flexible tools that you can get things in and out easily, because quite frankly, if you don’t have a tool that’s easy to use, and is innovative, and has all the new features in it, then you don’t deserve to be in business. And so, that sounds like a harsh statement, but that’s the way life is” (R-13).

Charles Severance and Michael Feldstein, in their respective assessments of Blackboard’s recent efforts toward interoperability (Section 6.2.3), and the IT leaders’ perspectives on Blackboard’s IPR litigation, reported here, support a major premise of Merges & Nelson (1994) regarding the effects of patent scope on innovation (see Chapter 2, *Literature Review*, pp. 26-27):

“In the case of cumulative systems technologies, empirical evidence appears to support the hypothesis that the granting of broad pioneer patents, rather than making subsequent invention and development more orderly and productive, actually complicates and blocks development.”

Consistent with the final outcome of *Blackboard v. Desire2Learn*, Merges and Nelson suggest that cross-licensing<sup>62</sup> and “a regime where intellectual property rights are weak or not stringently enforced” can lead to a period of very rapid technical advance (Merges & Nelson, 1994, p. 16).

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<sup>62</sup> In a cross-licensing agreement, two or more parties agree to share their intellectual property, permitting access to one another’s patent portfolios.

### *6.3 Differences in Culture between Higher Education and Commercial LMS*

#### *Manufacturers*

The perception that a cultural disconnect exists between the higher education community and the community of commercial Learning Management System providers was a recurring theme throughout the interviews, resonating strongly with the IT leaders who participated. One respondent, a Learning Technology Director for a large state university system, provided this assessment:

“If you’re in the higher education market, be more creative, because that’s what academics want to see, and if you can be more innovative, then sure, you’re always going to be leading the pack. But if you’re going to spend time negatively going the other direction, trying to shoot your competitors, it’s like ‘give up,’ because you’re just going to be pouring gasoline on an open fire. We don’t need that kind of... whatever you want to call it... that kind of attitude, and culture, and atmosphere” (R-15).

Similar comments by other CIOs and Learning Technology Directors earlier in this chapter have already alluded to this area of concern. While observations regarding this phenomenon of cultural differences were most often expressed about Blackboard and its IPR enforcement activities, this is at least partially attributable to Blackboard having been a focal area of the portion of the interviews exploring the impact of IPR related issues on LMS selection decision-making. The concerns expressed by CIOs and Learning Technology Directors regarding cultural differences went beyond Blackboard, and extended to experiences they had had with other commercial LMS vendors as well.

A finding which emerged from the research is that the IT leaders who participated in this study, whose institutions use a proprietary LMS, have relationships with and expectations of their commercial LMS providers that are, in some ways, uniquely different from the

relationships and expectations they have with other vendors with whom they regularly do business (e.g., software vendors like Adobe, Microsoft, and Oracle; hardware vendors like Dell, HP, and Sun; and utility providers like electric and telephone companies). A number of respondents felt that commercial LMS providers should have a deep and special level of dedication and engagement with their higher education clients because of a shared commitment specifically to education, a shared history, and because the principals of these companies, at least at the beginning, had come from higher education. Such relationships are rarely expected from the aforementioned software, hardware, and utility providers. A possible explanation for this may relate to the historical origins of commercial LMSs as described in Section 6.2.4 above. This idea of an expectation of “shared values” and “shared goals” was articulated by several of the IT leaders.<sup>63</sup> The Learning Technology Director who spoke about cultural differences earlier in this section, summarized the consensus view of these IT study participants:

“Higher education tends to want to be connected to companies that care about students and learning and teaching and faculty, and understand the culture rather than are here to make a buck. Now I understand that they have to make a buck in order to survive, I’m clear about that, but I don’t feel like they [Blackboard] try to match our culture, and I felt that WebCT... we were a WebCT system, so I’m a little biased... but I’ve heard multiple WebCT campuses say that they just felt that WebCT knew how to include people in conversations, how to be a part of the culture, you know? They had people who were teaching, they had people who were really... had the essence of wanting to participate rather than ‘I’m here to sell you something’” (R-15).

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<sup>63</sup> A related area for future research would be an investigation of whether higher education institutions have similar expectations of shared values and shared goals for the commercial companies who provide their Enterprise Resource Planning (ERP) administrative services and infrastructure, like Jenzabar, PeopleSoft, and SunGard Banner. Anecdotally, this appears to be the case.

This observation about WebCT having been a company more closely aligned than Blackboard with the interests and values of higher education was repeated by several of the CIOs and Learning Technology Directors. Two IT leaders suggested that this quality, the ability of an LMS vendor to understand the culture of higher education, can have a direct effect on the Learning Management System selection decision-making process:

“Yeah, you know, we’re in higher education. We’re about the maintenance of culture and the exchange of ideas. And it [Blackboard’s lawsuit] was a shoddy move that was anti-competitive. That, at least from what I’m seeing play out between the patent office and the courts, didn’t have, wasn’t justified... and, actually, the biggest thing it’s done in my mind is make me more interested in understanding about Desire2Learn. It’s one of the things we will look seriously at the next time we’re faced with an adoption evaluation. I don’t know whether they can do what we need, but we’re going to look at it. That said, you know it’s not an entirely ideological thing... I think we have to be fairly pragmatic. We’re not going to make these choices purely out of theological or ideological reasons. We ultimately have to select the collection of tools that is going to be in the best interest of the faculty and the students” (R-06).

“So, when we were investigating these companies, and trying to decide which Course Management System to select... you know, Blackboard is a very corporate culture company. That was a huge turn off to higher education from the beginning, and one of the huge marks against it in our evaluation process. But WebCT was the mirror image of that, where they were very much in the higher education market. They understood, they responded really well to it. Those were huge factors I think, too, in the final evaluation” (R-12).

Another area of cultural difference which emerged from the research concerns language – the specific words and expressions used by members of these two interconnected but separate communities. It is commonplace, for example, for commercial LMS vendors to refer to colleges and universities who use their products as higher education “partners,” rather than as “customers” or “clients” - more common expressions in the marketplace of products and services. This is, perhaps, intended to help reinforce the aforementioned desirable quality of shared values and goals. These two cultures also refer to time and

projects differently. Where the higher education community measures time in *semesters*, *terms*, and *academic years*, and refers to institutional *goals* and *initiatives*; the commercial LMS vendors speak in *quarters* (e.g., “We will have the new gradebook module in Q2 of 2011”), and goals and initiatives become “deliverables.” While it can be argued that these and other language differences represent a somewhat superficial distinction, it does support the premise that higher education administrators and commercial LMS vendors come from different institutional cultures - and communication has implications for how people interpret each others’ messages and intent. A related observation about language and communication, noted by some IT leaders, was a sense that the language used by commercial LMS vendors is sometimes cautious and guarded, with company representatives appearing hesitant to speak about technical problems or product plans until their corporate offices have “signed off” on the conversation.<sup>64</sup> This “guarded speak” contrasts with communication in higher education, where the cultural norm is generally a free exchange of ideas and the ability to speak openly and frankly.

The term, *corporate culture* (see comment from Learning Technology Director R-12, p. 148) was used by study participants to describe certain behavioral characteristics of the proprietary Learning Management System companies. Corporate culture, as defined by these IT leaders, is characterized by a top down, tightly managed executive business structure; a tendency, especially by Blackboard, to be highly competitive in the

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<sup>64</sup> When asked about this policy, a Blackboard company representative explained that product managers and technical personnel are encouraged to not engage in discussions about product issues or future development plans which could later be construed as having represented an “official company commitment,” and which could have legal implications if, for example, discussed features, never become part of future product releases (conversation with Jennifer Roth, Blackboard Regional Sales Manager, at Southern Connecticut State University, 3/26/2009).

marketplace; a reliance on corporate lawyers to manage business transactions;<sup>65</sup> and a “traditional business culture” approach to social interaction with college, university, state system, and prospective clients. This last characteristic, the methods that some proprietary LMS vendors employ to build and perpetuate relationships with their clients, was a topic raised by several respondents. In particular, the ways in which some of these companies engaged senior level administrators, especially those with LMS selection and renewal decision-making authority, generated negative criticism:

“You know [in our state university system], there were a lot of really ugly kinds of things going on, and Blackboard had been wanting to put our overall CIO on their advisory Board, and he knew *nothing* about Learning Management Systems—zero, nil, nada. And he had nothing to do with it, except that five layers down from him were the people who were running it. Yeah, but they put him on their Advisory Board, and they flew him to Australia, and this, that, and the other thing. It was nasty... so I lost a lot of respect for them [Blackboard] in that regard” (R-05).

“...Also, WebCT’s culture kind of sickened me a little bit, too, because they were also kowtowing to the higher up decision makers in terms of buying them expensive dinners. I felt like they were trying to buy their [LMS selection] votes, basically. I knew what was going on. And I felt our senior administrators were caught up in that, too. I had a very bad reaction to it. That’s one of the other reasons I abstained from the voting, because I saw that happening a lot and I just thought, ‘Was this a really fair process, or not?’” (R-12).

An observation related to this area of criticism which emerged from the data was that disapproval of proprietary LMS companies’ use of perquisites (or “perqs”) like inviting

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<sup>65</sup> As alluded to earlier (see comment by CIO R-14, page 127), some respondents were particularly critical of the ways in which commercial LMS vendors engage their lawyers - not only over IPR-related disputes, but when regularly negotiating contracts, establishing Service Level Agreements (SLAs), and defining the scope of licensing terms and numbers of active student/faculty users. This use of lawyers, some respondents felt, provided further evidence of a difference in institutional cultures, since the higher education community tends to rely less often than the business community on attorneys to resolve problems and establish agreements.

senior IT leadership to sit on Advisory Boards, participate in CIO-Corporate Executive Roundtables, and attend lunch and dinner meetings at expensive restaurants, came from some Learning Technology Directors in the study, but from none of the CIOs. One possible explanation for why this may have been considered an acceptable practice by the CIOs, but was deemed unacceptable by the Learning Technology Directors, was that the former were on the receiving end of these benefits. Another possibility is that the Chief Information Officers, as more senior level administrators, have a greater familiarity with how large companies regularly interact with major clients, including colleges, universities, and state systems, while the Learning Technology Directors are usually not involved in transactions at that level. For many in this latter group, interaction with the LMS vendor may be one of their few frames of reference and experience regarding big ticket vendor-institution relationships.

A finding from an analysis of this area of the data is that the use by vendors of “good” restaurants, as well as golf outings, ballgames, and other “social” activities - long a fixture of how companies “close the deal” with their customers - provided further evidence, especially to the Learning Technology Directors in the study, of a cultural difference between the higher education community and the community of commercial LMS manufacturers. This dimension, the ways in which commercial vendors engage higher education decision-makers with purchasing authority, would be a useful topic for future research, since it raises a number of ethical and legal questions.<sup>66</sup>

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<sup>66</sup> In the State of Connecticut, for example, individuals with decision-making authority may not receive any items or services exceeding \$50 in value annually from any vendor or other individual with whom the state does or may do business. Even that level is frowned upon by some administrators for the appearance of impropriety it may create. In many states, public university and other state officials with fiscal authority above a certain level are required to undergo annual ethics training; and they may be required to file annual

A final area of cultural difference noted by some respondents related to ways in which the proprietary LMS companies' sales representatives can impact the selection decision-making process. Several IT leaders remarked that they felt that some sales people employed by the commercial Learning Management System vendors lack an adequate understanding of the technical capabilities, features, and limitations of the products they represent. As a consequence, misinformation can adversely affect the quality of selection decision-making, with the result that sometimes only after a Learning Management System has been purchased and installed, does the institution learn what it's not able to do. This problem, some respondents suggested, can be successfully ameliorated by vendors deploying sales teams comprised of *both* sales people and technical specialists. Another area noted with regard to the product sales process, had to do with differences in purchase timing between the institutions and the vendors. The timeframe to commit to and complete a purchase by higher education institutions, especially purchases of the magnitude of a Learning Management System, is usually dictated by the specific procurement policies that an institution is required to follow (see *Purchasing Rules and the LMS Selection Process*, Chapter 4, pp. 85-87). This can sometimes take several months or longer, and is usually not a problem for the colleges, universities, and state systems, since they are already familiar with the timeframes their institutions require for completing large purchases and, therefore, plan accordingly. The sales people, on the other hand, are usually paid on a commission basis, or are eligible for bonuses, and some have quotas to meet at specific times during the year. As a result, some respondents

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statements of financial investments and related income-generating activities, sometimes referred to as "Conflict of Interest" statements.

reported having experienced a degree of pressure from LMS vendor sales representatives anxious to get contracts signed by a specific date (R-10, others).

In summary, the CIOs and Learning Technology Directors in this study believe that cultural differences exist between the higher education community and commercial LMS manufacturers. These differences are manifested in values, language, corporate culture, and contractual and procurement practices. Several IT leaders expressed their preference for entering into long term relationships with those vendors who “get it” - who more closely embrace higher education’s mission and goals (R-12, others). Conversely, they are less inclined to enter into relationships with companies they deem “too corporate,” too focused on profitability to the extent it harms collaboration and innovation (R-14, others). Nevertheless, as the next section will illustrate, the IT leaders in this study seek to achieve a balance in their decision-making between risk and selecting what they believe to be the best learning management products for their institutions - sometimes despite their dislike for a preferred LMS’s manufacturer and their business practices and behavior.

#### *6.4 IPR Enforcement and its Effect on LMS Selection Decision-making, and on Innovation*

In their research on the impact of patent scope on innovation, based on an evolutionary theory of individual and organizational behavior, Robert Merges and Richard Nelson (1994) provide a useful framework for considering the impact that the granting and enforcement of patents and other intellectual property rights protections may have on the LMS selection decision-making process by higher education IT leaders (for a summary of

Merges' and Nelson's work in this area, see Chapter 2, *Literature Review*, pp. 26-27).

Merges' and Nelson's research supports the hypothesis that broadly constructed patents can have a direct effect on innovation by causing inventors to become less motivated to invent for fear that the holder of a pre-existing and broadly constructed patent may seek legal remedies against them, claiming patent infringement. While this so-called "chilling effect" can have a *direct* impact on the innovation and creativity of inventors by constraining their work (i.e., how much effort an inventor is willing to invest in the development of a product or process he or she may be prevented from selling or sharing); it can also have a related, but *less direct* impact by creating risk concerns on the part of decision-makers considering a particular product for purchase if that product may conceivably have IPR-related problems. If the threat of IPR enforcement spills out into marketplace competition, and begins to influence purchasing decisions, then that, too, can negatively affect innovation and future product development.

#### 6.4.1 *IPR and Concerns over Risk*

In the specific area of focus for this study, the decision-making process when selecting an institutional Learning Management System, some of the IT leaders interviewed described concerns they had had relative to IPR enforcement, particularly regarding Blackboard's patent infringement suit against Desire2Learn, which affected their willingness to consider certain proprietary products or open source alternatives. One respondent, the CIO for a private research university, expressed these concerns directly:

"So... from a decision perspective, and maybe... I don't know how you put 'wuss' into your Ph.D. thing, but I might be considered a 'wuss.' I would not be interested in pursuing a Desire2Learn alternative when I know that there may be some issues still hanging around relative to the patent, and the rights, and that sort of thing. So that thing just keeps me, shy's me away from being an entrepreneur

or a pioneer. And I know that Blackboard in the past has been sued, too. I, as a CIO, have better things to do than...unless there's a compelling reason to go to another product. If there's something out in the press on it, if there are issues out there, I don't need to deal with those kinds of issues. And if there isn't a compelling reason [to change LMSs], I just skip that alternative. And so, that's an impact of the potential patent infringement. I don't even want to get involved in that when I'm trying to stay to the core, and that is to get nervous faculty members, okay, on the best solid basic system" (R-11).

A finding which emerged from this portion of the interview data was that one dimension of reaction to the enforcement of IPR rights by proprietary LMS manufacturers like Blackboard is to generate varying levels of risk concern, or at least risk awareness, by IT leaders considering new or replacement Learning Management Systems. While this was a significant issue for some respondents, it was less of an issue for others. The following responses provide some examples of the continuum of these positions regarding risk expressed by participants in this study:

"[We now ask] more pointed and focused questions that would not have been asked before. And certainly when you talk about any type of development into the [Learning Management] Systems, both from the developer point of view, and also from those that might be acquiring or using whatever the product is, I think that will be a heightened issue about 'Well, okay, it's developed - what do I need to do to legally ensure that I've got the use of it for whatever purposes?'" (R-11).

"I mean I'm concerned even that, you know, higher education is doing their own open source stuff. Blackboard, at some point could... they claim right now that they're not going to go after open source... Yeah, well what's to stop them once they sue the Patent Office about how things need to be patented, and then come back to open source and say, 'Well, we invented this, and you stepped on us'" (R-15).

"Yes, I don't think anyone [on the LMS selection committee] felt overly strongly about the intellectual property rights as much as I think there was more of a concern about not wanting to put the colleges and the consortium in harm's way" (R-09).

"No, I think it's really an internal issue [the process used by the institution to select an LMS]. I don't think the policy of intellectual property will really affect what LMS we go to" (R-07).

“Well, yeah, I think about it, but I wouldn’t shy away from a product because they were being challenged. If I were looking at Desire2Learn, and I liked the product... I get very upset with companies like Blackboard, you know, who seem to be using the system in ways that it shouldn’t be used” (R-04).

A possible explanation for the range of responses to risk articulated by the CIOs and Learning Technology Directors in this study, and reflected in the comments just presented, is that it depends to some extent on the individual personality and attitude toward risk that these individuals have in general. Some people tend to be risk averse, while others are risk takers, and this would reasonably be expected to be reflected in their leadership style and approach to decision-making.

Another factor conceivably affecting an individual IT leader’s willingness to accept risk may relate to characteristics of the institution where he or she works. In a smaller-sized college, at an institution where only a small percentage of the academic program relies on the LMS for support, or where the IT department enjoys a positive reputation, there is, perhaps, less at stake than at a university or state higher education system with a larger population, at institutions where the majority of instruction is delivered via the LMS, or where the IT department has experienced credibility or reliability issues. While further research and an expansion in sample size would be necessary to properly investigate this aspect of risk (institutional context), it is worth noting that two of the respondents in this study (R-09 and R-15), IT leaders who expressed particular concern about not exposing their institutions to risk, represented large, multi-institutional state systems.

Within the context of LMS selection and the possible effects of IPR enforcement on that process, the institutions considering Desire2Learn as a major LMS selection option faced

a different set of risk issues than those who did not. For those IT leaders reporting that Desire2Learn had been considered or selected as their institutional Learning Management System while Blackboard's lawsuit against Desire2Learn was pending, an additional "indemnification question" was asked: "*When you selected, or were considering Desire2Learn as your LMS, did Desire2Learn guarantee you that if you adopted their product, your organization would be protected from future lawsuits or potential royalty charges by Blackboard?*" Several of the CIOs and Learning Technology Directors reported Desire2Learn as having been among the proprietary and open source products they considered, with three reporting having considered Desire2Learn through the finalist stage.<sup>67</sup> Each IT leader whose institution included Desire2Learn as a finalist described a process where their institution's Office of Legal Counsel assisted the LMS Selection Committee by investigating the potential risk that might accompany the selection of Desire2Learn as their institutional Learning Management System due to the Blackboard lawsuit.

One respondent, the Learning Technology Director for a state community college system, explained the ways in which Blackboard's IPR enforcement activities factored into his committee's deliberations over an LMS selection, particularly regarding their consideration of Desire2Learn:

"It [*Blackboard v. Desire2Learn*] was certainly on people's minds, but we actually went out of our way very purposefully to say that that's not a factor in our RFP... Our primary concern was getting the best feature set for our students and faculty – and if that was going to be Blackboard, then it was going to be

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<sup>67</sup> Of those three, all state public institution systems, one chose Angel, one chose Desire2Learn, and the third selected several finalist products, including Desire2Learn, in a model where institutions across the state can select any one of several approved and contracted proprietary and open source LMS solutions for institution-wide use.

Blackboard. And so, we had several very open conversations with the entire committee to say one of our data points is *not* the lawsuit of Blackboard versus Desire2Learn. And we're not going to ask the vendors about it. We're not going to, unless we think it affects long-term viability. So, when Desire2Learn presented, we certainly did ask them, 'Look, one of the things we have in our contracts is putting code in escrow if the company ever goes under. Yeah, your company happens to be in a lawsuit right now, and one of the recent judgments was that, you know, a cease and desist order on all instances. So, you know, if we bought you, what would the effect be on us, based on the current situation?' And those were fair questions for us to ask, because we're concerned about uptime and the viability of enterprise systems. And so we asked them in that respect. But we did not ding Blackboard for suing Desire2Learn" (R-08).

As a follow-up, this respondent was asked whether he was satisfied with Desire2Learn's response to the concerns and questions he and his committee had raised:

"Well, sure, they gave us their lawyer answers, which were: 'Everything's fine, don't worry about it.' Yeah, yeah, and then you know: 'They're not going to shut us down,' and this and that" (R-08).

The other IT leaders whose systems had considered Desire2Learn as a finalist vendor described similar experiences. As the CIO from another state community college system recalled:

"Well, certainly as D2L (Desire2Learn) became a front runner, we did take a time out to speak to our legal counsel who has been following the case between D2L and Blackboard rather closely, to make sure, you know, this was really an option for us...that she was comfortable that whatever happens will be in D2L's favor, or at least not do them irreparable harm. So, it was certainly of significant concern to us, but she checked with some of her colleagues, and like I said, had been following the case, and we spoke quite openly with the President of D2L about our concerns, so that I think we're okay with it... They [people at our institution] were very disturbed three years ago when they contracted with WebCT and were immediately swooped up by Blackboard,<sup>68</sup> and so, there were a lot of questions about, 'Well, are you going to sell D2L to Blackboard?' And the President said, 'Over his dead body'" (R-09).

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<sup>68</sup> Several respondents in this study recounted similar concern and disappointment at their campuses when WebCT was acquired by Blackboard in 2005. At the time this research was conducted, several institutions represented by the IT leaders in this study were either considering, or had moved to the Angel Learning Management System. A useful direction for future research would be follow-up interviews with these individuals to learn their reaction to and assessment of Blackboard's recent (2009) acquisition of Angel Learning, Inc.

A finding from the data with regard to these IT leaders and their response to Blackboard's legal action against Desire2Learn is that while this IPR legal enforcement caused them to take extra measures to assess the risk that selecting Desire2Learn might represent, it did not deter them from considering or selecting that company's product. For the other respondents in the study who either didn't consider Desire2Learn at all, or didn't permit it to proceed to the finalist product stage, only one specifically cited the lawsuit as a reason for his decision (R-11). More prevalent reasons included Desire2Learn not having key features sought by the LMS selection committee (R-08, others), a decision to remain with the institution's current Learning Management System (R-10, R-11, R-14), or a decision to pursue an open source LMS solution (R-01, R-02).

#### *6.4.2 IPR and Consideration of Open Source Options*

Chapter 4 included a discussion of the study participants' consideration of open source Learning Management Systems when their institutions were selecting a new LMS, or replacing an existing one (Section 4.2.1, *Rationale for Selecting a New LMS*). This section reports findings from the interview data regarding ways in which legal enforcement of intellectual property rights, like Blackboard's lawsuit against Desire2Learn, affected these IT leaders' interest in and support for open source LMS solutions like Moodle and Sakai.

For some respondents, consideration of open source LMS alternatives was connected to their concerns about avoiding risk. One study participant, a Learning Technology Director in a large state university system, recalled:

“In 2005 we had several sort of summits about course management systems, and that was a big issue about what happens if Moodle gets sued or Sakai gets sued - would we be left with nothing?” (R-05).

Another respondent, the CIO from a state system of community colleges, described having limited their LMS selection considerations to the two prevalent proprietary systems at the time, Blackboard and WebCT:

“Those were the two primary ones. I think anything beyond those two at the time were considered too far out of the mainstream. You know, we weren’t looking for freeware, we weren’t looking for start-ups. We were looking for best of breed at that time, and certainly integrating it with Banner was the primary focus” (R-10).

With regard to risk associated with the consideration of open source LMS solutions, these two respondents represent different aspects of this dimension. The first respondent expressed concern about risk due to pending litigation, while the second respondent considered risk within the context of uncertainty around the long term viability of open source products.<sup>69</sup>

“I’m happy to sort of have the Moodle experiment going on here because it gives the institution some ‘flight time.’ And it has two advantages, one of which is people are actually understanding the real benefits [of open source]; and people are also understanding the real challenges. They’re getting an honest picture about it, and it’s not just, you know, ‘Oh, it’s open source, we ought to do that... it’s free and beautiful’” (R-06).

For IT leaders who expressed a belief in the value and benefits of open source, like the Learning Technology Director above, the IPR enforcement activities and disputes taking place in the commercial LMS market did not dissuade them from supporting and encouraging the use of open source LMSs on their campuses and in their state systems (R-09, others). On the contrary, most of the CIOs and Learning Technology Directors

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<sup>69</sup> As noted earlier, the concerns over the sustainability of open source LMS products correlated to the time period in which the institution engaged in the LMS selection decision-making process. For those deciding early in the rollout of such open source products as Moodle and Sakai, several respondents noted it was too early to have felt confident in their long term viability (R-06, others). For those engaged in the LMS selection process more recently, this was a less frequently articulated concern.

participating in this study emphasized that this was the whole point: that the litigation by Blackboard, the need for a defense response by Desire2Learn, the involvement of many lawyers on both sides, and the considerable expense of pursuing this course - financial as well as in terms of its interference with innovation - all made a compelling argument for pursuing or at least considering open source LMS solutions.

Finally, regarding IPR enforcement and its potential impact on open source as an LMS selection option, as already noted in Chapter 4 (Section 4.2.1, *Rationale for Selecting a New LMS*), open source Learning Management Systems, particularly Moodle, continue to have the largest number of installations and users worldwide. Blackboard's patent and subsequent IPR enforcement activities did little to alter that trajectory.

#### 6.4.3 *Intellectual Property Rights and Innovation in Learning Management Systems*

In terms of their perception of the impact of legal enforcement of IPR, like Blackboard patenting its Learning Management System and then suing a competitor over alleged patent infringement, the IT leaders who participated in this research were consistent in their belief that such actions have potential to impede innovation. One IT leader, the CIO at a private college, explained his concerns about *Blackboard v. Desire2Learn* and other cases of IPR enforcement relative to software-based products and processes:

“I think these cases will cast a bit of a shadow or at least will force entrepreneur-type individuals to be very cautious and do exhaustive kinds of research before they start inventing – that’s not exactly the right word, but maybe it is – or at least implementing new ideas and new functionality, and new applications that push that envelope, when they could be very concerned about, well, ‘Is Blackboard or some other entity going to come around and say No! No! That was mine first’” (R-01).

This idea of IPR ownership problems associated not only with the development of new software-based products, but also with innovation around earlier inventions, what Merges and Nelson refer to as “cumulative systems technologies,” was an area of IPR related concern expressed by several IT leaders in this study (R-15, others).

Another recurring IPR enforcement-based observation expressed by the CIOs and Learning Technology Directors, and noted throughout this chapter (see, for example, R-01’s comment, p. 144), concerned a strong preference to see Blackboard and other LMS vendors “compete in the marketplace, instead of in the courtroom or at the Patent Office” (R-08, others). This concept, that innovation is enhanced and accelerated by competition rather than by IPR legal enforcement, is consistent with another of Merges’ and Nelson’s key research findings:

“In cumulative systems technologies, superior design, production, and marketing, rather than strong patent protection, are the principal source of profit” (Merges & Nelson, 1994, p. 21).

As already observed, most of the IT leaders who were familiar with Blackboard’s Learning Management System thought it was among the best of the proprietary LMSs, and most believed that continuing to provide and improve upon a good product would be a more successful business strategy than trying to enforce their IPR through litigation.

As one respondent communicated to Blackboard at the time:

“The way you keep people buying [your products] is you make them the best. You make them the absolute best, and people will buy it. Even if you’re being jerks in the courtroom, they’ll still buy it if it’s the best” (R-08).

This Learning Technology Director had served on Blackboard’s Strategic Advisory Council during the time of their litigation against Desire2Learn, and he recalled how

members of the Advisory Council had advised Blackboard not to proceed with their IPR enforcement activities, citing its damaging effect on innovation, reputation, and business:

“As Blackboard got into this patent dispute, our common advice, advice from all of us was, ‘You have got to stop. Yes, you are right legally, we do not dispute that. So say you were right, stop, and move on. Because the perception is terrible, you are putting your time, money, and resources into lawsuits and not software innovation. And meanwhile, others will innovate past you, and you are missing the point. If you are a software company, you need to be about innovation.’ And it just didn’t sink in” (R-08).

The IT leaders in this study were also asked to share their perspectives on how, if at all, they thought the legal enforcement of IPR affected the work and innovation of applications developers and programmers on their staff involved with support of the Learning Management System and related eLearning tools. For those respondents who employed such individuals - not all did - most felt that IPR and patent-related issues had little impact on their technical staff, few staff members discussed it, and few seemed to be following the *Blackboard v. Desire2Learn* case:

“My sense is that most of the people who work with the system at that level are not engaged in that issue. I think they view it [the Learning Management System] as the product that they’ve been hired to work with, and they may like or dislike the ease with which it can be worked with, but I don’t think their focus would be on the kind of big picture issue of whether it’s good for higher ed that Blackboard got a patent on something” (R-14).

In this respect, it appears, according to the study participants, that IPR legal enforcement developments and issues are more of a concern to IT leaders than they are to IT professionals in higher education who work hands-on in the area of application development and programming.

Some CIOs and Learning Technology Directors emphasized a distinction between the programming staff not being particularly engaged in developments regarding legal

enforcement of IPR, but believed, with regard to innovation, that a majority of them have strong feelings about open source, the importance of access to open APIs,<sup>70</sup> and having the ability to work in a collaborative and interoperable environment (R-05, R-06). One of the Learning Technology Directors, responsible for a state system of community colleges, explained the importance he feels application developers and programmers attach to this:

“I think that when you talk to the developers, their overwhelming driver for what matters to them about intellectual property really has little to do with patents. I think what they’re going to be concerned about is the openness of the protocol. They’re going to say to you, I think, ‘We like working with software platforms that have easy open APIs to work with. Code we can work with, documentation that’s clear. There’s a community around it, tools like Eclipse can interface with it easily. You know, it’s a piece of cake for me to suck data out into my data mart, re-manipulate it in a .net environment, and shove it this way. I’ve got to be able to use Ruby on Rails and write some simple code. And, you know, it better be able to flow into Ajax well, because that’s what I’m using on my Web site to do drag and drop.’ Look no further than Google Labs and the stuff that Google puts out where usually it’s very open APIs. And look no further than Google Maps, and people have mashed that thing up in so many different ways Google can’t even keep track... and that is... it’s downright brilliant. So, it’s that openness, ease of use which I think is just core for anybody doing development” (R-08).

In summary, with respect to the legal enforcement of intellectual property rights, the IT leaders participating in this study were in agreement that this can have a negative impact on innovation by creating a “chilling effect” on potential inventors and those seeking to build on earlier, cumulative work if they are fearful that their efforts may later be found “infringing.” It can also negatively impact the diffusion of innovation by limiting

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<sup>70</sup> An API, or Application Programming Interface, is a particular set of rules and specifications that a software program can follow to access and utilize the services and resources provided by another program that implements that API. It serves as an interface between different software programs, facilitating their interaction (from *Wikipedia* entry under Application Programming Interface: [http://en.wikipedia.org/wiki/Application\\_programming\\_interface](http://en.wikipedia.org/wiki/Application_programming_interface))

marketplace competition and the availability of different Learning Management Systems to choose from, both proprietary and open source. The CIOs and Learning Technology Directors believe it is important that LMS manufacturers compete in the marketplace on the basis of product quality and features, rather than in the courtroom on the basis of legal, IPR-based technicalities. For those IT leaders who manage application development staff, there was consensus around the perception that these programmers tend not to focus on IPR-related enforcement issues, like Blackboard's lawsuit; however, they do highly value the ability to work in an open, interoperable, and collegial environment. An additional observation, raised by one of the CIOs, was his belief that issuing patents can also adversely affect innovation by short-circuiting the research and development process and the opportunity for third party verification and validation (of claimed capabilities and features) if a product "goes commercial too quickly" (R-01). Despite these concerns, when selecting a Learning Management System for their institutions or state systems, the IT leaders in this study largely put issues of IPR enforcement aside, and seek to obtain the best LMS products available for their students and faculty - even if they disapprove of or are uncomfortable with the manufacturer's business practices. Several of the IT leaders reported that their recent experiences with commercial LMS manufacturers and their IPR enforcement activities made a strong case both for considering open source options, and for reconsidering the appropriateness of current IPR protections like patent and copyright as they're being applied to software-based products and services like Learning Management Systems - the topic of the next section.

## *6.5 Patent, Copyright, and Alternatives for IPR Protection of Software-based Products and Processes*

A final area of inquiry during the interviews with IT leaders concerned their views on intellectual property rights enforcement and the options for IPR protection that might be most suitable for Learning Management Systems and related eLearning technologies. As noted earlier, the Chief Information Officers and Learning Technology Directors who participated in this study had significant years of senior leadership experience, and many had worked in multiple institutions. Most had been in “the IT business” long enough to have witnessed a number of landmark software-related intellectual property rights cases prior to Blackboard’s, including *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* (over a data processing system, see Chapter 2, Literature Review, pp. 19-22), *Apple Computer, Inc. v. Microsoft Corporation* (over use of the graphical user interface), and multiple challenges to Amazon.com’s One-Click business method patent (a technique for online ordering of merchandise). Having seen this area of IPR legal enforcement evolve, especially over the past 12 years, many of the IT leaders have developed a perspective on the appropriateness and usefulness of current IPR protections like patent and copyright as they’re being applied to software-based products and processes. Each of the participants was asked: “*Do you think patent is an appropriate IP protection mechanism for Learning Management Systems and other eLearning tools? If not, what do you think might represent a better approach?*” While the majority of study participants were comfortable discussing this topic, a few chose to “disqualify themselves,” explaining that they didn’t feel they had the necessary legal background and basic understanding of IPR issues to be able to engage in an informed or well-reasoned

conversation (R-06, R07, R-10, R-12). The remainder of the IT leaders expressed perspectives ranging from those who felt that patent could be an appropriate IPR protection mechanism if used within a very specific and limited set of circumstances, to those who believed open source licensing models like the GNU General Public License might be better suited for IPR management of LMSs and other software-based eLearning tools.

A recurring theme expressed by several respondents when asked about Blackboard having received their patent in 2006 was, “Yeah, they were just smart enough to get to the Patent Office first” (R-05, others). While this comment, and similar ones expressed by other study participants, appear on the surface to be just “rhetorical quips,” a closer examination of the interview data indicates that comments like these reveal a basic belief held by many of the IT leaders that Blackboard’s patent was never legitimate to begin with. The awarding of this patent, these respondents contend, resulted from the combination of an improperly staffed and poorly managed U.S. Patent and Trademark Office and Blackboard taking advantage of these shortcomings (R-08, others). Any other major LMS vendor at the time, these CIOs and Learning Technology Directors maintain, with WebCT being cited most often, could just as easily have made an equally legitimate (or illegitimate) patent claim had they arrived at the USPTO ahead of Blackboard (R-10, others).

The following comment from the CIO at a private college is representative of the concern expressed by several study participants over the qualifications of USPTO patent

examiners to knowledgeably assess the validity of patent claims relative to LMSs and other eLearning technologies:

“I would say patent could be a good approach [to protecting intellectual property like Learning Management Systems]. The problem I would be concerned about for patents is whether the people who have to judge authenticity in the Patent Office really understand this stuff. To validate a patent, I think, would be pretty hard to do” (R-04).

A good summary of the IT leaders’ criticism of the federal government’s management of the U.S. Patent and Trademark Office is provided by this Learning Technology Director, responsible for a state system of community colleges:

“I personally have done some work with the USPTO and they suffer from roughly 50% turnover annually of their attorneys. Attorneys can make a lot of money, and they don’t at the USPTO, so they leave. And the workload’s too high, and they’re sitting on archaic technology systems.... So, you know, it’s a mess, and so companies like Blackboard and other software companies take advantage of that system and try to... you know, like the whole One-Click thing from Amazon, and there’s just a lot of silly stuff out there... and the USPTO system is busted, and it’s a shame, and hopefully it will get fixed” (R-08).

While the IT leaders who commented about the patent process were consistent in their interpretation that poor outcomes in the approval of patents are attributable to a lack of skill by patent examiners and to excessive workload and poor management at the USPTO, this premise has been refuted by at least one major study (Cockburn, Kortum, & Stern, 2002) which concluded, among other findings, that patent examiners and the patent process are not homogeneous. This research found substantial variation in observable characteristics of patent examiners, including their length of experience, the amount of time they take to issue a patent, and their degree of specialization in technology areas. There is also variation in the outcomes of their examination process, including the volume and pattern of citations made and received by patents they issue, and *there*

*appears to be no strong statistical association between examiner experience or workload at the time a patent is issued and the probability of the CAFC<sup>71</sup> finding it to be invalid if it is subsequently litigated to the appeals court level (Cockburn et al., 2002, pp. 27-28).*

Further investigation would be required to determine if other studies validate the findings just reported, but this USPTO-related research helps provide a countervailing balance for considering whether or not the IT leaders' contention that improperly issued patents are caused by inadequacies at the USPTO is a meritorious argument, or if other factors may be involved, for example, inherent deficiencies in the patent instrument itself when applied to software-based technologies like Learning Management Systems.

Another development in Blackboard's litigation against Desire2Learn occurred in 2008, when Blackboard brought suit against the U.S. Patent and Trademark Office challenging their authority to reexamine the '138 patent (see footnote #60 for a summary update on the outcome of this litigation against the USPTO). The IT leaders in this study were asked to comment about this action by Blackboard, and the discussion which followed served to elicit their thinking about the overall efficacy of patent and copyright, whether these traditional IPR protections were appropriate for this area of software-based invention, or if other methods might be better. Consistent with their overall dissatisfaction over the legal actions Blackboard had taken to obtain and enforce their patent, the IT leaders in this study similarly disapproved of Blackboard's suit against the USPTO, and several acknowledged having followed this development in the press and on the Internet (R-01, R-04, R-05, R-08, R-13, R-15). The following comments, from state

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<sup>71</sup> Court of Appeals for the Federal Circuit

system level Learning Technology Directors, are representative of the reaction the IT leaders in the study expressed toward Blackboard's litigation against the USPTO:

“Well, to me, Blackboard suing the Patent Office... I mean it's a software thing then, and yes, it is a huge thing, not just for higher education, but in general. How the Patent Office patents software, period. Who cares... LMSs, Higher education [itself], anything? In my mind, I mean, that's how broad it is. But at the same time, why are we going backwards, because the minute they settle it in the legal system, we'll be on to some other format of how software needs to be patented, because we've created libraries, or things that are open source” (R-15).

“Yeah, you know, I think there's a whole lot wrong, and I think we're headed towards a major crisis in terms of patents and copyrights, because it's sort of getting to the point of absurdity in a lot of things. You know, at least I mean... also, recently a Supreme Court case came down essentially rejecting business methods patents<sup>72</sup> – and I think that was a hopeful sign” (R-05).

As perhaps another example of the “shared narrative” and “groupthink-like behavior” phenomenon described earlier in this chapter (see 6.2 *Blackboard Inc. and Blackboard v. Desire2Learn*, pp. 127-130), the IT leaders in this study were closely aligned in their point of view around the USPTO's condition as an agency, and patent's viability as an IPR instrument. Several descriptive expressions, “patent is broken,” for example, were repeatedly used by several respondents.

Regarding options for managing IPR related to Learning Management Systems and eLearning technologies, the CIOs and Learning Technology Directors in this study

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<sup>72</sup> This case, *Bilski v. Kappos*, reached the U.S. Supreme Court in 2009, and was decided in 2010. It basically concerned the patentability of a software-based business method for hedging risk associated with energy costs. The finding of the Court, while reaffirming the CAFC's earlier rejection of a patent for this process, still leaves in doubt many aspects of earlier and sometimes contradictory precedents pertaining to the patent-eligibility of software-based “business methods.” The significance of this latest Supreme Court ruling is summarized by Darren Franklin, an IPR attorney, in the *Intellectual Property Law Blog* in an article entitled: Supreme Court Rejects Bilski Claims, Overturns “Machine-or-Transformation” Requirement for Patent Eligibility of Processes (12/19/2010): “While the significance of the *Bilski* decision will be determined in future cases, the Court's careful grounding of its ‘abstract ideas’ analysis in well-established precedent suggests that this case likely does not portend a ‘sea change’ in the law of business method patents or software patents as many hoped or feared. Patent applicants are no longer required to meet the ‘machine-or-transformation’ test, but the Supreme Court made clear that pure business methods will be scrutinized to ensure that abstract ideas are not patented.”

expressed a wide range of views about which method made the most sense. On the topic of whether or not *some* method was necessary to help incentivize innovation and protect the IPR of inventors involved in eLearning technology research and development, there was wider agreement. As one CIO observed, “I mean clearly, if you’re a vendor, you don’t want other vendors to be able to come along and steal your proprietary stuff or your techniques” (R-13). Another CIO expressed the right of inventors or developers to protect their IPR in almost identical terms: “If someone went and just totally stole something, then, I think, you know, they deserve the power of the law against them” (R-09). The other participants in the study generally shared these sentiments, whether applied to proprietary or open source products and processes, which, in the latter case, also included giving proper attribution to inventors and developers for their contributions. According to several of the IT leaders, a more difficult determination, once one accepts the premise that original creative work is entitled to IPR protection, is ascertaining what gets defined as “original creative work.” The complexity in making this determination stems from the shared origins and collaborative derivation of modern Learning Management Systems, as has been noted throughout this chapter. Merges & Nelson (1994) address this challenge of considering what should or shouldn’t be included when awarding patents for products based on cumulative systems technologies:

“Where a strong case can be made that an invention basically amounts to following out leads that have been provided by a prior scientific breakthrough, and represents a ‘first bringing to practice,’ there are double reasons for limiting the patent to just what the inventor did, and not allowing it to effectively privatize the broad use of that public science. It is bad policy as well as unjust to allow an inventor to claim for private use the fruits of what were largely other people’s work. And it is a far better social policy bet to keep inventing in the field pluralistic and rivalrous” (Merges & Nelson, 1994, p. 22).

With regard to this question of determining what portion of Learning Management Systems and other eLearning technologies should be patentable, one CIO from a state system of community colleges offered his conceptualization of the issue:

“Just speaking of the topic generically, I think because you’re a company that perhaps automates a process that is commonplace across colleges and universities [like a gradebook or a quizzing format]... you develop a software product to do that, and then you go to the market with it first... I don’t think you should have exclusive rights over anyone else attempting to automate or develop a product that facilitates that process as well. So, the fact that Blackboard did indeed develop a product that was certainly marketable across colleges and universities, and were smart enough to get to the Patent Office and get it patented first, is to their credit, and they’re right to protect their patent, certainly from a legal standpoint, and I’m not a lawyer... certainly they have every right to protect their patent and copyright privileges, whatever they may have put in place. But my own opinion is that unless there’s something really unique to what they had requested and obtained a patent for, it shouldn’t hold up” (R-10).

This position regarding IPR protection, which basically argues against the granting of patents for products that automate prior existing manual processes, the business methods category of patents, was supported by several IT leaders in the study (R-02, others).

These individuals expressed their belief that patent as an IP instrument is not inherently the problem, it is how it has sometimes been applied. Following, are comments representative of those CIOs and Learning Technology Directors in the study who felt that patent, properly applied, could be a valid method for protecting intellectual property rights associated with Learning Management Systems and eLearning tools:

“I mean clearly when a company has invested millions of dollars in development of a product which is really proprietary in nature, there needs to be some way to protect that investment, otherwise you’re not going to get that investment put in place, and hence, we’ll never get the evolution of better and better products. So there has to be some protection to ensure that the private sector continues to put in that type of investment. Having said that, it’s got to be protection of only those things they’ve invested substantial assets in that are proprietary in nature – not just a product that can be easily duplicated” (R-10).

“Well, I actually think we have quite a nice system, I think the very sort of utilitarian approach that’s originally in the Constitution we had towards copyright and patents. You know, you need some sort of incentive to create... you need to be able to value from... I mean probably some will create regardless, but I think it’s good to have some sort of incentive and profit to create. And I’m in favor of people holding copyright and holding patent rights. I think a huge problem is with the duration... you know, how long after you’re dead do you need the incentive to create? I mean the whole duration of copyrights, and maybe patents, but certainly copyright, has gotten out of control, so that’s one thing. I think, also, technology is posing a huge challenge to copyright and probably patent as well. Obviously, Blackboard didn’t create Learning Management Systems out of thin air – and we all know that. And they didn’t even improve them necessarily, that much more than everybody else. Yeah, they got to the patent office first, and so that was that. But, you know, I think technology is challenging the way that the system works, and we need to find a different kind of way to make it work” (R-05).

As noted in Chapter 3, *Methodology* (pp. 46-47), as part of the research for this dissertation, an interview was conducted with Matthew Small, Chief Business Officer and Chief Legal Officer for Blackboard Inc., who agreed that his comments could be “on the record” and attributable to him. Among the topics discussed during this interview, were Blackboard’s ‘138 patent and why Mr. Small, on behalf of Blackboard, had concluded that patent was the most appropriate way for Blackboard to secure its intellectual property rights. Mr. Small was asked the same question that the IT leaders in the study had been asked regarding patent as applied to eLearning technologies like Learning Management Systems: “*Do you think patent is an appropriate IP protection mechanism for Learning Management Systems and other eLearning tools? If not, what do you think might represent a better approach?*” Following, is Matthew Small’s response:

“Well, an advantage of patent is that there’s already a huge amount of case law. Software can easily be copied. If you have a product that cost millions to develop, you need to figure out how to protect its use and distribution. Reforms are already underway to improve patents. I think we need a different standard for software patents than what is applied to pharmaceutical or biomedical products.

There are the same concerns as with those areas of invention, except anyone can readily copy a piece of software.”<sup>73</sup>

In the interview, Mr. Small was also asked if he felt patent had been a useful instrument in enforcing Blackboard’s intellectual property rights specifically with reference to their patent infringement suit against Desire2Learn:

“In these kinds of disputes, patent is the most effective available legal remedy. All you have to show is ‘Yes, they did infringe,’ or ‘no, they didn’t infringe.’ The ‘138 patent was about something very specific – about a role-based capability. In our case, we proved no prior art, and the court determined that Desire2Learn had infringed our patent.”<sup>74</sup>

From the comments about the advantages and disadvantages of patent as an IPR protection method articulated throughout this chapter by the IT leaders, and the comments by Matthew Small, just presented, a finding that emerges from the research is that the value and efficacy of patent, at least to these study participants, is determined in large measure by who is using it and/or who is affected by it. What also emerges from an analysis of the contrasting perspectives about patent and its value from the community of IT leaders and from the chief architect of Blackboard’s IPR legal enforcement decisions is validation of a major observation by Krugman in his work on the intersection of economic theory and evolutionary biology (see Chapter 2, *Literature Review*, pp. 24-25). Krugman (1996) notes that where economists assume rational actors - individuals who normally act in their own best interest - evolutionary biologists allow for sometimes less predictable behavior, what Krugman refers to as “myopic behavior.” In these instances, one’s actions and decisions do not always align with their best self-interest. Blackboard’s

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<sup>73</sup> Telephone interview with Matthew Small, Blackboard Inc., 3/20/2009.

<sup>74</sup> Ibid.

pursuit of their intellectual property rights by suing Desire2Learn may have made legal sense at the time, and it did initially result in their patent being upheld by the court, but the damage to their reputation in the higher education community, including among their clients, was significant.<sup>75</sup> Krugman (2011) observes:

“Economics is basically about incentives and interaction - or, as Schelling<sup>76</sup> put it, micromotives and macrobehavior. You try to think about what people will do in certain circumstances, and you try to understand how individual behavior adds up to an overall result.

What economists have known since Bagehot<sup>77</sup> (with regard to financial markets) and since Keynes (with regard to goods and labor markets) is that under some circumstances seemingly reasonable individual behavior adds up to very unreasonable macro outcomes.”

The perception that Blackboard’s IPR related actions were harmful to the company’s reputation and contrary to its best interests was shared by several respondents in the study, and specifically articulated by one of them earlier in this chapter (see comment by R-08, p. 163).

In his interview, Matthew Small explained that it was never his or Blackboard’s intention to file a patent infringement suit against Desire2Learn. According to Small, “the suit didn’t need to happen.” As he recalled, Blackboard went to see Desire2Learn’s President, John Baker, privately, to request proper compensation (like royalties or a one-time settlement) for the parts of Desire2Learn’s product they asserted were infringing.

This all could have been settled out of court, Small observed, out of the court of public

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<sup>75</sup> The litigation was also expensive. While difficult to accurately determine, a number of estimates have circulated on the Internet. Michael Feldstein, in his *e-Literate* blog, has “conservatively” estimated the cost to both parties at around \$32 million (EduPatent Fight As Complicated As Ever, *e-Literate*, 4/22/2009).

<sup>76</sup> Thomas C. Schelling is an economist and Professor of Foreign Affairs at the University of Maryland.

<sup>77</sup> Walter Bagehot was a 19<sup>th</sup> century English literary, political, and economic essayist. Bagehot served as editor-in-chief of *The Economist* from 1860 until his death in 1877.

opinion. Instead of reaching a settlement, Small said, Desire2Learn decided to “go public,” issuing statements on their Web site which generally portrayed themselves as being victims of a much larger and more powerful company. At that point, Blackboard felt they had little choice but to pursue a remedy through the courts. In his interview, Mr. Small suggested that Desire2Learn had harmed themselves by their actions, and had lost significantly more market share than royalties would have represented from prospective clients who were not comfortable signing contracts with a company facing litigation, injunctions, and an uncertain future. In retrospect, and as indicated in footnote # 75, both companies experienced considerable financial consequences as a result of the litigation. Both of these proprietary LMS actors then, to return to the Evolutionary Theory, acted in ways that were economically counterproductive, and in Blackboard’s case, reputationally counterproductive, but as Krugman would say, they acted like people, not like economic models (Krugman, 1994, p. xii).

In response to the question about appropriate IPR protection mechanisms for eLearning technologies, one CIO from a public research university suggested the possibility of a hybrid approach:

“The fact that Blackboard, in my opinion, has misused patent, and that the Patent Office granted them a patent that should not have been granted, doesn’t necessarily mean that patents per se are wrong, because any kind of legalistic mechanism can be misused, I suppose. But I would think that maybe we need to look at whether the patent works in the kind of collaborative environment that the online world creates... and I suspect we’ll end up with a combination of sort of proprietary but standards-based options, and open source options” (R-14).

While the IT leader cited above and some other respondents believed that patent, if properly applied, or in combination with other approaches, could have value as an IPR instrument for software-based Learning Management Systems and eLearning tools, other

study participants saw patent as a fundamentally flawed IPR concept for this area of innovation:

“I don’t know how you can patent ideas. I just struggle with imagining how you really can do that. I think you can copyright ideas. I think there are protections there that would protect me if I have a new idea for a piece of software, that would protect me from the college across the street from us simply saying ‘Oh, there’s a good idea. Let’s take that and we’ll market it.’ I think there are protections there, but I think that’s the level of protection that’s appropriate... Maybe there is a better solution [for protecting the IPR of LMSs and similar technologies], maybe honestly there is, but I don’t think patent is it. I truly don’t. That casts such a shadow over competition, and refinement, and further development. It’s such a ‘stopper,’ if you will, that I think it does not fit with what I think of in terms of information technology and the value of that competition, and investment, and creativity” (R-01).<sup>78</sup>

Considering whether patent, copyright, or some other model of IPR protection would be best suited for software-based eLearning technologies, most of the CIOs and Learning Technology Directors concluded that a newer, more software-oriented and open source-friendly solution would be preferable. Licensing LMSs and related eLearning software in a manner similar to how Creative Commons licenses<sup>79</sup> manage non-software authorship

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<sup>78</sup> The viewpoint expressed by this respondent closely aligns with Muffatto’s (2006) discussion of this topic: “According to the USPTO’s guidelines, an idea cannot be patented but a process that leads to a real-world result can. In the case of software, the main ideas behind the software are the algorithms. The algorithms are considered processes that lead to computing results... Many argue that algorithms cannot be considered patentable processes but, like mathematical models, must be considered ideas and as such part of the public domain. According to the law in most countries, abstract ideas cannot be patented. When a programmer develops an idea (an algorithm) and creates a product with it (the software product), the inventor and product are protected by copyright laws. Though copyright prohibits the copy and use of software without the consent of the owner of the copyright, it does not prohibit software programmers from using the algorithms and techniques developed by others to create new software that can carry out different functions. In other words, what is protected is the final product, the software that has been developed, and not the abstract ideas or algorithms contained in it” (Muffatto, 2006, p. 32).

<sup>79</sup> Creative Commons offers six variations of content licenses (<http://creativecommons.org/licenses/>), all based on the principles of open source. Owners of copyrighted works, under Creative Commons, can designate whether and how they will allow their work to be used by others. Content licenses cover works of authorship *other than software*, including art, film, photography, music, literature, scholarship, course content, and Web sites (Frey, Frey, & Smith, 2009; Muffatto, 2006).

was viewed by several respondents as being superior to patent (and traditional copyright) because it takes into account the cumulative development which created these technologies, and it helps facilitate the kind of collaboration which can lead to future innovation and improvements (R-06, R-08, R-11, R-12). While these respondents cited Creative Commons as an important contributor to innovation and scholarship, one Learning Technology Director was especially emphatic about this:

“I side with the Software Freedom Foundation on almost all of the issues. I think the big issue here is that U.S. patent law and U.S. copyright law is simply out-of-date. And if you look no further than... what’s his name... Larry Lessig, and the work that he does with Creative Commons, and his latest Remix book, to really understand that because works are now born digital, there are new opportunities, and copyright sorely out-of-date, and thank God for Creative Commons. We don’t have anything to go to like that with patent law” (R-08).

During this portion of the interviews investigating current and future models for protecting intellectual property rights relative to eLearning technologies, one IT leader suggested that the IPR of Learning Management Systems should be structured the way open source products like Linux have evolved. He noted that Red Hat, Inc. developed a successful business model around supporting and enhancing Linux open source technologies,<sup>80</sup> and companies like Moodlerooms, rSmart, and Unicon are doing the same with open source LMSs like Moodle and Sakai. This is a model, he believes, where innovation can move forward, and where profitability can exist, without what he refers to as the “expropriation and privatization” of collaboratively developed software products

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<sup>80</sup> In Red Hat’s business model, subscriptions are sold for enterprise level technology and services based on open source products (Frey, Frey, & Smith, 2009). As Red Hat states on their Web site: “We share our expertise, our code, and our knowledge... we stand up for open source ideals, and we foster greater participation in the open source process.” Total 2010 revenue for the company, publicly traded on the NYSE, was \$748M ([www.redhat.com/about/redhat](http://www.redhat.com/about/redhat)).

and processes. “Basically, the software itself is in the public domain. So, you’re not actually selling the technology, you’re selling services for that technology” (R-02).

Also, during this part of the interviews, a few of the IT leaders commented on the difficulty of trying to protect the IPR of software-based technologies in an Internet-based environment. As one Learning Technology Director observed:

“You know, with technology now, and with Google in the market, I don’t think there’s anything that could protect intellectual property anymore. Yes, because everything is out there. .. everything and anything” (R-03).

Another study participant, the CIO for a state system of community colleges, although having reached a similar assessment, saw opportunity in the challenge:

“I do think it’s so hard in this day and age for someone to say, ‘By golly, I invented that.’ I’m just not sure how one could really prove it, protect it, that kind of thing. And I would hope that we would not get into that way of thinking we had to own it. There are many things to like about open source in terms of a sense of community and camaraderie, and I would hope some of these major software vendors would feel a little less territorial and more that, you know, the sum could be greater than the parts” (R-09).

A finding from this area of the research is that all of the IT leaders in the study, even those who felt they couldn’t offer specific suggestions on how best to safeguard IPR connected to Learning Management Systems and e-Learning tools, had given considerable thought to these matters. These CIOs and Learning Technology Directors had followed developments in this area for many years, and all believed it was important to develop appropriate mechanisms that would serve to protect intellectual property while incentivizing future invention. This, they agreed, needs to be accomplished in a way that balances private interests and the public good - both of which, they conclude, are best served by an environment which promotes innovation and its diffusion.

## 6.6 Summary of Findings from this Chapter and What the Research Shows

Following, is a summary of the findings from the interview data on the impact of legal enforcement of IPR on IT leadership's decision-making when selecting an institutional Learning Management System:

- When asked about matters of intellectual property rights relative to Learning Management Systems, IT leaders in this study tended to view them as faculty content and course ownership issues, rather than as legal matters pertaining to the IPR legitimacy of the Learning Management System itself.
- The relationship between most respondents in this study and Blackboard Inc. can best be described as *ambivalent*. Many thought highly of Blackboard's product and the company's knowledge and experience in the online education field, however, they generally held a negative view of Blackboard as having been too corporate-oriented, predatory, and anti-competitive. A number of respondents cited problems with service quality from Blackboard, especially those who had used Blackboard's Managed Hosting service. Even those who were satisfied with Blackboard's LMS products and services found them expensive.
- A generally consistent narrative about Blackboard as a company and about their intellectual property rights enforcement activities has evolved over the years in the higher education community. This was evidenced in the perceptions and beliefs of the IT leaders who participated in this study. Two possible reasons for this consensus narrative are groupthink-like behavior by

the higher education IT leaders interviewed for this research; and their first-hand experience with Blackboard Inc. and its products.

- *EDUCAUSE*, as an association of higher education information technology professionals, was influential in helping shape public opinion in the higher education IT community about Blackboard's IPR enforcement activities.
- The IT leaders in this study have a dichotomous view of Blackboard Inc. disliking the company because of its "arrogant and anti-competitive" behavior and corporate business culture; but thinking highly of Blackboard's LMS products, which many believe are among the best available.
- While most of the IT leaders viewed Blackboard's *Patent Pledge* not to enforce their patents against higher education institutions using open source solutions as disingenuous and a likely marketing strategy, some of the IT leaders in the study were more positive and encouraged by Blackboard's announced plans to increase interoperability with other commercial and open source LMSs and related eLearning products. For those IT leaders, this commitment to increased interoperability made them more inclined to consider Blackboard products as viable choices when they engaged in the decision-making process around selection of a new LMS for their institution.
- For some IT leaders in the study, legal enforcement of IPR by a proprietary LMS company was a motivating force to consider switching to an open source LMS solution.

- IT leaders in this study all agreed that open source LMS standards are preferable to closed systems, and will be an essential prerequisite for the future design of both proprietary and open source Learning Management Systems.
- The IT leaders saw the prior art for Blackboard's LMS as having evolved from origins in higher education institutions. Therefore, most believed the patent awarded to Blackboard was improper, and consequently, their lawsuit against Desire2Learn claiming "patent infringement" was without merit.
- The IT leaders see a "difference in cultures" between higher education and proprietary LMS manufacturers. They prefer to do business with companies whom they feel have an understanding and an appreciation for their educational mission, values, and goals.
- The enforcement of IPR by LMS vendors creates a level of risk concern or risk awareness among IT decision-makers considering the purchase of a new institutional Learning Management System. The extent to which this affects their willingness to consider or not consider certain products likely has to do with their general attitude towards risk and uncertainty. Two types of risk concerns were identified by respondents: (1) risk related to IPR enforcement by proprietary LMS manufacturers against their competitors, both proprietary and open source; and (2) risk related to the long term viability of open source LMS products.

- The IT leaders who participated in this study believe that legal enforcement of IPR by proprietary LMS vendors impedes innovation, and their views are consistent with the research conclusions of Merges and Nelson who found that broadly constructed patents complicate and block product development; and for products based on cumulative systems technologies, superior design, production, and marketing, rather than strong patent protection, are the principal drivers of profit.
- The perceived value and efficacy of patent as an IPR protection mechanism is determined in large measure by who is using it and/or who is affected by it.
- Blackboard's action in pursuing patent infringement litigation against Desire2Learn was an example of what economist Paul Krugman describes as "myopic behavior" – action contrary to the company's self-interest, and consistent with an evolutionary theory of individual and organizational behavior.
- While some IT leaders in the study believed that patent, properly applied, could be a valid method for IPR protection of software-based products and services like LMSs, most preferred a newer, more software-oriented solution like the GNU General Public License and similar models which embrace and support open source principles.

The major conclusion from the data analyzed for this area of the research is that while legal enforcement of intellectual property rights did concern the IT leaders in this study,

and while aggressive behavior by proprietary LMS vendors like Blackboard did produce a negative reaction from the CIOs and Learning Technology Directors, pursuit of legal enforcement of intellectual property rights by vendors had either no impact or a limited impact on the decision-making of IT leaders when selecting an institutional Learning Management System.

## **CHAPTER 7**

### **CONCLUSION**

The research reported in this dissertation focused on two closely related areas of inquiry pertaining to the selection of an institution-wide Learning Management System for use at a college, university, or state system of higher education. These areas of inquiry were the LMS selection and decision-making process followed by the institutions represented in this study, and the role their IT leaders played in that process; and the impact that intellectual property rights litigation, relative to Learning Management Systems, had on the thinking and decision-making of these CIOs and Learning Technology Directors when helping their institutions to select an LMS. Two main questions framed this research, and each, in turn, generated data about related sub-topics, themes, and dimensions:

Question 1: What are the principal characteristics of the decision-making process employed by institutions of higher education when selecting an institutional Learning Management System, and what is the role of senior IT leadership in that process?

Sub-topics for Question 1:

- Rationale for selecting or changing an institutional LMS
- LMS selection criteria
- Structure of LMS selection process
- Leadership role of CIOs and Learning Technology Directors in the LMS selection process

Question 2: What impact, if any, does the legal enforcement of intellectual property rights have on decision-making by IT leaders when selecting Learning Management Systems for their institutions?

### Sub-topics for Question 2:

- IT Leaders' conception of IPR issues related to LMSs
- Reaction to Blackboard's patent infringement suit against Desire2Learn
- Perceived cultural differences between commercial LMS manufacturers and their higher education clients
- Impact of IPR legal enforcement on decision-making, on the LMS marketplace, and on future LMS innovation
- Suitability of IPR protections like patent and copyright for software-based products and processes like LMSs

The findings which emerged from the data around these two main research questions and their respective sub-topics, themes, and dimensions were presented in Chapters 4 and 6, and were consistent with theories supporting diffusion of innovations (Rogers, 2003; Wejnert, 2002) in the case of how LMSs are selected; and with an evolutionary theory of individual and organizational behavior (Merges & Nelson, 1994; Krugman, 1996) with regard to the effects of IPR legal enforcement on innovations developed cumulatively and collaboratively, like Learning Management Systems.

#### *7.1 Summary of Major Findings from the Research*

Following, is a summary of the major findings related to the research questions which emerged from the interviews with the IT leaders in this study and from an analysis of the data those interviews generated. While Chapters 4 and 6 provide this information in greater detail, along with specific references to the IT leader interviews and to the theoretical works cited above, the consolidated results provided here are presented at a higher level as part of the conclusion of this dissertation.

- *LMS Selection Process*

Selection of an institutional Learning Management System for institutions represented in this study is most often a group process with administrators and faculty members serving on an LMS Selection Committee. Student representatives are seldom included as members of this Committee, though some institutions try to solicit their input in other ways (public product demos, pilot projects, etc.).

- *Role of the IT Leader in the Selection Process*

The Chief Information Officers and Learning Technology Directors with institution-wide responsibility who participated in this research served in key leadership roles during their institution's LMS selection process. They helped develop product feature specifications, assisted with the preparation of Requests for Proposals, and participated throughout the product evaluation and procurement process. At some institutions, these IT leaders served as change agents or information technology champions.

- *Who Makes the Final LMS Selection Decision?*

For the institutions represented in this study, the final decision of which Learning Management System to select was usually made by the institution's senior leadership, usually at the vice president level (Provost, Chief Administrative Officer, Chief Financial Officer, Chief Information Officer, etc.), or by the President or Chancellor. In all cases represented by respondents in this study,

recommendations made by the LMS Selection Committee were supported and implemented by those with authority to make the final decision.

- *Consideration of Open Source LMS Solutions*

The IT leaders in this study did not report IPR legal enforcement issues, like Blackboard's patent infringement lawsuit, as having had an influence on their thinking or decision-making relative to the consideration of open source solutions like Moodle or Sakai as alternatives to commercial LMS products. Several respondents observed that adoption of open source LMSs was more a function of when in the continuum of LMS technology development they were being considered. For institutions who had selected their enterprise-wide LMS early (e.g., mid-1990's), respondents reported that either open source products didn't exist yet, they weren't aware of them at the time, or they were too early in their development to have been considered viable for institution-wide adoption. A notable finding from the research was that all of the IT leaders interviewed expressed support for the principles of open source, including open source LMSs, even if they had concluded in their particular selection decision that a commercial, proprietary LMS was better suited for their institution's needs.

- *IPR-related Concerns of IT Leaders*

When thinking about intellectual property rights issues within the context of a Learning Management System, most respondents in this study reported that they and their institutional colleagues focused more on issues related to the content

faculty place in the LMS, rather than about the IPR of the Learning Management System itself as a technology-based product. These concerns related to issues pertaining to copyright and Fair Use, and questions about who owned the IP of faculty-authored online courses - the “work for hire” issue.

- *Perspective on Blackboard v. Desire2Learn*

IT leaders in this study had a generally negative attitude toward the Blackboard v. Desire2Learn patent infringement lawsuit and, by extension, toward Blackboard as a company. They found Blackboard’s litigation anti-competitive, felt that it created a “chilling effect” in the LMS marketplace, both open source and proprietary, and they questioned the legitimacy of Blackboard’s ‘138 patent, citing prior art and the collaborative and cumulative history of this software-based technology.

- *Impact of IPR Legal Enforcement on LMS Selection Decision-making*

Despite their dislike of Blackboard as a company, the IT leaders interviewed for this research acknowledged the strengths of Blackboard’s Learning Management System as a product, and they concluded that, in the final analysis, LMS selection should be based on features, compatibility with other interdependent enterprise level IT services, scalability, and reliability, rather than on an LMS vendor’s behavior in the marketplace. Several respondents acknowledged a perceived difference in cultures between the commercial LMS vendors and their higher education clients, and suggested they would prefer to do business with companies

and organizations whose values were more consistent with their own.

Nonetheless, the IT leaders in this study reported that while the Blackboard lawsuit and other IPR legal enforcement activities of which they were aware concerned them, this concern did not translate into a change in their decision-making when it came to selecting an institutional Learning Management System. Respondents considering a product involved in litigation, like Desire2Learn, however, did make an effort to assess that product's future viability due to the significant investment an institution-wide LMS represents.

- *Impact of IPR Legal Enforcement on Innovation*

Consistent with Merges' and Nelson's (1994) research on patents and innovation, and the anti-commons perspective developed by Murray & Stern (2007), IT leaders in this study expressed the belief that legal enforcement of IPR, and particularly patent, for cumulatively and collaboratively developed software-based products and processes like Learning Management Systems, can impede innovation by inhibiting the free flow and diffusion of knowledge necessary to advance this area of educational technology. Further data from the research indicated that, for some individuals, legal enforcement of IPR can lead to a level of risk concern or risk awareness that may affect their decision-making when considering an LMS product for purchase. Risk aversion can translate into buying decisions, thereby affecting the marketplace viability of products under IPR challenge, which, in turn, reduces competition and adversely impacts innovation.

- *Alternatives to Patent and Copyright for Software-based Products and Processes*

While all respondents in the study had followed the Blackboard patent infringement lawsuit, and most were familiar with its history and details, when asked about what might represent a better alternative to patent and copyright for software-based products and processes, some study participants expressed the idea that this was largely a legal question that they didn't feel equipped to knowledgeably discuss. The remainder of the IT leaders expressed perspectives ranging from those who felt that patent could be an appropriate IPR protection mechanism if used within a very specific and limited set of circumstances, to those who thought licensing models like the GNU General Public License and others which embrace and support open source principles are better suited for Learning Management Systems and other software-based eLearning tools. Most respondents noted that they believe these technologies evolved from the academic community over a period of years through a cumulative and collaborative process.

## *7.2 Discussion and Areas for Future Research*

As noted earlier in the *Methodology* chapter (see Section 3.8, *Limitations of this Research*), developments in the areas with which this research has been concerned - Learning Management Systems used to support and enhance education, and intellectual property management of computer software-based products and processes - continue to evolve in the marketplace and in the courts. This is consistent with an observation by Nelson (2006) that the marketplace tends to be in a continuous state of flux because of innovation. Since the time of the interview with the last of the IT leaders in this study,

Blackboard has purchased additional competitor companies and products, including ones that respondents in the study had selected because of their and their institution's preference for an "other than Blackboard LMS solution." During this same timeframe, Blackboard and Desire2Learn settled their IPR dispute and agreed to cross-license each other's products. Blackboard has continued along the path of increasing their interoperability with other products and services, and they continue to be committed to the Common Cartridge and IMS Global Consortium LTI interoperability standards. As noted by several of the IT leaders who participated in this study, and reported earlier in this dissertation, there is a strong belief that Learning Management Systems, to be successful in future years, must continue along this interoperable and flexible trajectory. Educators, they believe, will increasingly require the ability to select from a toolkit of technological options, putting together different combinations of educational technologies and techniques best suited to the instructional goals they are trying to attain for the community of learners they are trying to teach. Recent developments that are stretching earlier concepts of a Learning Management System include the evolution of textbook publisher-developed, textbook content-specific software and Web-based environments; and the growing demand for LMSs that support mobile devices like Smartphones, eBook readers, iPads, and similar tablet-like products. Further research would contribute to an understanding of these LMS developments and their implications, including an informed consideration of costs and benefits.

Challenges to patents awarded for software-based business methods and other software-based products and processes continue to arise in the courts. New ideas, discussion, and

debate about alternative IPR management solutions like the General Public License, Berkeley Software Distribution, and hybrid licenses which blend features from open and more restrictive models are ongoing. Additional work in this area will be required to develop intellectual property rights measures that strike a balance between incentivizing innovation and protecting the rights of inventors (the latter also being one of the methods for incentivizing innovation). Further investigation of developments in this area, and specifically pertinent to this study, how changes in IPR protection mechanisms are affecting IT leaders' decision-making and the LMS marketplace, would be useful. Differences in attitude by proprietary LMS manufacturers and by their higher education customers toward the appropriateness of IPR protection and enforcement continues to be an evolving phenomenon. From the licensing of its LMS in 2006, to its present active participation in the IMS Consortium, Blackboard has moved in directions that its reputation for corporate culture and prior history of litigation would not have predicted. The question of whether this change came about as a result of the higher education community's strong reaction to *Blackboard v. Desire2Learn*, or if there were other contributing factors, would be a promising area for future research. On a related note, while Blackboard has reduced its level of litigiousness in recent years, a number of higher education institutions, particularly major research universities, have sought to commercialize and license products developed on their campuses. Many of these institutions have established "business incubators," research parks, and "technology transfer" departments.<sup>81</sup> In a sense, perhaps, the business and higher education sectors,

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<sup>81</sup> The University of Colorado, for example, has established a Technology Transfer Office with the mission to "aggressively pursue, protect, package, and license to business the intellectual property generated from the research enterprise and to serve faculty, staff, and students seeking to create such intellectual property." (University of Colorado System Web site: <https://www.cu.edu/techtransfer/>).

as they continue to evolve and address a 21<sup>st</sup> century economy and marketplace, are learning from one another, with business people becoming more “collegial” in some respects, and academics becoming more “business-like,” especially regarding scientific and engineering based invention. A degree of ambivalence in higher education toward IPR legal enforcement has existed for years, and the higher education community continues to address intellectual property-related concerns including copyright Fair Use provisions, the Teach Act, the Digital Millennium Copyright Act, and recent new regulations regarding peer-to-peer file sharing and anti-piracy protections required by the Higher Education Opportunity Act of 2008. In his interview for this study, Blackboard’s Chief Legal Officer, Matthew Small, commented about this ambivalence among educators regarding intellectual property rights enforcement: “In higher education, there’s a general disdain for patent. In some ways, that’s ironic, since many major universities are, themselves, involved in technology transfer and licensing of inventions their faculty develop.”<sup>82</sup> A conclusion from the research regarding differences in attitude toward the appropriateness of IPR and its enforcement is that it depends on the circumstances, and on who’s doing the licensing.

This study has focused on decision-making relative to the selection of an institutional Learning Management System for use by colleges, universities, and state higher education systems. In his work on diffusion of innovations, Rogers (2003) notes that most research in this field focuses on the inventions themselves and how they’re adopted, rather than on the *consequences* of adoption. Consequences, according to Rogers, “are

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<sup>82</sup> Telephone interview with Matthew Small, Blackboard Inc., 3/20/2009.

the changes that occur to an individual or to a social system as a result of the adoption or rejection of an innovation” (Rogers, 2003, p. 470). Rogers observes that although obviously important, the consequences of innovations have received little attention by change agents and by diffusion researchers because:

1. “Change agencies have overemphasized adoption per se, assuming that an innovation’s consequences will be positive.”
2. “The usual survey research methods may be inappropriate for investigating consequences.”
3. “Consequences are often difficult to measure” (Rogers, 2003, p. 470).

A useful and expanded direction for future research would be follow-up interviews with the participants from this study and with other higher education LMS stakeholders about the consequences of their institution’s decision to adopt a particular Learning Management System. Specific to this area of inquiry, Rogers suggests, questions would focus on whether the outcome from an LMS’s adoption produced a desirable or undesirable result for the individuals and groups affected by this innovation; whether the adoption produced any indirect, as well as direct, outcomes; and if there were unanticipated, as well as anticipated, consequences from this innovation’s adoption.

The global economic downturn, which began to escalate around the time of the interviews with the IT leaders in this study, has likely produced LMS-related consequences that warrant further investigation. For example, the decision to self-host an institutional Learning Management System, particularly an open source one, usually requires a significant technical staff commitment. In the past three years, many institutions have experienced hiring freezes and staffing reductions. One question to

investigate, relative to innovation consequences, is how these economic challenges have affected an institution's ability to properly staff and support this mission critical academic function. A related question is how the poor economy has affected institutional investment in Learning Management Systems and other eLearning technologies. Has the challenge of diminished resources (and the expectation of "doing more with less") positively or negatively impacted institutional assessment of the cost and benefit of information technologies which support online, on ground, and blended learning?

In *Qualitative Analysis for Social Scientists*, Strauss (1987) observes, "We are interested, after all, not in the viewpoints of specific individuals, but in the general pattern evinced by classes of individuals" (Strauss, 1987, p. 268). The research findings from the interviews with the Chief Information Officers and Learning Technology Directors who participated in this study help provide a degree of information and perspective about the general pattern evinced by this class of individuals, higher education IT leaders, regarding the research questions this dissertation has sought to investigate. While neither exhaustive nor conclusive, the information presented here appears consistent with what has been written about these topics, themes, and dimensions in the higher education information technology literature, and with what has been presented at higher education IT professional meetings and conferences in recent years. Ongoing inquiry into LMS adoption and its consequences through the use of longitudinal studies and by other means is recommended due to the dynamic nature of the Learning Management System marketplace, the LMS technology itself, and the changing landscape of intellectual property rights applied to software-based products and processes.

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## APPENDIX A

### LIST OF QUESTIONS: INTERVIEWS WITH CIOs AND LEARNING TECHNOLOGY DIRECTORS – Page One

#### (Introduction)

Good afternoon, \_\_\_\_\_. I really appreciate your willingness to do this. Before we get started, just a couple of pieces of “housekeeping.”

Since this is voluntary, I just want you to know that if there are any questions you’d rather not answer, just say so, and we’ll move on to a different area.

Also, I hope it’s okay with you if I record our conversation so I can refer back to it later. The recording will only be used for my reference, and all content will remain anonymous.

#### (Questions about LMS Selection Process, Institutional Decision-making, and Campus LMS Investment)

When it comes to selecting a Learning Management System for your institution, what do you consider when making your decision?

Tell me how your institution went about selecting your current Learning Management System.

Which products did you consider? Did you consider any open source products like Moodle, Sakai, LON-CAPA or aTutor? (If yes, why? If no, why not?)

How long did the selection process take?

Who was involved in the process and what were their roles?

Did *you* make the final decision on which LMS system to implement? If not, who or who else had final say on the selection of a Learning Management System?

Does your campus IT organization host the LMS and its related content (syllabi, class projects and discussions, digital content materials, etc.) on your own servers, or are these services outsourced?

## APPENDIX A

### LIST OF QUESTIONS: INTERVIEWS WITH CIOs AND LEARNING TECHNOLOGY DIRECTORS – Page Two

If outsourced, to whom?

Do you maintain a staff of in-house programmers / developers assigned specifically to e-Learning and Learning Management Systems and tools? How many, and what are their assigned responsibilities?

How well adopted is this LMS in departments across campus? (e.g., how many departments, colleges use this LMS) Do some use other LMS systems they maintain themselves?

What is your annual budget for LMS products and services?

- Campus license fees (if a commercial product)
- Costs of external contractor?
- Costs of in-house staff?

Is there any thought of switching LMS's? If yes, why? If this is under consideration, what might the time frame look like?

#### *(IPR-related Questions)*

Were there intellectual property rights issues that specifically affected the selection and investment decision for your *current* LMS? Were they patent-related? Can you describe what these issues were and the impact they had?

Generally, in what ways do intellectual property rights issues influence your decision-making process regarding Learning Management Systems and eLearning tools?

Generally, in what ways do intellectual property rights issues affect your decisions regarding the hiring of programmers and application developers? Do intellectual property rights factor into the kinds of tasks they're assigned? If so, how?

**APPENDIX A**

**LIST OF QUESTIONS: INTERVIEWS WITH CIOs AND LEARNING TECHNOLOGY DIRECTORS – Page Three**

Are you familiar with the Blackboard patent infringement suit against Desire2Learn?

What do you think the major issues are with regard to this case?

Blackboard’s infringement claims have recently been sustained by the U.S. District Court in Texas with a financial judgment of \$3.1 million and the right to file an injunction preventing Desire2Learn from selling its product in the U.S. until they negotiate a licensing agreement with Blackboard. Desire2Learn has appealed this ruling. And in the meantime, Blackboard recently sued the U.S. Patent Office challenging their authority to have reviewed and discredited all of Blackboard’s patent claims, at least preliminarily. What is your view about this dispute?

There have been recent announcements by Blackboard about building increased interoperability with open source LMS’s like Moodle and Sakai. Does that alter your views or plans with regard to Blackboard or consideration of other commercial products?

Blackboard has established what they call their “Patent Pledge.” Are you familiar with this? If so, has it affected your view of the company and its position on intellectual property rights?

Do you think this case has larger implications for the future of Learning Management Systems *selection*? What might those implications be?

Do you think this case has larger implications for the future of Learning Management Systems *development and innovation*? What might those implications be?

How do you think this case will ultimately be resolved? How do you think it *should* be resolved?

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For indemnification issue where applicable - If subject’s institution selected or were seriously considering Desire2Learn as their LMS, then ask:

When you selected or were considering Desire2Learn as your LMS, did Desire2Learn guarantee you that if you adopted their product, your organization would be protected from future lawsuits or potential royalty charges by Blackboard?

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## APPENDIX A

### LIST OF QUESTIONS: INTERVIEWS WITH CIOs AND LEARNING TECHNOLOGY DIRECTORS – Page Four

Are there other cases you are aware of involving patent infringement / IPR enforcement that are similar to the *Blackboard v. D2L* suit?

Do you think patent is an appropriate IP protection mechanism for Learning Management Systems and other eLearning tools? If not, what do you think might represent a better approach?

Do you have anything more to add to what we've been discussing here?

Are there other questions I should have asked?

Thank you very much for your participation and for sharing your perspectives on these issues.

## APPENDIX B

### LETTER POSTED TO CIO LISTSERVS AND E-MAILED TO CIOs AND LEARNING TECHNOLOGY DIRECTORS REQUESTING THEIR PARTICIPATION IN THIS RESEARCH

Dear Colleagues:

I am writing to ask for your help with a study I'm conducting which seeks to examine the impact of intellectual property rights enforcement, primarily patent, on decisions you make when selecting Learning Management Systems and tools for your institution. Case studies for this work include the *Blackboard v. Desire2Learn* patent infringement suit.

Participation will consist of a telephone or in-person interview which should take under one hour, conducted by me, and at your convenience. All responses will be anonymized, and there will be no attribution of comments to any individuals. This research is being conducted in conjunction with completion of my Ph.D. dissertation in Library and Information Science at the University of Illinois, and I plan to share research results with our community through EDUCAUSE and other venues. I think the information I seek to obtain will have useful benefit for our profession.

If you are willing to be interviewed, please contact me by e-mail at [spelke@illinois.edu](mailto:spelke@illinois.edu) or [kspelke@commnet.edu](mailto:kspelke@commnet.edu) (please do not re-post to this list!) and we can work out a convenient time to meet over the telephone or in person. I am especially interested in speaking with colleagues from a wide variety of institutions - large and small, public and private, 2-year, 4-year, and professional schools.

Thanks very much for your consideration.

With warm regards,

Ken

Ken Spelke  
Chief Information Officer  
Connecticut System of Community Colleges

Ph.D. Candidate  
Graduate School of Library and Information Science  
University of Illinois at Urbana-Champaign

## APPENDIX C

### EDUCAUSE OPEN LETTER TO BLACKBOARD CEO MICHAEL CHASEN – Page One

October 9, 2006

Mr. Michael Chasen  
Chief Executive Officer  
Blackboard Inc.  
1899 L Street, 11th Floor  
Washington, DC 20036

Dear Mr. Chasen,

I am writing you on behalf of the higher education IT community, the EDUCAUSE Board of Directors, and our executive team to express in writing what we have conveyed in prior conversations. Our community is deeply concerned by Blackboard's patent and its recent law suit claiming patent infringement against Desire2Learn. Our community feels these actions go beyond competition to challenging the core values and interests of higher education.

One of our concerns is that you may not fully appreciate the depth of the consternation this action has caused for key members of our community. Among those who have been most directly involved in the development and evolution of course management systems customers whom Blackboard has relied upon for ideas and advice these concerns are most pronounced. Their anger over the law suit is so intense that many are simply not communicating with Blackboard. We have seen this intensity of anger only a few times before. In those cases, the corporations involved were unaware of what was happening outside their official channels. Please do not underestimate this consternation which we believe will impact Blackboard in both the short- and the long-term.

We are sure you are aware of the many blog postings discussing the law suit. Web sites have been established to gather evidence of prior art to refute the patent claims. The expressions we hear range from the vilification of Blackboard, to stories about the cold reception Blackboard is receiving at presentations, to the embarrassment of your employees who are asked to explain this corporate action. Even those members of the community who counsel taking a wait-and-see approach are not necessarily less concerned, just more focused on what they might have to lose by speaking out against the dominant vendor in the CMS market. The fact that these perceptions exist is not likely to lead to greater market share or profitability for Blackboard.

EDUCAUSE is a non-profit association dedicated to serving its 2000 college and university members, as well as its 200 corporate members. We do not endorse products or take the side of one company over another. Our corporate guidelines, established in 1998, are very clear that EDUCAUSE is primarily accountable to its institutional members. In

## APPENDIX C

### EDUCAUSE OPEN LETTER TO BLACKBOARD CEO MICHAEL CHASEN – Page Two

the event of a conflict between corporate and institutional member objectives, we must support our institutional members. Let me clearly state that we are not siding with Desire2Learn at the expense of Blackboard. Our discussions and actions are based solely on the collective interests of our institutional members.

There are two core tenets behind the community concern. One deals with co-creation and ownership; the other deals with innovation. Course management systems were developed by the higher education community, which includes academics, organizations, and corporations. Ideas were freely exchanged, prototypes developed, and refinements continue to be made. The new EDUCAUSE Catalyst Award, given to course management systems this year, celebrates that course management systems "were conceived and developed among faculty in pockets of innovation throughout the world. They originated simultaneously at a number of institutions," as stated in the award announcement. One of the reasons course management systems were singled out for this award is because of the "fluid movement of ideas and initiatives between academia and the commercial sector as individual limited-use efforts evolved into enterprise-wide systems." Our community has participated in the creation of course management systems. A claim that implies this community creation can be patented by one organization is anathema to our culture.

We realize that what one believes is not necessarily legally binding. As a result, EDUCAUSE engaged the services of a highly reputable, independent law firm to review the patent. The preliminary conclusion is that the patent was very broadly defined and was inappropriately approved by the U.S. Patent and Trademark Office. That is certainly the view of the higher education community, many of whom are contributing evidence of prior art.

The other core tenet is to promote innovation. The free exchange of ideas fosters innovation. The open sharing of ideas does not preclude commercialization or profiting from ideas. Innovation is critical to the higher education community and it is critical to corporations. Blackboard has espoused the importance of listening to customers as its source of innovation. This law suit will certainly have a chilling effect on the open sharing of ideas in our community.

We believe that Blackboard should disclaim the rights established under your recently-awarded patent, placing the patent in the public domain and withdrawing the claim of infringement against Desire2Learn. We believe this action would be in the best business interests of Blackboard and in the best interests of higher education. We do not make this request lightly or underestimate the courage it will take to implement. However, we believe it is the right action for your corporation and our community.

## APPENDIX C

### EDUCAUSE OPEN LETTER TO BLACKBOARD CEO MICHAEL CHASEN – Page Three

As EDUCAUSE members convene this week, this patent and its implications for innovation in education will be discussed more broadly. Now is the time for Blackboard to demonstrate why it is a leader in course management systems and listen to the marketplace that has been a primary source of collaboration and innovation. I, along with members of my executive team, are willing to meet with you at any time.

Sincerely,

Brian L. Hawkins  
President  
EDUCAUSE

On behalf of the EDUCAUSE Board of Directors

Robyn R. Render, EDUCAUSE Chair of the Board, Vice President for Information Resources and CIO, University of North Carolina, Office of the President

John E. Bucher, EDUCAUSE Vice Chair, Chief Technology Officer, Oberlin College

Ellen J. Waite-Franzen, EDUCAUSE Treasurer, Vice President for Information Technology, Dartmouth College

Jeffrey W. Noyes, Secretary of the EDUCAUSE Board, Director, Student System Consolidation Project, Board of Regents of the University System of Georgia

Rebecca L. King, Director for Information Systems and Services and Interim CIO, Baylor University

Lucinda T. Lea, VP for Information Technology and CIO, Middle Tennessee State University

Marilyn A. McMillan, Associate Provost and Chief Information Technology Officer, New York University

Margaret F. Plympton, Vice President for Finance and Administration, Lehigh University

David L. Smallen, Vice President, Information Technology, Hamilton College

George O. Strawn, CIO, National Science Foundation

Brian L. Hawkins, President, EDUCAUSE