

**U.S. House of Representatives Committee on Science and Technology**  
June 5, 2007 hearing on:  
**“The Role of Technology in Reducing Illegal Filesharing: A University Perspective”**

**Questions for the Record to Mrs. Cheryl Elzy**  
Dean of University Libraries  
Illinois State University

Questions Submitted by Chairman Bart Gordon

**1. Since the beginning of the Digital Citizen Project at Illinois State University, have other universities sought information about your experiences and information on how to reduce illegal file-sharing?**

Several associations and universities have sought out the leadership of the Digital Citizen Project through a variety of venues. One avenue of contact is through the Project web page at <http://www.digitalcitizen.ilstu.edu/>. Another opportunity for sharing what we've learned so far comes through presentations at conferences like EDUCAUSE. Many will take our cards or contact us afterward once they've attended one of our sessions. The Project's technology specialist and one of the Project's leaders based here in DC gets many calls.

All are seeking advice. Most just want answers – a shrink-wrap solution they can buy and all the DMCA complaints will go away. At present, the Digital Citizen Project doesn't have that answer. We are gaining experience every day. We are documenting the scope of the problem with each new study and data collection. There is much work to be done and improvements to be made before the technology will be effective in stopping the DMCA complaints and eliminating downloading. Some of the answers will come from changing cultures and behaviors as much as relying on a technological monitoring or blocking solution.

The surprising large number of calls and contacts we do get about the Digital Citizen Project and its findings confirms our belief that a National Center on downloading issues should be funded and created at Illinois State University. All of higher education is laboring with a lack of reliable information on what to do, what works, and – more importantly – what doesn't work. Such a Center as we propose could provide reliable, tested, replicable information on products, softwares, educational programs, and more.

**2. You mention that ISU would like the Digital Citizen Project to be a “consumer-reports-like” study on ways to reduce illegal filesharing. Could you explain this in more detail? How would such a study work and what type of results might it produce? How would you integrate new technology products into the study throughout its duration?**

The “consumer-reports-like” study refers to an aspect of our study wherein Illinois State could capitalize on its strong working relationships with multiple associations and vendors to compare and contrast the capabilities of the emerging software and hardware products that are appearing almost weekly. The “reports”, as we conceive of them at present, would involve testing each product – first on a test networking and then on a segment of our live network such

as a residence hall complex – and determine the effectiveness of the product from a variety of benchmarked perspectives. These elements might include ease of installation, size of the music and movie library, compatibility with Macs and PCs, ability to stand alone versus requiring another software or program to work. While the early focus would be on monitoring systems and escalated response programs, it could easily be expanded to include an evaluation of legal media downloading services or K-12 educational programs.

It is important to remember that many of these products were originally developed for other uses than tracking file sharing but are being adapted to meet this new challenge. Also, in most cases they are products for a commercial environment. ISU is testing these in a live networked higher education environment to identify their strengths and weaknesses for reducing illegal file sharing. Each product will be set up for at least a semester through our residence hall network. Results expected vary depending on the sophistication of the product but may include: does the product identify copyrighted downloads and stop uploads, can the product tell the difference between copyrighted and non-copyrighted material, how much of downloads are being missed, and does it recognize metadata.

It is also important to note that some of these products can be tested on a live network while others absolutely can not. Certain programs can not because their technology needs to alter the make-up of the ISU network so drastically as to make the ISU network profile so different that it could potentially change daily academic and business uses of the live ISUNet network or bring the network down all together. (This highlights a crucial reason that independent testing and evaluation is sorely needed by higher education. No institution can afford to destabilize its network in installing a product, nor can it change its network architecture to meet the demands of a new technology.) For those not able to be on a live network, a test network is essential, so Illinois State is seeking funding to create a small test network to provide a safe environment for study and evaluation.

When the Project leaders become aware of new products, the new vendor is contacted and invited to join the project immediately. A product can be added at any time.

The timetable for the Digital Citizen Study covers several years. The first phase of the study will be completed in June 2008. Existing funding extends only through that date. At that time we will have completed the early testing of two to three monitoring products, several surveys of college students' behavior and motivations regarding downloading, initial release of an escalated response system just developed at Illinois State, and put in place legal media downloading services. The long term effects of this will not be known because we will have just barely gotten all the elements of the Project started by the end of this first phase. The results of this first phase will be the foundation to build the solution for this problem in the next phase.

We are seeking funding from private foundations, from the entertainment industry, and from the public sector to undertake succeeding phases that include studying downloading behaviors in the K-12 age ranges and developing educational modules for the kindergarten through senior in high school level that will successfully capture their attention and positively impact their behaviors. We believe that through education at this younger level, with technological barriers in place, a long term solution is possible. These educational modules must

appeal to the younger generation and be able to be integrated into an already crowded curriculum easily for teachers to incorporate them at point of need. Research in conjunction with Illinois State University's College of Education faculty using our elementary and secondary laboratory schools provides us an excellent opportunity to develop these modules. Moreover, ISU has institutional agreements with seven professional development schools – existing K-12 school districts – throughout the state representing demographics from rural to inner-city, from poor to wealthy. This phase is a three year project.

Other phases of the Project that would get underway concurrently include further testing of monitoring systems with feedback both to industry and vendors as well as higher education decision-makers, exploration of financial models that might make systems on campuses more affordable and defensible, development of better public relations programs through a clearinghouse exchange of successes and best practices with other colleges and universities, and a comparison of existing educational programs available throughout the marketplace.

The biggest barrier to Digital Citizen Project is money and time. Money and time. The work undertaken is labor-intensive, uses a lot of expensive technology, and requires a wide spectrum of expertise from network engineering to behavioral research to effective marketing to classroom excellence. Without additional funding, the Project will begin shutting down in March 2008. With additional funding, the Project can expand and adapt as rapidly as the downloading issues themselves.

### **Questions Submitted by Ranking Member Ralph Hall**

**1. Dr. Wight's testimony highlights the exemption of copyright for certain nonprofit education purposes. Please elaborate on how copyrighted works are used in coursework on your campus. Does your university employ specific software to allow educational use without risking broader distribution? What is the scope of this type of fair use on your campus and how can educational fair use be differentiated from infringing traffic?**

The Project leaders at Illinois State would certainly echo Dr. Wight's testimony regarding legal, educational uses of copyrighted media. At Illinois State University and on other college campuses, downloading and peer-to-peer technology is used heavily in distance education applications, in legitimate sharing of data and research through scholarly exchange of information online, in legal software upgrades for important programs such as Linux, for digital files housed in the university's library and shared for class reserves, and more. Our course management software on campus is WebCT through which students access many of the course materials, syllabi, and other course-related documents. WebCT allows faculty to post (with copyright permission) electronic journals, digitized chapter in books, images, film clips, audio files, and more – all with password protection so only authorized students can access the items. All these legal uses of downloading technology must be protected. To do less would be to cripple the academic enterprise. That is one of the many reasons that Illinois State chose not to block peer-to-peer traffic unilaterally.

Illinois State University has, for almost seven years, used Packeteer to shape the traffic on our network and give highest priority for academic and administrative purposes. The

university's library and campus technology's working groups have developed methods for password-protecting files from images to film clips to electronic journal articles to data files so that only a given class or other specified group can gain access to material available for legal use through copyright permissions.

The Digital Citizen Project's leaders feel strongly that the faculty model the behavior adopted by their students. If a faculty member bootlegs an opera or a play or a film, then the students will think it must be okay. We must make legal use of films, music, and all digital media easier by creating better avenues for securing copyright permissions. This can be illustrated with an experience straight from the Project's history. We were creating a brief training session for all incoming freshmen about the dangers of downloading and the fact that not "everyone does it." We asked RIAA to help us in getting permission to use a couple of minutes of a copyrighted music video popular at that time. We started the process in April, and in August we still could not get that permission – even with the help of the industry's own association! We must develop and adopt distribution systems that make it easier for faculty to open a computer file and have a legal copy of a film, show, or song delivered to a classroom than it is for that faculty member to bring in his own copy for classroom use – a practice not presently permitted under DMCA.

**2. Many of the witnesses described their support for offering students “a legitimate online service, one that provides an inexpensive alternative to illegal file-sharing.” Does your university offer this service to their students? If so, how many students use this product and what feedback have you received from them? If not, has your university considered their use before? What are the principal factors that affect the decision to provide legal alternatives?**

Illinois State University has, in the course of the Digital Citizen Project, explored formal agreements to provide legal media downloading services. We even got to the point of negotiating contracts with two different services, but those were never signed. Two crucial factors halted that initiative.

First, the commercial legal vendors have come and gone so fast that it's difficult to be assured the deal is the best one or that the company will still be in existence at the end of the contract. One company with whom we negotiated changed its business model five times in 15 months – from costing \$40,000 for our campus and requiring a formal contract to being free and open to anyone with an .edu email address. Further, there are still no solid services with a broad and deep film library. ISU will be approaching Blockbuster and Netflix this fall about creating a college program with us, but that's still speculative.

The second factor is driven by our study of high school seniors coming to Illinois State as freshmen over the last two summers. In summer of 2007, 80% of respondents report they are bringing an iPod to campus. iPods still only work with Apple compatible services, and the only legal Apple service is iTunes. The leading campus companies, most notably Ruckus, are not compatible with iPods, so to secure a single service would be to disenfranchise the vast majority of our students.

Instead of bringing one or more legal services to campus, the Digital Citizen Project proposes to inform students – almost relentlessly – about all the legal media services we can identify. Anecdotally, when one of the researchers asked Project focus groups to name one legal service, no one in the groups could. They even thought iTunes was an illegal service. However, the students in the focus group universally said they would happily use legal downloading services if they knew what they were – and if they were easy to use, free or inexpensive, and had the library of songs and movies they wanted. There is a huge marketing opportunity here. If we can point the students in the right direction and find a funding model that may work for the individual and for the University, then we may be able to begin a slow shift in downloading behaviors.

**3. You state in your testimony that, “if Congress asks all 4,000 colleges and universities . . . to implement monitoring systems over a very short period of time – from our experience it would seem impossible for vendors to supply our needs.” What leads you to this conclusion? In your opinion, how many years would vendors need to overcome these obstacles?**

The Project leaders have come to the conclusion that – at this point in time – vendors could not supply or service 4,000 college campuses because, in our opinion, they aren’t ready. This is based on the experience of the Project itself. For example, Red Lambda is a monitoring system often mentioned in Congressional hearings as a potential monitoring system to reduce downloading. Red Lambda was the first monitoring system we began working with in October 2004. In January 2005 Illinois State gave Red Lambda \$5,000 in installation fees to bring them to campus. Thirty months later, Red Lambda will make its first trip to campus (July 11, 2007) in preparation for installing their program on part of our network for testing and evaluation. When asked whether they have installations beyond the campus where Red Lambda was developed as Icarus, they can name only one or two that are in development or at the talking stage. Audible Magic, at last report, had about 60 customers (both business and higher ed), and they are the industry leader. Other companies like Allot, eTelemetry, Safe Media, and others either have no customers of record or less than a handful.

These systems are also labor intensive to install and maintain. Each and every campus network is different in its architecture, its needs, and its capabilities. Some installations appear to change network settings or registration procedures that can cause chaos on a live network. There is very little available from these companies in the way of technical support either online, in person, or by phone.

The existing monitoring systems that track by individual songs or films also cannot find every copyrighted item. Even the largest libraries of electronically signed media still only capture 51% of the songs (up from 11% two years ago, however) and about 2% of the movies. Campuses cannot catch and block what they cannot find. Until the tracking systems are more universal and comprehensive, the technology will not be as effective as the industry hopes.

It should be noted that as monitoring systems become better, so will the efforts to get around them. One of the aspects of downloading that Illinois State researchers would ultimately like to tackle is how long it takes users to find ways to defeat any given monitoring system –

whether through encryption or other means. The industry is going to have to constantly change its focus and methods in order to stay ahead of the downloaders technologically – which is why education and changing behavior becomes so much more crucial to reducing downloading.

Should Congress decide to impose a requirement that all college campuses have monitoring systems in place to reduce illegal downloading, the Digital Citizen Project respectfully, but strongly, recommends that campuses be given a generous lead time because vendors will need to gear up significantly to provide systems and support services that will be essential if there is to be any success.

### **Questions Submitted by Representative Eddie Bernice Johnson**

**1. You are an advocate that we must educate students about the issue of illegal filesharing. You also mention that most incoming ISU students have already “learned” this behavior while in elementary and high school. What sort of education programs should be instituted in K-12 schools about illegal filesharing?**

Illinois State University researchers know that students in the K-12 learning environment today are already far more technologically savvy students than those that have come before them. Many learn from their siblings or peers – or even their parents – very early how to download. Our research tells us some learn as early as third grade, but most know how certainly by their junior high years. With that being the case, our Project is committed to developing interesting and effective educational modules -- short technological teachable moments -- that teachers could use in the classroom or tech teachers could use in their classes when they are teaching a particular assignment. As one example, imagine a teacher as a class sponsor for a sixth-grade dance group, and the students want to download music from one of the popular downloading sites to use for their upcoming performance. This would be an opportunity for the teacher to take a few minutes to help those young people understand that taking music through an online source is illegal as well as morally unethical. She or he could use one of the many “teachable moments” curricula developed by the Digital Citizen Project that would be fast, fun, and educational. However, at the same time we want to take care to help the students understand that their educational uses of music and media can be fair use while their entertainment uses are not and, therefore, they must pay for them.

Classrooms are already crammed with all sorts of requirements. Teachers are overwhelmed. Educational materials are expensive. If the Digital Citizen Project can develop quick, point-of-use materials that can be woven into any classroom subject or setting, and if those materials are only a click away, and – better yet – if they are free, then there is a much better chance the information will get to the students.

Lessons on illegal downloading can also be incorporated in the many cyber-safety curricula that are available or in development. Being safe and being legal on the Internet are very compatible subjects for discussion in classrooms.

## Questions Submitted by Representative Michael McCaul

### **1. Do you believe that the availability of a certain technology should automatically legitimize the activity undertaken on it? In preparing students for an increasingly technological world, does it help or hurt them when they are not adequately punished for abusing the school's network and computing resources and privileges?**

The Digital Citizen Project leaders believe students should obey laws, appropriate use policies, and other rules for using university resources. The availability of technology should not absolve a user of responsibility for its use. Just as the invention of the match doesn't legitimize burning down a building, the invention of illegal file sharing technology and the audio/video capabilities of a computer don't legitimize stealing music, games, or movies. Students must know the rules and abide by them. In the past we've heard that young people "didn't know" that downloading was illegal. The Digital Citizen Project research has confirmed that, in fact, students DO know downloading and file-sharing is illegal – but they do it anyway.

Rather than "adequately punish" students for downloading, the Digital Citizen Project seeks to interweave monitoring and enforcement – the punishment side of the program – with education and behavioral change, while at the same time helping students FIND the legal media services available to them. The Digital Citizen research has demonstrated that punishing them – kids "getting caught" – only has a short term impact on student behavior, and they'll go back to their old habits once memory fades. If the industry and higher education truly wants to solve this problem, then a combination of approaches will be much more effective.

We're facing a long-term cultural change. Think about seat belts. Congress passed the first seat belt laws in 1963. In 2006 seat belt use – something that can save a person's own life – was only at 80%. Laws, fines, and other penalties along with some intensive marketing campaigns have only slowly moved people to change their behaviors. Downloading may be just such a cultural change that will take 20 years to effect.

Students must be prepared to function well in today's technologically changing work and home environment. It is education's role, and that of parents, to teach students all through the grades that legal online behavior is essential. This isn't just a college campus issue. Downloading begins long before students come onto campus. A comprehensive answer must be sought.

### **2. Is it appropriate for taxpayers to fund school networks that are widely used to facilitate theft? Is it appropriate for school networks – created and intended for academic use – to be slowed and clogged by illegal activity?**

It is appropriate for taxpayers to support computer networks for educational and research functions at all levels of education. Like it or not, without computers and the Internet today, the work of any university would come to a halt. Packet-shaping technology has gone a long way in the last few years to segregate and prioritize a variety of uses of Internet capabilities on campuses. Of the millions of messages and transactions that go across our campus network

every day, downloading still represents a very small percentage from the research our project has done.

The Digital Citizen Project is examining a number of funding options that may develop into means of supporting bandwidth for legal downloading by those who actually use it. On ISUNet, our network snapshots have shown that only about 26% of the computers on our network engage in any kind of downloading activity. Are there ways that only those who download pay for the privilege? Could there be a “reconnect” fee for those whose privileges are suspended for illegal downloading? Is it appropriate to charge a fee to students much like cable TV is supported? All these are options that are being explored.

Illinois State University has more students living on-campus (and thus using University network resources in their academic AND living spaces) than most campuses due to a two-year residency requirement for all freshmen and sophomores. However, even with such a policy, approximately two-thirds of ISU students live off-campus. While these students do use University network resources while on-campus, much of their entertainment resources come from commercial Internet Service Providers. The point is on most campuses, control and command of University networks only impact a percentage of students’ file-sharing activity.

We agree with Congressman McCaul that it is no more appropriate to fund networks for theft than to provide them for spam, worms, bank fraud, solicitation, or pornography. Unfortunately, all these things happen on any network. Education, enforcement of policies, and knowledge of how to acquire digital media legally are all pieces of the puzzle to be solved.

**3. We have heard that technological measures exist that reduce or prevent illegal file-sharing, reduce the network bandwidth wasted by such activity, secure the network against viruses and spyware, and decrease the amount of time spent by administrators responding to infringement notices. Doesn’t the cost benefit of addressing these problems justify the cost of implementing effective network technology? If not, what type of analysis have you used to arrive at your decision?**

The costs of illegal downloading to college campuses are potentially very large. Many hidden costs combine with the more overt or identifiable expenses to add up quickly, especially when campuses receive hundreds of DMCA complaints every year. Anecdotal industry estimates of costs associated with managing one DMCA complaint two years ago were about \$1,200. One of the things the Digital Citizen Project researchers want to examine more thoroughly is the actual cost of a DMCA complaint. Initial studies show something much lower than \$1,200. Rather, the overt costs are more in the range of \$75 - \$146. Obviously, this needs much more study.

However, the technology to reduce illegal downloading is also expensive. Initial costs for implementing Red Lambda two years ago were approximately \$85,000 per year for a campus of 20,000 students. Audible Magic hardware and software costs \$50,000 per box with multiple boxes needed to adequately cover campus online traffic. That’s just the hardware costs. Ongoing expenses for staffing, maintenance, and other monitoring support activities are significant. Most colleges cannot find the ongoing funds to support that without passing those

costs on, once again, to the student. In an age of double-digit tuition increases, campuses understandably are reluctant to raise anything they can avoid.

As described in Question #2 above, Illinois State's researchers are exploring how to make implementing monitoring systems, providing legal digital services, and offering effective education cost-effective. Downloading is an ingrained, cultural way of life for young people today. A lot of factors – including entertainment industry business models and delivery systems – will have to change as we work on the associated problems.

**4. Rather than purchasing a commercially available technology, some schools, such as Ohio University have used internal technological solutions to block some or all of the illegal music, movies, and software on their networks. Ohio University went a step beyond blocking illegal peer-to-peer programs and shut down a “darknet”, which is a private hub that allowed students to trade music and movies on the local area network without connecting to the wider Internet. What type of action has your university taken to address the issue of darknets operating on your internal system? What are some of the solutions to finding and shutting down darknets?**

About eighteen months ago the RIAA shared with Illinois State project leaders that they believed about 45% of the illegal downloading traffic was happening on “darknets”, within the campus network where they could not reach. Illinois State's own network engineers believed that darknet traffic was more like 5%. ISUNet is constantly monitored for unapproved servers or server-like activity, so many felt there was little chance much was happening on our campus in the way of darknets. However, when our Audible Magic box was placed on one floor of one dorm for a brief darknet “snapshot”, darknet traffic constituted about 16% of the activity. Assuredly, this is a tiny sample, but it is indicative of the need for more extensive documentation so we all can have accurate measures rather than relying on anecdote and supposition.

When our network architecture was analyzed by Audible Magic for ways to address possible darknet, on-campus downloading activity, it was suggested that we needed a minimum of eight boxes (at \$50,000 each). 23 or more would be better. No campus is going to undertake such a massive, expensive installation. Internal network monitoring, escalated response with its increasing loss of network privileges for repeated violations, and stronger education have the best chance of combating darknet activity.

**5. Campus officials at Stanford University wrote a letter to students last month saying “Keeping up with the number of file-sharing complaints coming in under the DMCA has required almost three full-time Stanford employees.” How much time and resources did your institution spend on DMCA notices each year before implementing a technological solution? How much time does your staff spend on notices now that you've adopted a technological solution? What caused your University to take proactive steps?**

Illinois State University has a team of individuals responsible for managing any DMCA copyright complaints. While no one person is responsible and no one has copyright complaints as the sum total of his or her job, many are involved and serve as back-ups to each other. Illinois State has a federal copyright officer, an appropriate use coordinator, a designated network engineer, and several support staff who receive, investigate, identify, notify, and track each individual complaint.

In 2004, Illinois State received 469 DMCA violation notices. Early in its developing phases in 2005, the Digital Citizen Project participants tracked workload and analyzed the costs associated with the DMCA complaints. The cost was \$75.26, including staff time, network resources, and any record-keeping for a first offense. For a second offense that would involve the on-campus student judicial process the cost increased to \$133.29. In total, then, the 2005 costs ranged from \$35,297 to \$62,513 depending on the nature of the offenses. In point of fact, it was the increasing number of DMCA complaints and the delivery of four federal subpoenas that began the Digital Citizen Project. We felt we had to do something proactive, something to better protect our students from the possibility of being sued. Yet as a university that firmly stands for and believes in the principals of the American Democracy Project that teaches young people to be good citizens overall and to engage in politics and take civic responsibility seriously, we needed to redirect student behavior and change their culture in this regard.

Illinois State University has not yet implemented a monitoring system, primarily to allow the research of the Digital Citizen Project to go forward without any unusual technological influences. New technologies will be tested this fall after a thorough data capture of network activity has been done. Reports on the effectiveness of the technologies implemented should be available midwinter.