

May 28, 2002

Senator Ron Wyden  
516 Hart Senate Office Building  
Washington DC 20510

Dear Senator Wyden:

I am writing to you both as a constituent and as a technical expert in security architecture to ask you to do everything in your power to **prevent** the passage of the Consumer Broadband and Digital Television Promotion Act (**CBDTPA**) or any other Act with similar intent until the Senate has heard from enough unbiased technical experts to realize that the goals of the Act are not technically achievable and that the unintended consequences of the Act would be disastrous for the US economy and might create a roadblock in the pursuit of national security.

Not Technically Achievable

The MPAA and RIAA member organizations, hereinafter called "the studios", have apparently made the claim that what they are requesting requires merely the addition of a well understood and inexpensive chip to each consumer electronics and home computer product. Because manufacturers of that equipment have not added that simple chip, the claim is made that those industries are recalcitrant at best and actively hostile against the entertainment industry at worst. The CBDTPA includes severe penalties on these industries should they fail to employ this technology promptly.

The security requirements that the studios have put forth encompass a number of areas that have been thoroughly studied by the security profession for decades. These requirements can not be met technically today. There is not even any promising research that might give a solution to these problems. You do not need to take my word for this. You can call in the National Security Agency to give you a briefing on Mandatory Access Controls (MAC), which is their name for the main thing the studios are trying to achieve, and on Tamper Resistance (TR). The history of MAC is not classified. The history of TR is probably classified, but the NSA could brief you in open session on what can be achieved in TR using unclassified technology, under consumer technology constraints (e.g., not using explosives, steel fire safes or motion sensors). You could also get briefings on this technology from those of us who are security researchers in the computer industry. We have been studying these problems for years, although probably not as intensely as the NSA has.

In addition to these formidable problems that the NSA has addressed, the studios apparently expect to achieve something no one in the security industry has dreamed of achieving – what the studios call "plugging the analog hole". They expect to have a simple chip added to cameras and audio recorders that would detect and refuse to record any material that has been copyrighted, for example by pointing a video camera at a television or theater movie screen.

On this same topic, there are directly opposing conclusions about technical feasibility. The most respected technical experts in security, at the NSA, in academia and in industry, will tell you that the security mechanisms the studios imagine are not possible to achieve today. The studios, whose expertise is in portraying fantasies as if they were believable but not in security, have a fantasy about a cheap, simple chip that merely needs to be added to consumer devices and that would then magically solve their problem. **Which of these groups of experts should the Congress choose to believe? Which should be allowed to shape US law?**

Disaster for the US Economy

Given that the studios' desire is unachievable, penalties on a large industry that is important to the US economy could be disastrous. If the law includes the presumption that this result is easily achievable and punishes companies for failing to demonstrate that, then stating the truth that the result is not achievable invites punishment rather than reform of the law.

#### Danger for US National Security

The CBDTPA, like the DMCA before it, punishes or threatens to punish those of us in the security profession who attack proposed or fielded technical protection measures, discover their weaknesses and publish those results – all in accordance with normal academic process. In the case of the DMCA, we saw this threat of punishment inhibit research into detecting and defeating steganography – a technology allegedly used by Usama bin Laden to communicate with his followers.

#### A Tough Problem for the Studios

In spite of my concern that these bills advanced by the studios to protect their own business interests could be disastrous economically and from the point of view of national security, I can understand and appreciate their concerns.

Digital audio and video are remarkable technologies. My professor and mentor, Dr. Thomas G. Stockham, Jr., was a pathfinder in this field and I had the pleasure of watching it from its very beginnings in the mid 1960's. With digital technology, my local singing group (The Trinity Consort, Portland) can record, edit and produce a commercial quality CD of their performances without having to use a recording studio. With the web, they could sell copies without using any distribution channel owned by the studios. My girlfriend can use my DV video camera to film documentaries and then use her personal computer to edit and write DVDs of a very professional finished product. Friends of hers use precisely the same technology to produce feature length films that are being sold on DVD and rented through video rental stores, also bypassing the studios.

Digital methods for recording, editing, storing, copying and transmitting music and video are much more accurate and much less expensive than the technologies they replaced. The record and movie studios that are now complaining once welcomed this change in technology. It reduced their costs significantly and, as a result, increased their profits. However, it also lowered the barrier to entry for competitors in their business. The reduction in cost of digital technology has continued to the point that a middle-class consumer can now afford the hardware and software necessary to become a competitor of the studios – not, perhaps, in artistic content but certainly in the mundane tasks of copying, storing and distributing audio and video. Those acts are now effectively without any barrier to entry and from the point of view of an economist, without value. That is, an entity that proposes to add value by copying and distributing audio or video has added no real value and therefore does not deserve to be paid anything for its "added value". I do not condone piracy. I believe piracy should be prosecuted strongly. However, I do not believe piracy is the real issue here. I believe the issue is the inherent loss of value in the act of copying and distributing content and the technical impossibility of preventing the copying and distribution of content for lack of effective technical protection measures.

When the conditions that created a business opportunity change, removing that business opportunity, any business based on the earlier conditions must change or die. Companies do not like to change. They use any means at their disposal to try to avoid having to make fundamental changes. Outlawing of competition is one attempt, and we are seeing that attempt here in the DMCA and now the CBDTPA.

The problem here is that the manufacturers of digital technology are not villains out to harm the studios. The "villain" of this piece is digital technology itself.

This gives the studios an obvious solution. They can eschew digital technology completely and go back to releasing product on vinyl records, celluloid film and maybe VHS videotapes. That technology was something they understood. It is hard to copy accurately and expensive to copy and distribute in bulk.

Of course, I offer that suggestion facetiously, to emphasize the point that the problem the studios face is inherent in the digital technology they embrace. If they could keep it as their private technology, without allowing anyone else to use it, then they might retain their market and enjoy the extra profits that digital technology permits. If, on the other hand, they were to restructure their pricing and business practices to reflect the cost changes inherent in digital technology, they could seriously reduce the incentive for piracy but would have to radically change their business organizations. They will have to

make those changes sooner or later. The question in your hands, in the US Congress, is whether they will be allowed to damage a much more important US industry and possibly US national security in their flailing around to find some means of avoiding that uncomfortable change.

Please, defeat the CBDTPA as soundly and as soon as possible. Thank you.

Sincerely,

Carl M. Ellison  
Senior Security Architect