

COMPETING DEFINITIONS OF "OPENNESS" ON THE NII

By Jonathan Band¹

Introduction

In the early 1990s, the computer, entertainment, and communications trade press began to devote increasing attention to the "information infrastructure." Although no one vision for the information infrastructure emerged, the dominant metaphor was the "information superhighway." Just as the federal interstate highway program of the 1950s and '60s created a vast road network that facilitated automobile travel throughout the United States, so too would the information superhighway create a vast communications network that would facilitate the movement of digital information throughout the United States.

With the election in 1992 of Vice President Gore, an early champion of the information infrastructure, Washington also began to focus more attention on the information infrastructure. The Clinton Administration in 1993 issued "The National Information Infrastructure: Agenda for Action," which sketched out the Administration's basic vision for the National Information Infrastructure (NII). One of the Administration's goals was to "promote seamless, interactive, user-driven operation of the NII." The Administration recognized that this goal could be accomplished only through interoperability:

Because the NII will be a network of networks, information must be transferable over the disparate networks easily, accurately, and without compromising the content of the messages. Moreover, the NII will be of maximum value to users if it is sufficiently "open" and interactive so that users can develop new services and applications or exchange information among themselves, without waiting for services to be offered by the firms that operate the NII.²

¹ Morrison & Foerster, telephone (202) 877-1555, facsimile (202) 887-0763, E-Mail: JXB1@Mofo.COM.

² The National Information Infrastructure: Agenda for Action, 9.

The Administration further recognized that interoperability could be achieved only through standardization:

To assure interoperability and openness of the many components of an efficient, high capacity NII, standards for voice, video, data, and multi-media services must be developed. Those standards also must be compatible with the large installed base of communications technologies, and flexible and adaptable enough to meet user needs at an affordable cost.³

While recognizing the importance of standardization, the Administration also conceded that in the information and communications industries, the standards process "has not always worked to speed technological innovation and serve end-users well."⁴ Once it identified this critical problem, however, the Administration failed to offer a meaningful solution. It simply charged the National Institute for Standards and Technology to "review and clarify the standards process to speed NII applications."⁵

It soon became apparent to the Administration, Congress, and industry that interoperability and openness required more than NIST's review and clarification of the standards process. Since the issuance of the "Agenda for Action" in 1993, the issues of interoperability, openness, and standardization on the NII have been debated heatedly inside the Beltway. A broad consensus has emerged that the government should not establish NII standards but rather facilitate their establishment by the private sector. The government, in other words, should help define the rules of the road. At the same time, no consensus has emerged concerning those rules of the road. Everyone supports "openness," but each firm seeking to participate in the NII has its own definition of "openness" that supports its narrow commercial interest. The differences between the varying definitions of openness are particularly pronounced with respect to software interfaces. This paper examines some of the definitions of openness that have emerged during

³ fo=159>Idfo=158>., 10.

⁴ fo=159>Idfo=158>.

⁵ fo=159>Idfo=158>.

the course of the debate.

The Working Group on Intellectual Property Rights

The Agenda for Action established the National Information Infrastructure Task Force under the chairmanship of Commerce Secretary Ron Brown. The Task Force included an Information Policy Committee, which in turn included a Working Group on Intellectual Property Rights. This Working Group, under the chairmanship of Patent Commissioner Bruce Lehman, was initially charged with the task of determining the adequacy of existing copyright law to protect content distributed on the NII. In October 1993, however, the Working Group requested comments from the public on a wider range of intellectual property issues relating to the NII, including: "Should standards be established to encourage or require the intercommunication or exchange of information and the interoperability of the different types of computer software and systems supporting or utilizing the NII?"⁶ This question introduced the possibility that the government may require software interoperability on the NII. Virtually all parties submitting comments agreed with the government's basic goals of interoperability and standardization, but they disagreed on how to achieve these goals.

Joint comments filed by the Business Software Alliance (BSA)⁷ and the Alliance to Promote Software Innovation (APSI) recognized the central role of software in the NII: While much of the talk about the NII revolves around hardware, it is essential to understand that what makes the whole system work is software. Fiber optic networks and digital information hardware without software are incapable of responding to even the simplest command or forwarding the simplest message. The hardware may serve as the "muscle" but it is the software that will operate as the "brains" of the NII. Software transforms the raw power of the high

⁶ 58 Fed. Reg. 53917 (Oct. 19, 1993) (emphasis added).

⁷ The BSA represents several large independent software houses, including Microsoft, Lotus, and WordPerfect.

capacity networks and computers into information that helps people at work, school, and home.⁸

APSI and BSA then asserted that "the elimination of incompatibilities is in everyone's best interests."⁹ Because compatibility was in "everyone's best interests," the market would achieve it efficiently without government interference.

The American Committee for Interoperable Systems (ACIS)¹⁰ agreed that the market would select standards, but cautioned that the software developers whose interface specifications became de facto standards would try to assert copyrights in those standards in an effort restrict competition and extract monopoly rents. ACIS noted that the U.S. Court of Appeals for the Second Circuit in *Computer Associates Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992) had ruled that copyright protection did not extend to interface specifications, but observed that many circuits had not yet considered the issue. In those circuits, "competing vendors who develop products conforming to th[e] de facto specifications would face costly litigation as well as the possibility the a court might erroneously refuse to follow the Second Circuit's lead."¹¹

ACIS also addressed the software reverse engineering technique known as disassembly.¹² In certain circumstances, a competitor may be able to discern the de facto NII standard interface specifications only by engaging in disassembly. ACIS was confident that the

⁸ Joint Statement of the Business Software Alliance and the Alliance to Promote Software Innovation, Nov. 18, 1993, 4-5.

⁹ fo=159>Idfo=158>., 9.

¹⁰ ACIS represents firms such as Sun Microsystems, Storage Technology Corporation, and AT&T Global Information Solutions (formerly NCR), whose computer hardware and software products interoperate with systems developed by other vendors.

¹¹ ACIS Comments on Intellectual Property Issues Involved in the National Information Infrastructure Initiative, Dec. 10, 1993, 5.

¹² Disassembly is the translations of the 0's and 1's of machine readable object code into a higher level human readable form. Unauthorized translations typically infringe the author's exclusive rights, but the U.S. Courts of Appeals for the Ninth and Federal Circuits found that software disassembly, when performed for a legitimate purpose and when necessary to discern unprotectable elements of a computer program, was a non-infringing "fair use." fo=159>Sega v. Accoladefo=158>, 977 F.2d 1510 (9th Cir. 1992); fo=159>Atari v. Nintendofo=158>, 975 F.2d 832 (Fed. Cir. 1992).

other circuits would agree with the Ninth and Federal Circuits that disassembly was a fair use; nonetheless, "until all circuits adopt this rule, vendors whose interface specifications become de facto NII standards may challenge the disassembly of their software products" ¹³

ACIS concluded that there is a substantial possibility that vendors will assert proprietary rights in interface specifications which become de facto NII standards. This danger is magnified by the wave of mergers and joint ventures sweeping the computer, communications, cable, entertainment, and consumer electronics industries. Several powerful companies working together may well have the market power to set a de facto NII standard over which they will exercise proprietary control to the exclusion of all competitors. ¹⁴

To eliminate the threat posed by proprietary control over de facto standards, ACIS proposed (1) that the government specifically endorse the Computer Associates and Sega decisions, and file amicus briefs urging other courts to follow suit; and (2) that the Antitrust Division of the Justice Department approve mergers and joint ventures relating to the NII only if the parties to the transaction waive any proprietary claim to de facto NII standard interface specifications. ACIS, however, acknowledged that some software interfaces might be patentable subject matter, and did not oppose patent protection for such interfaces provided they met the statutory requirements of novelty and non-obviousness.

In July 1994, the Working Group issued a preliminary draft report styled as a Green Paper. In the introduction, the Green Paper explicitly stated that it would not address "the current debate over whether or to what extent certain aspects of computer programs are or should be protected under copyright laws. . . ." ¹⁵ Instead, the Green Paper focussed primarily on copyright protection for content flowing through the NII.

¹³ fo=159>Idfo=158>., 6.

¹⁴ fo=159>Idfo=158>., 6-7.

¹⁵ fo=159>Intellectual Property and the National Information Infrastructurefo=158>, July 1994 ("Green Paper"), 2.

In its closing pages, however, the Green Paper turned briefly to the issue of intellectual property protection for NII-related standards. The Green Paper noted that "[i]nteroperability and interconnectivity of networks, systems, services and products operating within the NII will enhance its development and success."¹⁶ The Green Paper then signalled its support for intellectual property protection of NII-related standards. Specifically, the Green Paper stated that in the case of standards to be established, by the government or the private sector, the owner of any intellectual property rights involved must be able to decline to have its property used in the standard, if such use would result in the unauthorized exercise of those rights. If the rights holder wishes to have its intellectual property as part of the standard, an agreement to license the necessary rights on a nondiscriminatory basis and on reasonable terms may be required. In the case of de facto standards, arising out of market domination by an intellectual property rights holder, unfair licensing practices can be dealt with through the antitrust laws.¹⁷

While the Green Paper approved of intellectual protection for NII-related standards generally, it took no position on the narrower issue of whether NII software interface specification standards should receive copyright protection. Rather, it referred to a broader category of NII standards, such as copyright management systems and encryption technologies, which properly are the subject matter of patents. Indeed, the Green Paper referenced the FCC's recent adoption of a patented A.M. radio stereophonic transmitting system as a technical standard as an example of proprietary rights in standards. Thus, the Green Paper's recognition of proprietary rights in NII standards should not be construed as endorsement of copyright protection for NII interface specification standards.

The Set-Top Box Debate

While the Working Group was preparing its report, Congressman Markey of Massachusetts entered the fray. Markey, Chairman of the House Telecommunications and

¹⁶ fo=159>Idfo=158>., 139.

¹⁷ fo=159>Idfo=158>., 140.

Finance Subcommittee, had introduced legislation breaking down the barriers between the telecommunications and cable industries as a means of facilitating the development of the NII. While studying the issue, he began to appreciate the significance of the television set top convertor box (set-top box). The set-top box is envisioned as the entry point of the NII into the individual home or business. The hardware and software in the box will have to be compatible with the information superhighway outside the home as well as the television, computer, and application software inside the home. Markey soon understood that proprietary control over the set-top box interfaces would bestow control over access to the entire NII.

On February 1, 1994, Markey held a hearing on the set-top box issue. Witnesses from Microsoft and Sun Microsystems presented conflicting visions of proprietary control of set-top box interfaces, and, by implication, all critical NII interfaces.

Nathan Myhrvold, Microsoft's Senior Vice President for Advanced Technology, began by describing three necessary characteristics any set-top box (or any NII appliance) operating system must possess: (1) "it must be an open system which encourages independent third parties to participate in creating applications, services, and other products to work in concert with it";¹⁸ (2) "it must ensure sufficient compatibility for information appliances to work with each other, while at the same time not requiring such great conformity and similarity so as to stifle innovation";¹⁹ and (3) it must be neutral to different types of communications networks, e.g., telephone and cable television. Significantly, Microsoft viewed the openness and compatibility of the operating system only in terms of the ability of other vendors to attach to the operating system, not in terms of the ability of other vendors to compete with the operating system.

Myhrvold stated that "consumer demand and market forces will force companies to ensure that their systems have such characteristics."²⁰ Market forces also will lead to "maximum

¹⁸ Written Statement of Nathan P. Myhrvold, Feb. 1, 1994, 5.

¹⁹ fo=159>Idfo=158>.

²⁰ fo=159>Idfo=158>.

innovation" and "the best quality products at lowest prices."²¹ By contrast, if the government set the standards, "development will be slowed, innovation inhibited, and technology frozen at current levels."²²

Myhrvold explained that "Microsoft is pursuing an open systems strategy with its own products. Thus, any Microsoft [interactive television] operating system would be made readily and widely available. Microsoft is committed to communicate with, include, and listen to, the content providers and independent software vendors that will be developing the applications to run in . . . NII information appliances."²³ For Microsoft, "open" meant open for attaching, but not competing, products.

Myhrvold acknowledged "that there are some who would go further and say that a system is not truly 'open' unless its implementation or interfaces are in the public domain."²⁴ Myhrvold disagreed with such a definition of openness, and provided a vigorous defense of proprietary interfaces:

Without the incentive offered by the ability to license intellectual property, the information infrastructure would not get built. R&D of the type needed to develop complex products like interactive television requires the investment of hundreds of millions of dollars. Companies must be able to recoup those investments by licensing the rights to use the fruits of those investments. In addition, public domain standards give international competitors a free ride on technology and intellectual property developed here in the U.S.²⁵

This passage combines two of the principal tenets of the "maximalist" intellectual property position. Protection for interface specifications is necessary (1) to provide adequate incentive for innovation and (2) to enable U.S. firms to withstand foreign competition. The passage neglects to mention, however, that protection for the set-top box operating system

²¹ fo=159>Idfo=158>., 6.

²² fo=159>Idfo=158>.

²³ fo=159>Idfo=158>., 15.

²⁴ fo=159>Idfo=158>.

²⁵ fo=159>Idfo=158>., 23.

interface specifications would give Microsoft control of a multi-billion dollar market, leading to profits orders of magnitude larger than its R&D investment. The passage also neglects to mention that many foreign competitors have become so technologically sophisticated that they may well develop critical interfaces needed by U.S. firms.

Myhrvold's testimony also reflects the maximalist tendency to misrepresent the position of the interoperable developers. The interoperable developers did not want the government to set standards nor did they want to place interface implementations in the public domain. The testimony of Wayne Rosing, Corporate Executive Officer of Sun Microsystems, made these points clearly.

At the outset, Rosing emphasized the importance of interoperability to the success of the NII:

Interoperability is what allows systems with multiple components to work together, and it creates the opportunity for the existence of competing, interchangeable implementations.

Interoperability assures a level playing field for businesses interested in providing products and services for the NII; it also guarantees consumers the widest possible range of choices at competitive prices.²⁶

It is worth noting that Rosing's "interoperability" is different from Myhrvold's "openness" or "compatibility." Rosing spoke of "competing, interchangeable implementations," while Myhrvold referred to independently developed applications attaching to Microsoft's operating system.

Rosing explained that interoperability depended on standard interface specifications, and took pains to distinguish specifications from implementations: "Interface specifications are pieces of paper; implementations are actual products or services."²⁷ He also observed that "the distinction between an interface specification and an implementation is important because the

²⁶ Testimony of Wayne Rosing, Feb. 1, 1994, 2.

²⁷ fo=159>Idfo=158>.

former provides the basis for interoperability, while the latter provides the basis for competition."²⁸

Rosing then discussed the dangers of permitting ownership of interface specifications: Monopoly control of interfaces might make specifications unavailable to third parties, or it might allow access only to a select group of suppliers, thereby limiting competition. A similar anti-competitive impact would occur if interface specifications were only available for excessive license fees, by effectively prohibiting new entrants. Incomplete or untimely disclosure of interface specifications might also make true interoperability difficult, and stymie new, smaller entrants.²⁹

Rosing analogized proprietary interface specifications to barriers on the information superhighway.

Rosing next described his view of the government's proper role in the NII. He stressed that the government should not set standards: "That would freeze innovation and greatly limit all the benefits of competition."³⁰ Further, he did not want the government to interfere with intellectual property protection for interface implementations. He did, however, advocate government mandated barrier-free interface specifications. He proposed two sets of government actions to achieve this goal. First, the government should "designate critical NII interfaces as barrier-free."³¹ Second, the government should define certain requirements relating to these interfaces, including: a fully and publicly documented specification; availability to all developers; no license fees; no intellectual property restrictions; alteration only with timely notice; and openness on both sides of the interface, i.e., for attaching and competing products.

In short, Microsoft and Sun articulated two radically different visions of the NII. In Microsoft's view, the interface specifications to critical operating systems would be proprietary,

²⁸ fo=159>Idfo=158>., 3.

²⁹ fo=159>Idfo=158>., 4-5.

³⁰ fo=159>Idfo=158>., 6.

³¹ fo=159>Idfo=158>.

but the proprietor would allow other vendors to attach their products to the proprietor's operating system. In Sun's view, the interface specifications would be in the public domain, and any vendor would be permitted to develop its own implementation of any product conforming to those specifications, including operating systems. Microsoft's vision would require a reversal of Computer Associates, because Microsoft seeks copyright protection for interface specifications. Sun's vision, conversely, went beyond Sega. Sun not only wanted the interface specifications unprotected, it wanted them published, thereby obviating the need to reverse engineer. Sun also seemed to suggest that critical NII interface specifications should not be eligible for patent protection.

After hearings involving testimony from leading companies such as Microsoft and Sun Microsystems, Congressman Markey amended his telecommunications bill to provide for a Federal Communications Commission (FCC) study of set-top box interfaces. Markey's provision included the following Congressional findings:

- (1) the convergence of communications, computing, and video technologies will permit improvements in interoperability between and among those technologies;
- (2) in the public switched telecommunications network, open protocols and technical requirements for connection between the network and the consumer, and the availability of unbundled customer equipment through retailers and other third party vendors, have served to broaden consumer choice, lower prices, and spur competition and innovation in the customer equipment industry;
- (3) set-top boxes and other interactive communications devices could similarly serve as a critical gateway between American homes and businesses and advanced telecommunications and video programming networks;
- (4) American consumers have benefited from the ability to own or rent customer premises equipment obtained from retailers and other vendors and the ability to access the network with portable, compatible equipment;
- (5) in order to promote diversity, competition, and technology innovation among suppliers of equipment and services, it may be necessary to

make certain critical interfaces with such networks open and accessible to a broad range of equipment manufacturers and information providers;

- (6) the identification of critical interfaces with such networks and the assessment of their openness must be accomplished with due recognition that open and accessible systems may include standards that involve both nonproprietary and proprietary technologies³²

The language of the sixth finding was carefully crafted to remain neutral on the issue of whether software interface specifications could be protected by copyright: the interfaces referred to in the paragraph could include both software and hardware interfaces; the form of ownership could include patents or copyrights; and "standards that involve . . . proprietary technologies" could mean either standards that include proprietary technologies or standards that apply to proprietary implementations.

The provision also included a finding concerning the government's role with respect to standard setting: "whenever possible, standards in dynamic industries such as interactive systems are best set by the marketplace or by private sector standard-setting bodies" ³³ This finding emphasized Markey's aversion to having the government establish the standards for the NII.

Markey did, however, envision a critical role for the FCC concerning these standards:

- (A) to identify, in consultation with industry groups, consumer interests, and independent experts, critical interfaces with such networks (i) to ensure that end users can connect information devices to such networks, and (ii) to ensure that information service providers are able to transmit information to end users, and
- (B) as necessary, to take steps to ensure these networks and services are accessible to a broad range of equipment manufactures, information providers, and program suppliers.³⁴

This language suggests that Markey envisioned competition at each juncture of the NII,

³² H.R. 3636, § 205(a).

³³ § 205(a)(8).

³⁴ § 205(a)(9).

including, presumably, the set-top box operating system. The provision was silent on how the FCC was to ensure such competition.

The provision then required the FCC to commence an inquiry:

- (1) to examine the impact of the convergence of technologies on cable, telephone, satellite, and wireless and other communications technologies likely to offer interactive communications services;
- (2) to ascertain the importance of maintaining open and accessible systems in interactive communications services;
- (3) to examine the costs and benefits of maintaining varying levels of interoperability between and among interactive communications services;
- (4) to examine the costs and benefits of establishing open interfaces (A) between the network provider and the set-top box or other interactive communications devices used in the home or office, and (B) between network providers and information service providers, and to determine how best to establish such interfaces;

* * *

- (7) to ascertain the conditions necessary to ensure that any critical interface is available to information and content providers and others who seek to design, build, and distribute interoperability devices for these networks so as to ensure network access and fair competition for independent information providers and consumers³⁵

The seventh paragraph appears to contemplate competition on either side of each critical interface. The provision left it to the FCC to determine how to ensure such competition.

Not surprisingly, maximalist organizations such as the Computers Systems Policy Project (CSPP)³⁶ found this language extremely troubling. In their lobbying effort to defeat it, they misrepresented the proposed FCC inquiry as a government standard-setting exercise, notwithstanding the explicit finding opposed to government standard setting. They also tried to

³⁵ § 205(b).

³⁶ The CSPP represents many of the large computer systems vendors, including IBM, Apple, and Hewlett-Packard.

eliminate the need for the entire provision by making three "concessions," two true and the third false. The first true concession was that open interfaces should mean interface specifications readily available to all vendors so that they could "build products that are compatible with both sides of the interface,"³⁷ i.e., attaching and competing products. The second true concession was that open interfaces should mean specifications revised only with timely notice or public process.³⁸ These concessions reflected the CSPP members' desire to limit Microsoft's ability to dominate the NII.

Notwithstanding these concessions, the CSPP still insisted that an open interface could involve proprietary technology. "Developers of specifications for interfaces must be able to retain ownership of and benefit from the intellectual property that goes into the specifications, in order to maintain incentives to develop new technologies."³⁹ The false concession concerned a voluntary industry-wide licensing policy: "When a developer of an NII system proposes proprietary technologies for incorporation in critical NII interface standards, the developer of the technology should be prepared to license the technology on reasonable terms and conditions, demonstrably free of discrimination."⁴⁰

This language, modelled on the patent policy of most standards organizations, has a fundamental flaw in the NII context: it lacks an enforcement mechanism. When a firm joins a standards organization, it agrees to abide by the patent policy. If the firm refuses to license its technology on reasonable and non-discriminatory terms, the organization can refuse to include the technology in a standard. Further, most standards organizations have adopted dispute resolution processes to resolve quickly licensing disputes between organization members.

There is, by contrast, no single standards organization for the NII. Thus, there will be

³⁷ Computer Systems Policy Project, *Perspectives on the National Information Infrastructure: Ensuring Interoperability*, Feb. 1994, 7 (CSPP Report).

³⁸ *Id.*

³⁹ Statement of Ellwood R. Kerkeslager, AT&T Vice President, Technology & Infrastructure, May 26, 1994, 3.

⁴⁰ CSPP Report, 10.

no means of enforcing a voluntary "reasonable and non-discriminatory" licensing policy. Even if such a licensing policy were enacted into law, it would simply lead to endless litigation; a license fee that seems "reasonable" to Microsoft or IBM, for example, may not seem "reasonable" to a small competitor.

The CSPP itself appeared to recognize the shortcomings of its voluntary licensing policy. In a House hearing on "Electronic Commerce in the National Information Infrastructure," its witness acknowledged that "in markets that are not competitive," the government would have to "provid[e] oversight, and interven[e] when necessary to ensure that critical interfaces are open."⁴¹

At the same hearing, Computer and Communications Industry Association (CCIA) President Allan Arlow explained the benefits of non-propriety NII interfaces: It is my belief that sooner or later, we will have an open, non-proprietary NII. The question we will answer in the next few years is whether we will have this open, competitive system in the near future -- with it[s] attendant economic and social benefits -- or only in the distant future, after numerous ugly antitrust suits and regulatory and legal squabbling Make the critical interfaces open, and you can rest assured that the genius of competition and free enterprise will deliver the best NII in the shortest possible time.⁴²

The Four Definitions of Openness

Thus far, at least four definitions of openness on the NII have emerged. Following is a description of these four views, proceeding from the most proprietary to the least proprietary.

1. Microsoft believes that interface specifications should be proprietary, but will permit openness by licensing the specifications to firms developing attaching (but not competing) products. At least with respect to software interfaces, this position will require reversal of the

⁴¹ Kerkeslager Statement, 8.

⁴² Statement of Allan J. Arlow, CCIA President and CEO, May 26, 1994, 5.

Second Circuit's Computer Associates decision.

2. CSPP also believes that interfaces specifications can be proprietary, but will permit openness by licensing the specifications on reasonable and non-discriminatory terms for the development of products on either side of the interface. This position, too, would require reversal of Computer Associates.

3. ACIS believes that software interface specifications are not protectable under copyright, and that therefore reverse engineering (including disassembly) to discern those specifications does not infringe the author's copyright. Software and hardware interface specifications, however, may receive patent protection if they meet the statutory requirements.

4. Sun believes that critical NII software and hardware interface specifications should receive neither copyright nor patent protection. Further, the interface specifications should be published, obviating the need for reverse engineering.⁴³

These different definitions of openness reflect the difficulties inherent in the convergence of two conflicting cultures: telecommunications and computers. The telecommunications industry historically has been extremely open, in part because of government regulation of the AT&T monopoly, and in part because of the obvious network externalities flowing from a universal system. In contrast, the computer industry historically has been relatively closed, with incompatible stand-alone systems. The profit margins in closed systems are much higher, and the computer industry has reluctantly become more open over the past decade only in response to consumer demand. The computer industry realizes that it will have to become even more open to participate in the telecommunications-oriented world of the NII, but many firms will remain as closed as possible in an effort to extract additional profits.

Openness on the NII is as American as motherhood and apple pie. But just as there are many different types of apple pie, so too are there many different types of "openness." When a

⁴³ Oracle shares Sun's views. See Tim Hyland, Standardization on the Information Highway, April 21, 1994.

firm representative states that the firm supports openness on the NII, the firm representative should be required to define openness. Does she mean non-proprietary or proprietary with licensing? Does she mean licensing for the development of attaching products, or for competing products as well? Is she referring to software interfaces, or hardware interfaces, too?

The ultimate form of "openness" selected for the NII will have a significant impact on the nature of competition in the NII, which, in turn, will have far reaching implications for both our economy and our society. Accordingly, we must pay close attention to the definition of openness on the NII.

REFERENCES

Position Papers

ACIS Comments on Intellectual Property Issues Involved in the National Information Infrastructure Initiative, Dec. 10, 1993

Arlow, Allan J., May 26, 1994 Statement

Business Software Alliance and the Alliance to Promote Software Innovation, Nov. 18, 1993
Joint Statement

Computer Systems Policy Project, Perspectives on the National Information Infrastructure:
Ensuring Interoperability, Feb. 1994

Hyland, Tim, Standardization on the Information Highway, April 21, 1994

Kerkeslager, Ellwood R., May 26, 1994 Statement

Myhrvold, Nathan P., Feb. 1, 1994 Statement

The National Information Infrastructure: Agenda for Action

Rosing, Wayne, Feb. 1, 1994 Statement

Working Group on Intellectual Property, Intellectual Property and the National Information Infrastructure, July 1994 ("Green Paper")

Cases

Atari v. Nintendo, 975 F.2d 832 (Fed. Cir. 1992).

Computer Associates v. Altai, 982 F.2d 693 (2d Cir. 1992)

Sega v. Accolade, 977 F.2d 1510 (9th Cir. 1992)

Other Authorities

58 Fed. Reg. 53917 (Oct. 19, 1993)

H.R. 3636, § 205