

INTRODUCTION

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Since 1980, when then-President Jimmy Carter signed the Software Amendments¹ into law, the United States has led the world in applying the principles of copyright to computer programs. It is not uncommon, in law journals, at symposia, and in academic circles around the globe, to encounter serious discussion of the merits or demerits of *Apple v. Franklin*,² *Whelan v. Jaslow*,³ or *Lotus v. Paperback*.⁴ Perhaps because the United States leads the world in software technology, it is only natural that our nation is also the world leader in this area of the law. Nineteen ninety-one, however, saw the twelve Member States of the European Communities ("EC" or "Communities") move the discussion of copyright and computer programs onto new ground.

On May 14, 1991, the Council of Ministers of the EC ("Council") approved unanimously the final text of a *Final Council Directive on the Legal Protection of Computer Programs* ("EC Software Directive" or "Directive").⁵ In so doing, the Council concluded a process which had begun three years earlier with publication of the EC Commission *Green Paper on Copyright and the Challenge of New Technology*.⁶ Consideration of the Directive included a contentious intra-industry debate over the appropriate scope of copyright protection for computer programs, particularly the definition and protection of computer program interfaces, the concept of interoperability among hardware/software system components, and the lawfulness of various techniques for reverse analysis. In the end, the Communities opted for a compromise solution, advocating a system for protecting the investments of European software developers and a strong desire to promote open systems. The European Communities achieved these two

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¹ See 17 U.S.C. §§ 101, 117 (Amended 1980).

² *Apple Computer, Inc. v. Franklin Computer, Inc.*, 714 F.2d 1240 (3d Cir. 1983), cert. dismissed, 464 U.S. 1033 (1984).

³ *Whelan Assocs. v. Jaslow Dental Laboratory, Inc.*, 797 F.2d 1222 (3d Cir. 1986), cert. denied, 479 U.S. 1031 (1987).

⁴ *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37 (D. Mass. 1990).

⁵ *Final Council Directive on the Legal Protection of Computer Programs*, 34 O.J. EUR. COMM. (No. L 122) 42 (1991). The Directive is reprinted in full *infra* at 197 and 206.

⁶ EUR. PARL. DOC. (COM No. 88) 172 (1988). Excerpts from the Green Paper are reprinted *infra* at 228.

goals by endorsing the definition of computer programs as literary works under the international copyright system and by creating a totally new, limited right of decompilation.

Except among those American hardware and software companies that were involved directly in the debates, the EC Software Directive has received little attention or critical commentary in the U.S. In international forums, however, the Directive is much discussed. The World Intellectual Property Organization ("WIPO"), which is charged with administering the *Berne Convention for the Protection of Literary and Artistic Works*,⁷ recently proposed consideration of a protocol to the Berne Convention which roughly tracks the language of the decompilation right established by the EC Software Directive. The SOFTIC Symposium held December 8-10, 1991 in Tokyo, Japan, focused an entire day's discussion on the Directive. Even more important, the Directive mandates the intellectual property law policy to be followed by some of our country's most important trading partners. As such, it deserves more consideration in the U.S. than it has received to date.

The EC Software Directive is but one of over two-hundred directives, or formal policy statements, designed to effect a Europe without economic frontiers, "EC '92." Member countries have until January 1, 1993 to conform their national laws to the principles outlined in the EC Software Directive. Besides the twelve countries which currently make up the European Communities, the *Convention Establishing the European Free Trade Association*⁸ and related trade agreements⁹ obligate Austria, Finland, Iceland, Norway, Sweden, and Switzerland to apply the Directive within their borders as well. Additionally, Poland, Czechoslovakia, and Hungary have concluded bilateral agreements¹⁰ with the EC which obligate them to establish, within five years, the same level

⁷ Sept. 9, 1886, *revised* Paris, July 24, 1971, 25 U.S.T. 1341, T.I.A.S. No. 7868, 828 U.N.T.S. 221.

⁸ Jan. 4, 1960, 370 U.N.T.S. 3.

⁹ The European Free Trade Association ("EFTA") does not have the power to enter into trade agreements on behalf of its member nations. The EC, therefore, has developed individual trade agreements with each individual country. See Council Regulation 2836/72, *as amended*, O.J. L300/1 (1972) (EC-Austria Agreement); Council Regulation 2838/72, *as amended*, O.J. L300/96 (1972) (EC-Sweden Agreement); Council Regulation 2840/72, *as amended*, O.J. L300/188 (1972) (EC-Switzerland Agreement); Council Regulation 2842/72, O.J. L301/1 (1972) (EC-Iceland Agreement); Council Regulation 1691/73, O.J. L171/1 (1973) (EC-Norway Agreement); Council Regulation 3177/73, *as amended*, O.J. L328/1 (1973) (EC-Finland Agreement).

¹⁰ Council Decision 89/593, O.J. L339/1 (1989) (EC-Poland Agreement); Council Decision 89/215, O.J. L88/1 (1989) (EC-Czechoslovakia Agreement); Council Decision 89/593, O.J. L327/1 (1988) (EC-Hungary Agreement).

of copyright protection for computer programs as is found within the EC.

The most contentious discussions concerned the lawfulness of various methods of reverse analysis. Reverse analysis and reverse engineering are not terms in the copyright lexicon; they are more appropriately encountered in trade secret or patent law. They are important because more computer programs are distributed only in machine-usable object code rather than human-readable source code. Thus, unlike other literary works, the literal text of computer programs cannot be "read" or understood except by those very few who can decipher the zeros and ones of a program's object code. The less intrusive black box techniques for studying computer programs, such as activity traces, were less problematic than decompilation or disassembly. These latter methods have copyright implications because they entail the copying of a program's object code in order to convert its ones and zeros into an approximation of the source code in which the program was originally written. Without a derogation from the program copyright owner's otherwise exclusive right to make copies, program decompilation and disassembly are unlawful. The Directive, as originally drafted, contained no such explicit right.

Companies aligned with the European Committee for Interoperable Systems ("ECIS")¹¹ endorsed creation of a decompilation right in order to be able to study computer program elements not protected by copyright, particularly program interface specifications. Without such a right, they argued, computer program copyright owners would be afforded greater protection than the copyright system was designed to provide. Hardware or software companies "dominant" in particular areas could assert their intellectual property right to prevent third parties from developing and marketing add-on or competing programs.¹²

Companies associated with the Software Action Group for Europe ("SAGE"),¹³ on the other hand, opposed any derogation

¹¹ See *infra* at 245 for a full-text reprint of ECIS's *Statement of Principles* on the EC Software Directive.

¹² The controversy between Nintendo and Atari is probably the most dramatic example of what some in the computer industry see as the result if program interfaces can be protected by copyright. See *Atari Games Corp. v. Nintendo of America, Inc.*, 1991 WL 57304, 1991 Copr. L. Dec. ¶ 26,703, 18 U.S.P.Q.2d 1935 (N.D. Cal. Apr. 11, 1991); and related cases, *Atari Games Corp. v. Nintendo of America, Inc.*, 897 F.2d 1572 (Fed. Cir. 1990); *Tengen, Inc. v. Nintendo of America, Inc.*, 1989 WL 201201, 1990 Copr. L. Dec. ¶ 26,531 (N.D. Cal. June 23, 1989).

¹³ See *infra* at 256 for a full-text reprint of the position paper submitted by SAGE in July 1990.

of rights authorizing commercial free riding under the guise of research and analysis. While not opposing less intrusive forms of reverse analysis, SAGE members argued that permitting program decompilation would allow software cloners simply to usurp the efforts of others who had assumed the expense and risk of creating new software programs. Market forces, they insisted, will be sufficient to induce program creators to make sufficient program interface information widely available in order to ensure interoperability among the programs and systems of various vendors.

The Communities decided in the end upon a carefully crafted compromise. Program copyright owners would be granted the exclusive right to make program copies but subject to certain limited derogations found in articles 5 and 6 of the Directive. Thus, program decompilation will be permitted without authorization of the software copyright owner but only where legitimate users of computer program copies can demonstrate that less intrusive means of achieving interconnectivity among system components are unavailable. Program decompilation will be permitted only to create interoperable programs, and the right to engage in decompilation when absolutely necessary cannot be waived by contract.

Debate over the lawfulness of decompilation and the proper balance between intellectual property protection and healthy competition has yet to come to the United States as dramatically as it did in the EC Software Directive, but telltale signs of future conflict are already evident.¹⁴ Meanwhile the Member States of the Communities are rushing to amend their national laws by the end of 1992. Their experience in implementing the goals of the Directive should be instructive for industry and policy-makers in the United States.

The *Cardozo Arts & Entertainment Law Journal* is to be commended for bringing the EC Software Directive, and the important questions it raises, to the attention of its readers. Computer software is but the most recent in a series of challenges to the copyright system wrought by new technologies. Others are sure

¹⁴ See, e.g., Floor Statement of Senator Paul Simon (D-Ill.) in introducing S. 1035, a bill to amend section 107 of Title 17, United States Code, relating to fair use with regard to unpublished works. 137 CONG. REC. S5648 (daily ed. May 9, 1991):

Also testifying at the hearing were computer industry representatives concerned about the unintended consequences this bill might have on certain unpublished works such as computer source codes. As I noted upon introduction last year, this bill is not intended to provide new fair use access to those works through decompilation, and I have worked closely with those who have concerns to see that it does not.

to follow as more “traditional” copyrightable works, including graphics, sound, and motion pictures, are digitized and combined in new ways. For over two hundred years, the copyright system has proven itself adaptable to new forms of “writing” and it will likely do so in the future.

Final Council Directive on the Legal Protection of Computer Programs,
34 O.J. EUR. COMM. (No. L 122) 42 (1991).

COUNCIL
COUNCIL DIRECTIVE
of 14 May 1991
ON THE LEGAL PROTECTION OF COMPUTER PROGRAMS
(91/250/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community and in particular Article 100a thereof,

Having regard to the proposal from the Commission,¹

In cooperation with the European Parliament,²

Having regard to the opinion of the Economic and Social Committee,³

Whereas computer programs are at present not clearly protected in all Member States by existing legislation and such protection, where it exists, has different attributes;

Whereas the development of computer programs requires the investment of considerable human, technical and financial resources while computer programs can be copied at a fraction of the cost needed to develop them independently;

Whereas computer programs are playing an increasingly important role in a broad range of industries and computer program technology can accordingly be considered as being of fundamental importance for the Community's industrial development;

Whereas certain differences in the legal protection of computer programs offered by the laws of the Member States have direct and negative effects on the functioning of the common market as regards computer programs and such differences could well become greater as Member States introduce new legislation on this subject;

Whereas existing differences having such effects need to be removed and new ones prevented from arising, while differences not adversely affecting the functioning of the common market to

¹ O.J. No. C 91, 12. 4. 1989, p. 4; and O.J. No C 320, 20. 12. 1990, p. 22.

² O.J. No. C 231, 17. 9. 1990, p.78; and Decision of 17 April 1991 (yet published in the Official Journal).

³ O.J. No. C 329, 30. 12. 1989, p. 4.

a substantial degree need not be removed or prevented from arising;

Whereas the Community's legal framework on the protection of computer programs can accordingly in the first instance be limited to establishing that Member States should accord protection to computer programs under copyright law as literary works and, further, to establishing who and what should be protected, the exclusive rights on which protected persons should be able to rely in order to authorize or prohibit certain acts and for how long the protection should apply;

Whereas, for the purpose of this Directive, the term 'computer program' shall include programs in any form, including those which are incorporated into hardware; whereas this term also includes preparatory design work leading to the development of a computer program provided that the nature of the preparatory work is such that a computer program can result from it at a later stage;

Whereas, in respect of the criteria to be applied in determining whether or not a computer program is an original work, no tests as to the qualitative or aesthetic merits of the program should be applied;

Whereas the Community is fully committed to the promotion of international standardization;

Whereas the function of a computer program is to communicate and work together with other components of a computer system and with users and, for this purpose, a logical and, where appropriate, physical interconnection and interaction is required to permit all elements of software and hardware to work with other software and hardware and with users in all the ways in which they are intended to function;

Whereas the parts of the program which provide for such interconnection and interaction between elements of software and hardware are generally known as 'interfaces';

Whereas this functional interconnection and interaction is generally known as 'interoperability'; whereas such interoperability can be defined as the ability to exchange information and to mutually use the information which has been exchanged;

Whereas, for the avoidance of doubt, it has to be made clear that only the expression of a computer program is protected and that ideas and principles which underlie any element of a program,

including those which underlie its interfaces, are not protected by copyright under this Directive;

Whereas, in accordance with this principle of copyright, to the extent that logic, algorithms and programming languages comprise ideas and principles, those ideas and principles are not protected under this Directive;

Whereas, in accordance with the legislation and jurisprudence of the Member States and the international copyright conventions, the expression of those ideas and principles is to be protected by copyright;

Whereas, for the purposes of this Directive, the term 'rental' means the making available for use, for a limited period of time and for profit-making purposes, of a computer program or a copy thereof; whereas this term does not include public lending, which, accordingly, remains outside the scope of this Directive;

Whereas the exclusive rights of the author to prevent the unauthorized reproduction of his work have to be subject to a limited exception in the case of a computer program to allow the reproduction technically necessary for the use of that program by the lawful acquirer;

Whereas this means that the acts of loading and running necessary for the use of a copy of a program which has been lawfully acquired, and the act of correction of its errors, may not be prohibited by contract; whereas, in the absence of specific contractual provisions, including when a copy of the program has been sold, any other act necessary for the use of the copy of a program may be performed in accordance with its intended purpose by a lawful acquirer of that copy;

Whereas a person having a right to use a computer program should not be prevented from performing acts necessary to observe, study or test the functioning of the program, provided that these acts do not infringe the copyright in the program;

Whereas the unauthorized reproduction, translation, adaptation or transformation of the form of the code in which a copy of a computer program has been made available constitutes an infringement of the exclusive rights of the author;

Whereas, nevertheless, circumstances may exist when such a reproduction of the code and translation of its form within the meaning of Article 4 (a) and (b) are indispensable to obtain the

necessary information to achieve the interoperability of an independently created program with other programs;

Whereas it has therefore to be considered, that in these limited circumstances only, performance of the acts of reproduction and translation by or on behalf of a person having a right to use a copy of the program is legitimate and compatible with fair practice and must therefore be deemed not to require the authorization of the rightholder;

Whereas an objective of this exception is to make it possible to connect all components of a computer system, including those of different manufacturers, so that they can work together;

Whereas such an exception to the author's exclusive rights may not be used in a way which prejudices the legitimate interests of the rightholder or which conflicts with a normal exploitation of the program;

Whereas, in order to remain in accordance with the provisions of the Berne Convention for the Protection of Literary and Artistic Works, the term of protection should be the life of the author and fifty years from the first of January of the year following the year of his death or, in the case of an anonymous or pseudonymous work, fifty years from the first of January of the year following the year in which the work is first published;

Whereas protection of computer programs under copyright laws should be without prejudice to the application, in appropriate cases, of other forms of protection; whereas, however, any contractual provisions contrary to Article 6 or to the exceptions provided for in Article 5 (2) and (3) should be null and void;

Whereas the provisions of this Directive are without prejudice to the application of the competition rules under Articles 85 and 86 of the Treaty if a dominant supplier refuses to make information available which is necessary for interoperability as defined in this Directive;

Whereas the provisions of this Directive should be without prejudice to specific requirements of Community law already enacted in respect of the publication of interfaces in the telecommunications sector or Council Decisions relating to standardization in the field of information technology and telecommunication;

Whereas this Directive does not affect derogations provided for under national legislation in accordance with the Berne Convention on points not covered by this Directive;

HAS ADOPTED THIS DIRECTIVE:

Article 1

OBJECT OF PROTECTION

1. In accordance with the provisions of this Directive, Member States shall protect computer programs, by copyright, as literary works within the meaning of the Berne Convention for the Protection of Literary and Artistic Works. For the purposes of this Directive, the term 'computer programs' shall include their preparatory design material.
2. Protection in accordance with this Directive shall apply to the expression in any form of a computer program. Ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive.
3. A computer program shall be protected if it is original in the sense that it is the author's own intellectual creation. No other criteria shall be applied to determine its eligibility for protection.

Article 2

AUTHORSHIP OF COMPUTER PROGRAMS

1. The author of a computer program shall be the natural person or group of natural persons who has created the program or, where the legislation of the Member State permits, the legal person designated as the rightholder by that legislation. Where collective works are recognized by the legislation of a Member State, the person considered by the legislation of the Member State to have created the work shall be deemed to be its author.
2. In respect of a computer program created by a group of natural persons jointly, the exclusive rights shall be owned jointly.
3. Where a computer program is created by an employee in the execution of his duties or following the instructions given by his employer, the employer exclusively shall be entitled to exercise all economic rights in the program so created, unless otherwise provided by contract.

Article 3

BENEFICIARIES OF PROTECTION

Protection shall be granted to all natural or legal persons eligible under national copyright legislation as applied to literary works.

Article 4

RESTRICTED ACTS

Subject to the provisions of Articles 5 and 6, the exclusive rights of the rightholder within the meaning of Article 2, shall include the right to do or to authorize:

- (a) the permanent or temporary reproduction of a computer program by any means and in any form, in part or in whole. Insofar as loading, displaying, running, transmission or storage of the computer program necessitate such reproduction, such acts shall be subject to authorization by the rightholder;
- (b) the translation, adaptation, arrangement and any other alteration of a computer program and the reproduction of the results thereof, without prejudice to the rights of the person who alters the program;
- (c) any form of distribution to the public, including the rental, of the original computer program or of copies thereof. The first sale in the Community of a copy of a program by the rightholder or with his consent shall exhaust the distribution right within the Community of that copy, with the exception of the right to control further rental of the program or a copy thereof.

Article 5

EXCEPTIONS TO THE RESTRICTED ACTS

1. In the absence of specific contractual provisions, the acts referred to in Article 4 (a) and (b) shall not require authorization by the rightholder where they are necessary for the use of the computer program by the lawful acquirer in accordance with its intended purpose, including for error correction.
2. The making of a back-up copy by a person having a right to use the computer program may not be prevented by contract insofar as it is necessary for that use.
3. The person having a right to use a copy of a computer program shall be entitled, without the authorization of the rightholder, to observe, study or test the functioning of the program in order to determine the ideas and principles which underlie any element of the program if he does so while performing any of the acts of loading, displaying, running, transmitting or storing the program which he is entitled to do.

Article 6

DECOMPILATION

1. The authorization of the rightholder shall not be required where reproduction of the code and translation of its form within the meaning of Article 4 (a) and (b) are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs, provided that the following conditions are met:
 - (a) these acts are performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorized to [do] so;
 - (b) the information necessary to achieve interoperability has not previously been readily available to the persons referred to in subparagraph (a); and
 - (c) these acts are confined to the parts of the original program which are necessary to achieve interoperability.
2. The provisions of paragraph 1 shall not permit the information obtained through its application:
 - (a) to be used for goals other than to achieve the interoperability of the independently created computer program;
 - (b) to be given to others, except when necessary for the interoperability of the independently created computer program; or
 - (c) to be used for the development, production or marketing of a computer program substantially similar in its expression, or for any other act which infringes copyright.
3. In accordance with the provisions of the Berne Convention for the Protection of Literary and Artistic Works, the provisions of this Article may not be interpreted in such a way as to allow its application to be used in a manner which unreasonably prejudices the right holder's legitimate interests or conflicts with a normal exploitation of the computer program.

Article 7

SPECIAL MEASURES OF PROTECTION

1. Without prejudice to the provisions of Articles 4, 5 and 6, Member States shall provide, in accordance with their national legislation, appropriate remedies against a person committing any of the acts listed in subparagraphs (a), (b) and (c) below:

- (a) any act of putting into circulation a copy of a computer program knowing, or having reason to believe, that it is an infringing copy;
 - (b) the possession, for commercial purposes, of a copy of a computer program knowing, or having reason to believe, that it is an infringing copy;
 - (c) any act of putting into circulation, or the possession for commercial purposes of, any means the sole intended purpose of which is to facilitate the unauthorized removal or circumvention of any technical device which may have been applied to protect a computer program.
2. Any infringing copy of a computer program shall be liable to seizure in accordance with the legislation of the Member State concerned.
3. Member States may provide for the seizure of any means referred to in paragraph 1 (c).

Article 8

TERM OF PROTECTION

1. Protection shall be granted for the life of the author and for fifty years after his death or after the death of the last surviving author; where the computer program is an anonymous or pseudonymous work, or where a legal person is designated as the author by national legislation in accordance with Article 2 (1), the term of protection shall be fifty years from the time that the computer program is first lawfully made available to the public. The term of protection shall be deemed to begin on the first of January of the year following the abovementioned events.
2. Member States which already have a term of protection longer than that provided for in paragraph 1 are allowed to maintain their present term until such time as the term of protection for copyrighted works is harmonized by Community law in a more general way.

Article 9

CONTINUED APPLICATION OF OTHER LEGAL PROVISIONS

1. The provisions of this Directive shall be without prejudice to any other legal provisions such as those concerning patent rights, trade-marks, unfair competition, trade secrets, protection of semi-conductor products or the law of contract. Any contractual

provisions contrary to Article 6 or to the exceptions provided for in Article 5 (2) and (3) shall be null and void.

2. The provisions of this Directive shall apply also to programs created before 1 January 1993 without prejudice to any acts concluded and rights acquired before that date.

Article 10

FINAL PROVISIONS

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before 1 January 1993.

When Member States adopt these measures, the latter shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such a reference shall be laid down by the Member States.

2. Member States shall communicate to the Commission the provisions of national law which they adopt in the field governed by this Directive.

Article 11

This Directive is addressed to the Member States.

Done at Brussels, 14 May 1991

For the Council
The President
J.F. POOS

COUNCIL DIRECTIVE of 14 May 1991 ON THE PROTECTION OF COMPUTER PROGRAMS (91/250/EEC)	COM(88) 816 final.-SYN 183 EUROPEAN PARLIAMENT PROPOSAL FOR A COUNCIL DIRECTIVE ON THE LEGAL PROTECTION OF COMPUTER PROGRAMS	AMENDED PROPOSAL FOR A COUNCIL DIRECTIVE ON THE LEGAL PROTECTION OF COMPUTER PROGRAMS COM(90) 509 final. - SYN 183 (Submitted by the Commission pursuant to Article 149(3) of the EEC Treaty on 18 October 1990) (90/C 320/11)	PROPOSAL FOR A COUNCIL DIRECTIVE ON THE LEGAL PROTECTION OF COMPUTER PROGRAMS COM(90) 509 final. - SYN 183 (Submitted by the Commission pursuant to Article 149(3) of the EEC Treaty on 18 October 1990) (90/C 320/11)	ORIGINAL PROPOSAL
<p>THE COUNCIL OF THE EUROPEAN COMMUNITIES, Having regard to the Treaty establishing the European Economic Community and in particular Article 100a thereof, Having regard to the proposal from the Commission,¹ cooperation with the European Parliament,² Having regard to the opinion of the Economic and Social Committee,³ Whereas computer programs are at present not clearly protected in all Member States by existing legislation and such protection, where it exists, has different attributes;</p>	<p>THE COUNCIL OF THE EUROPEAN COMMUNITIES, Unchanged</p>	<p>THE COUNCIL OF THE EUROPEAN COMMUNITIES, Unchanged</p>	<p>THE COUNCIL OF THE EUROPEAN COMMUNITIES, Having regard to the Treaty establishing the European Economic Community and in particular Article 100a thereof, Having regard to the proposal from the Commission, In cooperation with the European Parliament, Having regard to the opinion of the Economic and Social Committee, Whereas computer programs are at present not clearly protected in all Member States by existing legislation and such protection, where it exists, has different attributes;</p>	<p>THE COUNCIL OF THE EUROPEAN COMMUNITIES, Having regard to the Treaty establishing the European Economic Community and in particular Article 100a thereof, Having regard to the proposal from the Commission, In cooperation with the European Parliament, Having regard to the opinion of the Economic and Social Committee, Whereas computer programs are at present not clearly protected in all Member States by existing legislation and such protection, where it exists, has different attributes;</p>

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Unchanged	Whereas the development of computer programs requires the investment of considerable human, technical and financial resources while computer programs can be copied at a fraction of the cost needed to develop them independently;
Unchanged	Whereas computer programs are playing an increasingly important role in a broad range of industries and computer program technology can accordingly be considered as being of fundamental importance for the Community's industrial development;
Unchanged	Whereas certain differences in the legal protection of computer program[s] offered by the laws of the Member States have direct and negative effects on the functioning of the common market as regards computer programs and such differences could well become greater as Member States introduce new legislation on this subject;
Unchanged	Whereas existing differences having such effects need to be removed and new ones prevented from arising, while differences not adversely affecting the functioning of the common market to a substantial degree need not be removed or prevented from arising;

Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
<p>Council Directive</p> <p>Whereas the Community's legal framework on the protection of computer programs can accordingly in the first instance be limited to establishing that Member States should accord protection to computer programs under copyright law as literary works and, further, to establishing who and what should be protected, the exclusive rights on which protected persons should be able to rely in order to authorize or prohibit certain acts and for how long the protection should apply;</p> <p>Whereas, for the purpose of this Directive, the term 'computer program' shall include programs in any form, including those which are incorporated into hardware; whereas this term also includes preparatory design work leading to the development of a computer program provided that the nature of the preparatory work is such that a computer program can result from it at a later stage;</p> <p>Whereas, in respect of the criteria to be applied in determining whether or not a computer program is an original work, no tests as to the qualitative or aesthetic merits of the program should be applied;</p> <p>Whereas, the Community is fully committed to the promotion of international standardization;</p>	<p>Unchanged</p>	<p>Whereas the Community's legal framework on the protection of computer programs can accordingly in the first instance be limited to establishing that Member States should accord protection to computer programs under copyright law as literary works and further in establishing who and what should be protected, the exclusive rights on which protected persons should be able to rely in order to authorize or prohibit certain acts, and for how long the protection should apply;</p>
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Unchanged

Whereas the function of a computer program is to communicate and work together with other components of a computer system and with users and, for this purpose, a logical and, where appropriate, physical interconnection and interaction is required to permit all elements of software and hardware to work with other software and hardware and with users in all the ways in which they are intended to function;

Whereas the parts of the program which provide for such interconnection and interaction between elements of software and hardware are generally known as 'interfaces';

Whereas this functional interconnection and interaction is generally known as 'interoperability'; whereas such interoperability can be defined as the ability to exchange information and mutually to use the information which has been exchanged;

Whereas, for the avoidance of doubt, it has to be made clear that only the expression of a computer program is protected and that ideas and principles which underlie its interfaces, are not protected by copyright under this Directive;

Whereas the function of a computer program is to communicate and work together with other components of a computer system and with users and for this purpose a logical and where appropriate physical interconnection and interaction is required to permit all elements of software and hardware to work with other software and hardware and with users in all the ways they are intended to function.

The principles describing any such means of interconnection and interaction are generally known as 'an interface.' Where the specification of interfaces constitutes ideas and principles which underlie the program, those ideas and principles are not copyrightable subject matter.

Whereas the parts of the program which provide for such interconnection and interaction between elements of software and hardware are generally known as 'interfaces'.

Whereas this functional interconnection and interaction is generally known as 'interoperability'; whereas such interoperability can be defined as the ability to exchange information and to mutually use the information which has been exchanged;

Whereas for the avoidance of doubt it has to be made clear that only the expression of a computer program is protected and that ideas and principles which underlie any element of a program, including those which underlie its interfaces, are not protected by copyright under this Directive;

Council Directive	Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
<p>Whereas, in accordance with this principle of copyright, to the extent that logic, algorithms and programming languages comprise ideas and principles, those ideas and principles are not protected under this Directive;</p> <p>Whereas, in accordance with the legislation and jurisprudence of the Member States and the international copyright conventions, the expression of those ideas and principles is to be protected by copyright;</p>		<p>Whereas in accordance with this principle of copyright, to the extent that logic, algorithms and programming languages comprise ideas and principles, those ideas and principles are not protected under this Directive;</p> <p>Whereas, in accordance with the legislation and jurisprudence of the Member States and the international copyright conventions, the expression of those ideas and principles is to be protected by copyright.</p>	
<p>Whereas, for the purposes of this Directive, the term 'rental' means the making available for use, for a limited period of time and for profit-making purposes, of a computer program or a copy thereof; whereas this term does not include public lending, which, accordingly, remains outside the scope of this Directive;</p> <p>Whereas the exclusive rights of the author to prevent the unauthorized reproduction of his work have to be subject to a limited exception in the case of a computer program to allow reproduction technically necessary for the use of that program by the lawful acquirer;</p>			<p>Whereas the exclusive rights of the author to prevent the unauthorized reproduction of his work have to be subject to a limited exception in the case of a computer program to allow reproduction technically necessary for the use of that program by its lawful acquirer;</p>

Whereas this means that the acts of loading and running necessary for the use of a copy of a program which has been lawfully acquired, and the act of correction of its errors, may not be prohibited by contract; whereas, in the absence of specific contractual provisions, including when a copy of the program has been sold, any other act necessary for the use of the copy of a program may be performed in accordance with its intended purpose by a lawful acquirer of that copy;

Whereas a person having a right to use a computer program should not be prevented from performing acts necessary to observe, study or test the functioning of the program, provided that these acts do not infringe the copyright in the program;

Whereas the unauthorized reproduction, translation, adaptation or transformation of the form of the code in which a copy of a computer program has been made available constitutes an infringement of the exclusive rights of the author;

Whereas, nevertheless, circumstances may exist when such a reproduction of the code and translation of its form within the meaning of Article 4(a) and (b) are indispensable to obtain the necessary information to achieve the interoperability of an independently created program with other programs;

Whereas a person having a right to use a computer program should not be prevented from performing acts necessary to observe, study or test the functioning of the program provided that these acts do not infringe the copyright in the program;

Whereas the unauthorized reproduction, translation, adaptation or transformation of the form of the code in which a copy of a computer program has been made available constitutes an infringement of the exclusive rights of the author;

Whereas, nevertheless, circumstances may exist when such a reproduction of the code and translation of its form are indispensable to obtain the necessary information to ensure that a new interoperable program can be created or can function;

Council Directive	Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
<p>Whereas it has therefore to be considered that in these limited circumstances only, performance of the acts of reproduction and translation by or on behalf of a person having a right to use a copy of the program is legitimate and compatible with fair practice and must therefore be deemed not to require the authorization of the rightholder;</p> <p>Whereas an objective of this exception is to make it possible to connect all components of a computer system, including those of different manufacturers, so that they can work together;</p> <p>Whereas such an exception to the author's exclusive rights may not be applied in a way which prejudices the legitimate interests of the rightholder which conflicts with a normal exploitation of the program;</p> <p>Whereas, in order to remain in accordance with the provisions of the Berne Convention for the Protection of Literary and Artistic Works, the term of protection should be the life of the author and fifty years from the first of January of the year following the year of his death or, in the case of an anonymous or pseudonymous work, 50 years from the first of January of the year following the year in which the work is first published;</p>	<p>Whereas it has therefore to be considered that in these limited circumstances, performance of the acts of reproduction and translation by or on behalf of a person having a right to use a copy of the program is legitimate and compatible with fair practice, and must therefore be deemed not to require the authorization of the rightholder;</p> <p>Whereas such an exception to the author's exclusive rights may not be applied in a way which prejudices the legitimate interests of the rightholder, or which conflicts with a normal exploitation of the program;</p> <p>Whereas in order to remain in accordance with the provisions of the Berne Convention for the Protection of Literary and Artistic Works, the term of protection should be the life of the author and 50 years from the first of January of the year following the year of his death, or in the case of an anonymous or pseudonymous work, 50 years from the first of January of the year following the year in which the work is first published;</p>	<p>Whereas it has therefore to be considered that in these limited circumstances, performance of the acts of reproduction and translation by or on behalf of a person having a right to use a copy of the program is legitimate and compatible with fair practice, and must therefore be deemed not to require the authorization of the rightholder;</p> <p>Whereas such an exception to the author's exclusive rights may not be applied in a way which prejudices the legitimate interests of the rightholder, or which conflicts with a normal exploitation of the program;</p> <p>Whereas in order to remain in accordance with the provisions of the Berne Convention for the Protection of Literary and Artistic Works, the term of protection should be the life of the author and 50 years from the first of January of the year following the year of his death, or in the case of an anonymous or pseudonymous work, 50 years from the first of January of the year following the year in which the work is first published;</p>	<p>Whereas it has therefore to be considered that in these limited circumstances, performance of the acts of reproduction and translation by or on behalf of a person having a right to use a copy of the program is legitimate and compatible with fair practice, and must therefore be deemed not to require the authorization of the rightholder;</p> <p>Whereas such an exception to the author's exclusive rights may not be applied in a way which prejudices the legitimate interests of the rightholder, or which conflicts with a normal exploitation of the program;</p> <p>Whereas in order to remain in accordance with the provisions of the Berne Convention for the Protection of Literary and Artistic Works, the term of protection should be the life of the author and 50 years from the first of January of the year following the year of his death, or in the case of an anonymous or pseudonymous work, 50 years from the first of January of the year following the year in which the work is first published;</p>

Whereas protection of computer programs under copyright laws should be without prejudice to the application in appropriate cases of other forms of protection;

Unchanged

Whereas protection of computer programs under copyright laws should be without prejudice to the application, in appropriate cases, of other forms of protection; whereas, however, any contractual provisions contrary to Article 6 or to the exceptions provided for in Article 5(2) and (3) should be null and void;

Whereas the provisions of this Directive are without prejudice to the application of the competition rules under Articles 85 and 86 of the EEC Treaty if a dominant supplier refuses to make information available which is necessary for interoperability as defined in this Directive;

Whereas the provisions of this Directive are without prejudice to the application of the competition rules under Articles 85 and 86 of the Treaty if a dominant supplier refuses to make information available which is necessary for interoperability as defined in this Directive;

Whereas the provisions of this Directive should be without prejudice to specific requirements of Community law already enacted in respect of the publication of interfaces in the telecommunications sector or Decisions of the Council relating to standardization in the field of information technology and telecommunication;

Whereas the provisions of this Directive should be without prejudice to specific requirements of Community law already enacted in respect of the publication of interfaces in the telecommunications sector or Council Decisions relating to standardization in the field of information technology and telecommunication;

Whereas this Directive does not affect derogations provided for under national legislation in accordance with the Berne Convention on points not covered by this Directive;

Council Directive	Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
<p>HAS ADOPTED THIS DIRECTIVE:</p> <p><i>Article 1</i></p> <p>OBJECT OF PROTECTION</p> <p>In accordance with the provisions of this Directive, Member States shall protect computer programs, by copyright, as literary works within the meaning of the Berne Convention for the protection of Literary and Artistic Works. For the purposes of this Directive, the term 'computer programs' shall include their preparatory design material.</p>	<p>HAS ADOPTED THIS DIRECTIVE:</p> <p><i>Article 1</i></p> <p>OBJECT OF PROTECTION</p> <p>1. Member States shall protect computer programs, including their preparatory design material, as literary works within the meaning of the Berne Convention for the Protection of Literary and Artistic Works.</p>	<p>HAS ADOPTED THIS DIRECTIVE:</p> <p><i>Article 1</i></p> <p>OBJECT OF PROTECTION</p> <p>1. In accordance with the provisions of this Directive Member States shall protect computer programs, by copyright, as literary works within the meaning of the Berne Convention for the Protection of Literary and Artistic Works. For the purposes of this Directive the term 'computer programs' shall include their preparatory design material.</p>	<p>HAS ADOPTED THIS DIRECTIVE:</p> <p>CHAPTER I</p> <p>Article 1</p> <p>OBJECT OF PROTECTION</p> <p>1. Member States shall protect computer programs by conferring exclusive rights in accordance with the provisions of this Directive.</p> <p>2. Exclusive rights shall be conferred by the provisions of copyright laws. Protection shall be accorded to computer programs as literary works.</p>
<p>2. Unchanged.</p> <p>2a. For the purposes of this Directive a computer program shall be defined as any sequence of instructions intended to be used, directly or indirectly, in a data processing system in order to carry out a function or obtain a specific result, independently of its form of expression. The preparatory design material, technical documentation and users' manuals associated with a computer program shall enjoy the same protection as the program itself. This definition of a computer program shall also extend to programs generated by the use of another program.</p>			

1. Protection in accordance with this Directive shall apply to the expression in any form of a computer program. Ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive;

4. A computer program shall be protected if it is original in the sense that it is the author's own intellectual creation. No other criteria shall be applied to determine its eligibility for protection.

3. Protection in accordance with this Directive shall apply to the expression in any form of a computer program. Ideas and principles which underlie any aspect of a program, including its interfaces, shall not be protected by copyright under this Directive.

4. A computer program shall be protected if it is original in the sense that it is the result of the author's own creative intellectual effort. No other criteria shall be applied to determine its eligibility for protection.

2. Protection in accordance with this Directive shall apply to the expression in any form of a computer program. Ideas and principles which underlie any element of a computer program, including those which underlie its interface, are not protected by copyright under this Directive.

3. A computer program shall be protected if it is original in the sense that it is the author's own intellectual creation. No other criteria shall be applied to determine its eligibility for protection.

3. Protection in accordance with this Directive shall apply to the expression in any form of a computer program but shall not extend to the ideas, principles, logic, algorithms or programming languages underlying the program. Where the specification of interfaces constitutes ideas and principles which underlie the program, those ideas and principles are not copyrightable subject matter.

4. (a) A computer program shall not be protected unless it satisfies the same conditions as regards its originality as apply to other literary works.
(b) Programs generated by means of a computer shall be protected insofar as they satisfy the conditions laid down in 4(a) above.

Article 2

AUTHORSHIP OF COMPUTER PROGRAMS

1. The author of a computer program shall be the natural person or group of natural persons who has created the program or, where the legislation of the Member State permits, the legal person designated as the rightholder by that legislation. Where collective works are recognized by the legislation of a Member State, the person considered by the legislation of the Member State to have created the work shall be deemed to be its author.

ARTICLE 2.

AUTHORSHIP OF COMPUTER PROGRAMS

1. The author of a computer program is the natural person or group of natural persons or, where the law of the Member States permits, the legal person who has created the program. Where collective works are recognized by the law of a Member State, the natural or legal person considered by the law of the Member State to have created the work shall be considered to be its author.

Article 2

AUTHORSHIP OF PROGRAMS

1. The author of a computer program shall be the natural person or group of natural persons who has created the program or, where the legislation of the Member State permits, the legal person designated as the rightholder by that legislation. Where collective works are recognized by the legislation of a Member State, the person considered by the legislation of the Member State to have created the work shall be deemed to be its author.

Article 2

AUTHORSHIP OF PROGRAMS

1. Subject to the following paragraphs, the author of a computer program is the natural person or group of natural persons who has created the program.

Council Directive	Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
<p>In respect of a computer program created by a group of natural persons jointly, the exclusive rights shall be owned jointly.</p>	<p>2. In respect of computer programs created by a group of natural persons, the rights conferred by the protection accorded by Article 1 shall be exercised in common unless otherwise provided by contract.</p>	<p>Unchanged</p>	<p>2. In respect of computer programs created by a group of natural persons, the exclusive right shall be exercised in common unless otherwise provided by contract.</p>
<p>Where the computer program is created by an employee in the execution of his duties or following the instructions given by his employer, the employer exclusively shall be entitled to exercise all economic rights in the program so created, unless otherwise provided by contract.</p>	<p>3. Unchanged.</p>	<p>Unchanged</p>	<p>3. Where a computer program is created under a contract, the natural or legal person who commissioned the program shall be entitled to exercise all rights in respect of the program, unless otherwise provided by contract.</p>
	<p>4. Where a computer program is created by an employee in the execution of his duties or following the instructions given by his employer, the employer shall be entitled to exercise all economic rights in the program so created, unless otherwise provided by contract.</p>	<p>4. Where a computer program is created by an employee in the execution of his duties or following the instructions given by his employer, the employer shall be entitled to exercise all rights in respect of the program, unless otherwise provided by contract.</p>	<p>4. Where a computer program is created in the course of employment, the employer shall be entitled to exercise all rights in respect of the program, unless otherwise provided by contract.</p>
	<p>5. Deleted.</p>	<p>5. Deleted.</p>	<p>5. In respect of programs which are generated by the use of a computer program, the natural or legal person who causes the generation of subsequent programs shall be entitled to exercise all rights in respect of the programs, unless otherwise provided by contract.</p>

Article 3

BENEFICIARIES OF PROTECTION

Protection shall be granted to all natural or legal persons eligible under national copyright legislation as applied to literary works.

Article 3

BENEFICIARIES OF PROTECTION

1. Unchanged
2. Unchanged

Article 3

BENEFICIARIES OF PROTECTION

1. Protection shall be granted to all natural or legal persons eligible under national copyright legislation as applied to literary works.
2. In the case referred to in Article 2(2) the computer program shall be protected in favour of all authors if at least one author is a beneficiary of protection in accordance with paragraph 1 of this Article.

Article 4

RESTRICTED ACTS

Subject to the provisions of Articles 5 and 6, the exclusive rights of the rightholder within the meaning of Article 2, shall include the right to do or authorize:

- (a) the permanent or temporary reproduction of a computer program by any means and in any form, in part or in whole, in part or whole. Insofar as loading, displaying, running, transmission or storage of the computer program necessitate the reproduction, such acts shall be subject to authorization by the rightholder;
- (b) the translation, adaptation, arrangement and any other alteration of a computer program and the reproduction of the results thereof, without prejudice to the rights of the person who alters the program;

Article 4

RESTRICTED ACTS

1. Subject to the provisions of Article 5, the protection accorded by Article 1 shall include the right to do or to authorize:

- (a) the reproduction of a computer program by any means and in any form, in part or in whole, and for whatever purpose. In so far as they necessitate a permanent or temporary reproduction of the program, loading, viewing, running, transmission or storage of the computer program shall be subject to the authorization by the rightholder;
- (b) the translation, adaptation, arrangement and any other modification of a program and the reproduction of the results thereof;

Article 4

RESTRICTED ACTS

Subject to the provisions of Article 5, the exclusive rights of the author shall include the right to do or to authorize:

- (a) the reproduction of a computer program by any means and in any form, in part or in whole, and for whatever purpose. In so far as they necessitate a permanent or temporary reproduction of the program, loading, displaying, running, transmission or storage of the computer program shall be subject to the authorization by the rightholder;
- (b) the translation, adaptation, arrangement and any other alteration of a computer program and the reproduction of the results thereof;

Article 4

RESTRICTED ACTS

Subject to the provisions of Article 5, the exclusive rights referred to in Article 1 shall include the right to do or authorize:

- (a) the reproduction of a computer program by any means and in any form, in part or in whole. In so far as they necessitate a reproduction of the program in part or in whole, loading, viewing, running, transmission or storage of the computer program shall be considered restricted acts;
- (b) the adaptation of a computer program;

Council Directive	Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
<p>(c) any form of distribution to the public, including rental, of the original computer program or of copies thereof.</p> <p>The first sale in the Community of a copy of a program by the rightholder or with his consent shall exhaust the distribution right within the Community of that copy, with the exception of the right to control further rental of the program or a copy thereof.</p>	<p>(c) Unchanged.</p>	<p>Unchanged</p>	<p>(c) the distribution of a computer program by means of sale licensing, lease rental and the importation for these purposes. The right to control the distribution of a program shall be exhausted in respect of its sale and its importation following the first marketing of the program by the right holder or with his consent.</p>
<p>ARTICLE 5</p> <p>EXCEPTIONS TO THE RESTRICTED ACTS</p> <p>1. In the absence of specific contractual provisions, the acts referred to in Article 4 (a) and (b) shall not require the authorization by the rightholder where they are necessary for the use of the computer program by the lawful acquirer in accordance with its intended purpose, including for error correction.</p>	<p>Article 5</p> <p>EXCEPTIONS TO THE RESTRICTED ACTS</p> <p>1. In the absence of specific contractual provisions, the acts referred to in Article 4(a) and (b) shall not require the authorization by the rightholder where they are necessary for the use of the program by the lawful acquirer in accordance with its intended purpose, including for error correction.</p>	<p>Article 5</p> <p>EXCEPTIONS TO THE RESTRICTED ACTS</p> <p>1. When a copy of a computer program has been sold, the acts referred to in Article 4(a) and (b) shall not require the authorization by the rightholder where they are necessary for the use of the program by the lawful acquirer in accordance with its intended purpose, including for error correction.</p>	<p>Article 5</p> <p>EXCEPTIONS TO THE RESTRICTED ACTS</p> <p>1. Where a computer program has been sold or made available to the public other than by a written license agreement signed by both parties, the acts enumerated in Article 4(a) and (b) shall not require the authorization of the rightholder, in so far as they are necessary for the use of the program. Reproduction and adaptation of the computer program for the purpose of its use shall require the authorization of the rightholder.</p>

- The making of a back-up copy by a person having a right to use the computer program may not be prevented by contract insofar as it is necessary for that use.
2. Where a copy of a computer program has been made available to the public in a legal manner, and in the absence of contractual provisions to the contrary, the right to authorize rental shall not be exercised to prevent normal use of the program in non-profit making public libraries.
- 2a. Notwithstanding the provisions of Article 4(a), the legitimate holder of a copy of a program may, without having to request the authorization from the right-holder, observe, study or test the working program in order to determine its underlying ideas, principles and other characteristics where these are not protected by copyright, in the course of loading, viewing, running, transmission or storage.
3. Unchanged.
- The person having a right to use a copy of a computer program shall be entitled, without the authorization of the rightholder, to observe, study or test the functioning of the program in order to determine the ideas and principles which underlie any element of the program if he does so while performing any of the acts of loading, displaying, running, transmitting or storing the program which he is entitled to do.
2. The provisions of paragraph 1 shall also apply to a licensee when the licence to use a copy of a computer program does not contain specific provisions dealing with such acts. The licence may not prevent the loading and running of a copy of a computer program necessary for its use by the licensee in accordance with its intended purpose.
3. The making of a back-up copy by a person having a right to use the program may not be prevented by contract in so far as it is necessary for that use.

Council Directive	Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
4. Unchanged.	4. Where a copy of a computer program has been made lawfully available to the public and in the absence of contractual provisions to the contrary, the right to authorize rental shall not be exercised to prevent normal use of the program in non-profit-making public libraries.	4. Where a copy of a computer program has been made lawfully available to the public and in the absence of contractual provisions to the contrary, the right to authorize rental shall not be exercised to prevent normal use of the program in non-profit-making public libraries.	2. Where a computer program has been sold or made available by means other than a written license agreement signed by both parties, the exclusive right of the rightholder to authorize rental shall not be exercised to prevent use of the program by the public and non-profit making public libraries.
5. Unchanged.	5. Subject to the provisions of Article 4(a) the person having a right to use a copy of a program shall be entitled, without the authorization of the rightholder, to observe, study or test the functioning of the program in order to determine the ideas, principles and other elements which underlie the program and which are not protected by copyright, if he does so while performing any of the acts of loading, displaying, running, transmitting or storing the program which he is entitled to do.	5. Subject to the provisions of Article 4(a) the person having a right to use a copy of a program shall be entitled, without the authorization of the rightholder, to observe, study or test the functioning of the program in order to determine the ideas, principles and other elements which underlie the program and which are not protected by copyright, if he does so while performing any of the acts of loading, displaying, running, transmitting or storing the program which he is entitled to do.	

Article 6
DECOMPILATION

The authorization of the rightholder shall not be required where reproduction of the code and translation of its form within the meaning of Article 4 (a) and (b) are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs, provided that the following conditions are met:

(a) these acts performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorized to do so;

Article 5a
AMENDMENT TO THE FORM OF THE CODE

I. Notwithstanding any contractual arrangements to the contrary, the rights enumerated in Article 4(a) and (b) shall not be exercised by the author to prevent any act essential to ensure the maintenance of the program and the creation or operation of interoperable programs.

This option may only be exercised by the licensee or by another person entitled to use a copy of the program on his behalf by the person authorized to do so and only where the following conditions are fulfilled:

(a) the information necessary to achieve interoperability shall not have been published or made available previously;

(b) the retrieval of information shall be confined to the parts of the original program which are necessary for the achievement of this aim;

(c) the information retrieved may not be communicated to third parties except in so far as this is necessary for the operation of the second program;

Article 5a
AMENDMENT TO THE FORM OF THE CODE

I. Notwithstanding contractual provisions to the contrary, the authorization of the owner of the rights shall not be required where reproduction of the code and translation of its form are indispensable to achieve the creation, maintenance or functioning of an independently created interoperable program, provided that the following conditions are met:

(a) these acts are performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorized to do so;

(b) the information necessary to achieve interoperability has not previously been published, or made available to the persons referred to in point (a); and

(c) these acts are confined to the parts of the original program which are necessary to achieve interoperability with it.

Council Directive	Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
<p>(d) the information necessary to achieve interoperability has not previously been readily available to the persons referred to in subparagraph (d); and</p> <p>(e) these acts are confined to the parts of the original program which are necessary to achieve interoperability.</p> <p>The provisions of paragraph 1 shall not permit the information obtained through its application:</p> <p>(a) to be used for goals other than to achieve the interoperability of the independently created computer program;</p> <p>(b) to be given to others, except when necessary for the interoperability of the independently created computer program; or</p> <p>(c) to be used for the development, production or marketing of a computer program substantially similar in its expression, or for any other act which infringes copyright.</p> <p>In accordance with the provisions of the Berne Convention for the Protection of Literary and Artistic Works, the provisions of this Article may not be used in a manner which unreasonably prejudices the right holder's legitimate interests or conflicts with a normal exploitation of the computer program.</p>	<p>(d) the information retrieved may not be used to create or market a program which violates a copyright or the program of origin.</p> <p>The provisions of this article may not be interpreted in such a way as to allow information obtained in the application thereof to be used in a manner which unreasonably prejudices the legitimate interests of the right holder or which conflicts with a normal exploitation of the program.</p>	<p>2. The provisions of paragraph 1 of this Article shall not permit the information obtained through its application:</p> <p>(a) to be used for goals other than to achieve the interoperability of the independently created program;</p> <p>(b) to be given to others, except when necessary for the interoperability of the independently created program; or</p> <p>(c) to be used for the creation or marketing of a program which infringes copyright in respect of the original program, and in particular of a program substantially similar in its expression.</p> <p>3. In accordance with the provisions of the Berne Convention for the protection of Literary and Artistic works, the provisions of this Article may not be interpreted in such a way as to allow its application to be used in a manner which unreasonably prejudices the rightholder's legitimate interests or conflicts with a normal exploitation of the computer program.</p>	

Article 7

SPECIAL MEASURES OF PROTECTION

1. Without prejudice to the provisions of Article 4, 5 and 6, Member States shall provide, in accordance with their national legislation, appropriate remedies against a person committing any of the acts listed in subparagraphs (a), (b) and (c) below:
 - a) any act of putting into circulation a copy of a computer program knowing, or having reason to believe, that it is an infringing copy;
 - b) the possession, for commercial purposes, of a copy of a computer program knowing, or having reason to believe, that it is an infringing copy;
 - c) any act of putting into circulation, or the possession for commercial purposes of, any means the sole intended purpose of which is to facilitate the unauthorized removal or circumvention of any technical device which may have been applied to protect a computer program.
2. Any infringing copy of a computer program shall be liable to seizure in accordance with the legislation of the Member State concerned.
3. Member States may provide for the seizure of any means referred to in paragraph 1 (c).

Article 6

SECONDARY INFRINGEMENT

1. Unchanged.

Article 6

SECONDARY INFRINGEMENT

1. Unchanged

Article 6

SECONDARY INFRINGEMENT

1. It shall be an infringement of the author's exclusive rights in the computer program to import, possess or deal with an infringing copy of the program, knowing or having reason to believe it to be an infringing copy of the work.
2. It shall be an infringement of the author's exclusive rights in the computer program to make, import, possess or deal with articles intended specifically to facilitate the removal or circumvention of any technical means which have been applied to protect a program.

Council Directive	Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
<p><i>Article 8</i></p> <p>TERM OF PROTECTION</p> <p>Protection shall be granted for the life of the author and for fifty years after his death or after the death of the last surviving author; where the computer program is anonymous or pseudonymous work, or where a legal person is designated as the author by national legislation in accordance with article 2 (1), the term of protection shall be fifty years from the time that the computer program is first lawfully made available to the public. The term of protection shall be deemed to begin on the first of January of the year following the abovementioned events.</p> <p>Member States which already have a term of protection longer than that provided in paragraph 1 are allowed to maintain their present term until such time as the term of protection for copyright works is harmonized by community law in a more general way.</p>	<p><i>Article 7</i></p> <p>TERM OF PROTECTION</p> <p>Protection shall be granted for 50 years from 1 January of the year following the publication of the program, or, where a program has not been published, its creation.</p>	<p><i>Article 7</i></p> <p>TERM OF PROTECTION</p> <p>Protection shall be granted for the life of the author and for 50 years after his death; where the computer program is an anonymous or pseudonymous work, the term of protection shall be 50 years from the time that the computer program is first lawfully made available to the public. The term of protection shall be deemed to begin on the first of January of the year following the abovementioned events.</p>	<p><i>Article 7</i></p> <p>TERM OF PROTECTION</p> <p>Protection shall be granted for 50 years from the date of creation.</p>

Article 9

CONTINUED APPLICATION OF OTHER
LEGAL PROVISIONS

1. The provisions of this Directive shall be without prejudice to any other legal provisions such as those concerning patent rights, trade-marks, unfair competition, trade secrets, protection of semi-conductor products or the law of contract. Any contractual provisions contrary to Article 6 or to the exceptions provided for in Article 5 (2) and (3) shall be null and void.

2. The provisions of this Directive shall apply also to programs created before 1 January 1993 without prejudice to any acts concluded and rights acquired before that date.

Article 10

FINAL PROVISIONS

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before 1 January 1993.

When Member States adopt these measures, the latter shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such a reference shall be laid down the Member States.

Article 8

CONTINUED APPLICATION OF OTHER
LEGAL PROVISIONS

1. The provisions of this Directive shall be without prejudice to any other legal provisions such as those concerning patent rights, trade marks, unfair competition, trade secrets or the law of contract.

2. The provisions of this Directive are applicable also to programs created prior to 1 January 1993.

Article 9

FINAL PROVISIONS

1. Member States shall bring into force the laws, regulations or administrative provisions needed in order to comply with this directive by 1 January 1993.

CHAPTER II

Article 8

CONTINUED APPLICATION OF OTHER
LEGAL PROVISIONS

1. The provisions of this Directive shall be without prejudice to any other legal provisions such as those concerning patent rights, trade marks, unfair competition, trade secrets, protection of semi-conductor products or the law of contract.

2. The provisions of this Directive are applicable also to the programs created prior to 1 January 1993 without prejudice to any acts concluded and rights acquired before that date.

CHAPTER III

Article 9

FINAL PROVISIONS

Unchanged

CHAPTER II

Article 8

CONTINUED APPLICATION OF OTHER
LEGAL PROVISIONS

1. The provisions of this Directive shall be without prejudice to any legal provisions concerning patent rights, trade marks, unfair competition, trade secrets or the law of contract in so far as such provisions do not conflict with the principles laid down in the present Directive.

2. The provisions of this Directive are applicable also in respect of works created prior to (date in Article 9).

CHAPTER III

Article 9

FINAL PROVISIONS

1. Member States shall bring into force the laws, regulations or administrative provisions needed in order to transpose this Directive by 1 January 1993.

Council Directive	Text Amended by the European Parliament	Amended Proposal by the Commission	The Commission Proposal
<p>Member States shall communicate to the Commission the provisions of national law which they adopt in the field governed by this Directive.</p>	<p>2. Member States shall ensure that they communicate to the Commission the texts of the provisions of national law which they adopt in the field covered by this Directive.</p> <p>2a. A Consultative Committee shall be set up by the Commission, to consist of representatives of the Member States and of representative associations of authors and producers of computer programs with the objectives of:</p> <p>(a) providing the Commission with information on research and on problems arising from the implementation of this Directive;</p> <p>(b) drawing up proposals with a view to possible changes in the rules which may be required for more effective realization of the Community's objectives.</p>	<p>2. Member States shall communicate to the Commission the provisions of national law which they adopt in order to transpose this Directive.</p>	<p>2. Member States shall ensure that they communicate to the Commission the texts of the provisions of national law which they adopt in the field covered by this Directive.</p>
<p>2b. The Commission shall take all the necessary initiatives in order to ensure the realization, at national and international levels, of the objectives set out in this Directive.</p>	<p>2b. The Commission shall take all the necessary initiatives in order to ensure the realization, at national and international levels, of the objectives set out in this Directive.</p>		
<p>2c. The Commission shall, every two years, forward to Parliament and to the Council a report on the implementation of this Directive at national and Community level[s].</p>	<p>2c. The Commission shall, every two years, forward to Parliament and to the Council a report on the implementation of this Directive at national and Community level[s].</p>		

Article 11

This Directive is addressed to the Member States.
Done at Brussels, 14 May 1991
for the Council
The President
F. POOS

Article 10

Unchanged

Article 10

Unchanged

Article 10

This Directive is addressed to the Member States.

Green Paper on Copyright and the Challenge of Technology,
EUR. POL. DOC. (COM No. 88) 172 (1988).

COMMISSION OF THE EUROPEAN COMMUNITIES

GREEN PAPER
ON COPYRIGHT AND THE CHALLENGE OF
TECHNOLOGY

COM (88) 172 final
Brussels, 7 June 1988
[Excerpt]

5.4. *Community involvement to date*

5.4.1. The Commission has monitored developments concerning the legal protection of software both within and outside the Community over a number of years. It has also participated in the meetings of the WIPO committee of experts and in discussions in other international fora. It has in addition consulted experts and organizations interested in the question including, representatives from major European Information Technology companies, UNICE, the European Computing Services Association (ECSA) and the Confederation of the European Computer Users Association (CECUA). On the basis of this involvement, the Commission concluded that a directive on the legal protection of computer programs was a necessary step for the completion of the internal market. Consequently, in its White Paper "Completing the Internal Market,"¹ it undertook the commitment to submit to Council before the end of 1987 a proposal for a directive on the legal protection in Community Member States of computer programs. Though delayed for technical reasons, the proposal will be submitted to Council as rapidly as possible.

5.5. *Copyright: the focus for a Community initiative*

5.5.1. It is suggested that the directive be based on the following principles.

5.5.2. No action appears to be called for at this time in relation either to patent law or to trade secrets and contract laws. As regards patent law, as previously mentioned, the European Patent Office in 1985 amended its guidelines on examination in the field of computer programs to make it clear that inventions having a technical character may be patentable even if they rely on computer programs to achieve their effects. Similar developments

¹ Document COM(85) 310 final, point 149.

are occurring in the Member States. The Commission considers this kind of evolution to be desirable and hopes that all national patent administrations will adopt a similarly liberal approach. No formal Community initiative seems to be necessary at present. Likewise in relation to trade secrets and contract law, the situation in the Member States seems relatively satisfactory and legislative action at Community level is not at present needed.

5.5.3. Similarly, no legislative initiative appears necessary as regards contract law though its importance in this field is often underestimated. Guidelines for software suppliers and users might well prove useful, however, and commercial practices be developed which, once they become widespread, will acquire the character of rules which might be applied failing other arrangements. The Confederation of European Computer Users Associations and some national associations are examining the possibility of drawing up guidelines in this area.

5.5.4. From time to time, the possibility is raised of protecting computer programs by means of technical devices. Devices developed recently may prove more effective than they have in the past. At this stage, however, further experience is needed of their use in practice. No Community initiative is accordingly suggested at the present time.

5.5.5. As to copyright and neighbouring rights, the basic question whether their application to protect computer programs is in principle desirable, is generally being answered in the affirmative. Those who have argued that such protection is either inadequate or excessive have not been vindicated by events.

5.5.6. As to the suggestion that copyright is insufficient, some European voices have indeed suggested in the recent past that protection against copying is insufficient and that a true monopoly right, analogous to a patent, is needed. They have suggested that the limitations of copyright, in particular the principle that it protects the form in which ideas are expressed rather than the ideas themselves, render it a less than completely adequate solution. The application of the principle to computer software leads to the conclusion that while programs are protected, their underlying logic or algorithms are not. To the extent that the basic concepts can be expressed differently, programs can thus be developed to achieve the same results. This has led some to propose that a new form of protection be adopted, alongside copyright, to grant exclusive rights in new algorithms involving

an inventive step. Such protection would in many ways be analogous to patent protection being dependent on registration and giving an effective monopoly for a fixed period in the region of 20 years as to the algorithms in question.²

5.5.7. However, this approach has not met with general approval. Many in the data processing industries indicated their doubts about the desirability of such protection, in particular, the risk that the development and use of programs might be stultified by the creation of monopolies in concepts having a mathematical or scientific character and as such unprotectable under any intellectual and industrial property protection system. This danger that the development and use of programs might be stultified is said to be greater since the number of useful algorithms appears in all probability to be limited. A broad consensus has emerged that competition would be severely impaired, if "independent invention" of programs having essentially the same functions of existing programs but developed without undue "inspiration" by existing programs and expressed in a different manner and "reverse engineering" were to be prevented. Interestingly, the same conclusion has been reached in the context of recent developments concerning the protection of semiconductor designs in the main producer countries.

5.5.8. As to the question of whether copyright protection can itself give an excessive degree of protection that is damaging to competition in the data processing industry and to the spread of computer technology, a definitive answer cannot be given at the present time but should soon emerge as more experience is gained both in the USA and in Europe.

5.5.9. For example, the problem of "access protocols" and interfaces has been raised. These must be used in the exact form in which they were first expressed if newly developed software or hardware is to operate compatibly with software or hardware already on the market. It has been argued that copyright could create an undesirable monopoly not only of the access protocol itself but of the entire segment of the systems market that depends on its use. The development of compatible programs, which is desirable from the point of view of both competition and industrial policy, would be impeded if competitors were pre-

² See for example, "Vers une protection des logiciels informatiques: situation actuelle et propositions", 21 June 1984. Report of a working group created within the framework of INPI (Institut National de la Propriete Intellectuelle).

vented from integrating into their product range protocols or interfaces that are gaining wide support as likely international standards. The same would apply if protocols or interfaces were technically available, but only at a license fee that only the largest of competitors can afford. Because of the severe consequences effective monopolies in such software would have for communications and industry at large, the specific exclusion of protocols and interfaces from copyright and similar protection is being debated in interested circles.³

5.5.10. Similarly, the allegation is sometimes heard that copyright protection makes it so difficult to create compatible systems without at least the appearance of copying that, quite apart from the particular problem of access protocols and interfaces, the legitimate development of compatible systems will be impeded and desirable competition will be stifled. This applies particularly to the systems software and business applications markets.

5.5.11. At present, the extent to which the copyright laws of the Member States might permit program developers to prevent others from using access protocols and interfaces or developing compatible programs is unclear. In any case, it might well be that in situations as described in the foregoing paragraph, where the exercise of copyright as to access protocols or interface specifications is likely to create and increase market dominance, such exercise would be accompanied by other factors so that an abuse of a dominant position may be established under the relevant competition laws.

5.5.12. Much will probably depend on how successfully the courts manage in concrete cases to resolve the level of abstraction problem and so achieve a reasonable balance between the interests of right holders in existing programs and of persons who can show that they have independently developed programs to achieve similar results to existing ones. While copyright protection reaches beyond the form of the program, in object or source code, to include preparatory material such as the program description, there comes a point at which a claim for protection is a claim to an idea rather than the expression of that idea. For example, a mathematical formula to solve a particular problem can be implemented in a program in many different ways. Each

³ Japanese Copyright Amendment Act No. 62 of June 1985 specifies, in a paragraph added to Article 10 that algorithms, programming languages and rule are excluded from copyright protection; (also, Japan has not yet determined whether or not to require registration).

implementation can provide the same result or output given identical values for the initial variables or input. But the performance of the different implementations will vary, perhaps considerably. Copyright should protect the manner of the implementation, and hence its particular advantages in terms of performance, and leave the formula to be implemented by anyone. As courts become more familiar with the subject matter, they should be able to develop case law on what constitutes copying in this field just as they have in more traditional fields. Copyright court cases have multiplied in the USA and so have the number of interpretations as to the scope of protection. At this stage, in the Community, there is not yet enough experience that would allow one to conclude that copyright laws need modification. If problems should arise, then methods could be found for dealing with them either within the relevant intellectual property laws themselves, through suitable non-voluntary licensing provisions or, in whole or in part, through the application of competition and standardization policy.

5.5.13. The Commission is of the opinion that from the point of view of fundamental economic policy, protection against copying of software by copyright or a neighbouring right seems correct and should be accorded by the Member States of the Community as a whole. After the Commission has taken a position on the question of principle, attention needs to be given to a consideration of what parameters may be needed to ensure sufficient convergence in the systems that will be applied in practice by the Member States.

5.6. *Clarification and adaptation of existing copyright regimes*

5.6.1. As regards clarification and adaptation of copyright regulation, the following matters have been said to merit consideration: the availability of copyright protection to computer programs, including requirements as to fixation; beneficiaries of protection; the scope of protection, that is, restricted and unrestricted acts, including possible provision for fair dealing or other exceptions from the exclusive right of the copyright owner; the term of protection; authorship, including the employee author and the self-employed author producing for remuneration; the protectability and authorship of computer generated programs; moral rights; and problems of proof.

Availability of protection

5.6.2. While judicial decisions in several Community jurisdic-

tions have recognized that computer programs are protected by copyright,⁴ and learned opinion generally supports this conclusion, nevertheless a degree of uncertainty remains and will continue to do so until resolved by a series of authoritative decisions of final courts of appeal. This uncertainty should be removed by means of Legislative clarification on the basis of a directive explicitly protecting computer programs under copyright law in the broad sense.

⁴ See note 8 above. [The following is the text of note 8: Leading cases include: FOR FRANCE, Babolat-Maillot-With v. Pachot (Paris Court of Appeal, 2 November 1982); Apple Computer Inc. v. Segimex *SARL* (Paris "Tribunal de Grande Instance", 21 September 1983); Atari v. Sidam (Court of Cassation, 7 March 1986); FOR GERMANY, Visicorp v. Basis Softwar GmbH et al. (Munich District Court, 1983); Sudwestdeutsche Inkasso KG v. Bappert and Burker Computer GmbH (Federal Supreme Court, 1985); FOR ITALY, Atari Inc. and Bertolino v. Sidam Srl. (Tribunal of Turin, 14 July 1983), Unicomp Srl. v. Italcomputers and General Informatic (Tribunal of Pisa, 14 April 1984); FOR THE NETHERLANDS, The "Logboekprogram" Case (District Court of Hertogenbosch, 14 May 1982); FOR THE UNITED KINGDOM, Sega Enterprises Ltd. v. Alca Electronics (Court of Appeal 1982).]

Molding the Directive: Public Comment and the Views of the Computer Software Lobby

BUSINESS SOFTWARE ALLIANCE
 ("BSA")*

MODEL GUIDELINES FOR THE LEGAL PROTECTION OF
 COMPUTER PROGRAMS

Governments all over the world are paying increased attention to the vital need for strong legal protection of intellectual property rights in computer programs. As these governments have recognized, meeting this need requires strong laws and effective enforcement. The Business Software Alliance (BSA) applauds these efforts, which recognize the dynamic economic contribution of software companies and their products.¹

Throughout the world this industry plays a critical role by creating economic opportunities for new software and hardware firms and by providing other companies in all areas of the economy with innovative technological tools to enhance their productivity. The software industry thereby makes a prominent contribution to the technological and economic growth of all countries.

Experience has shown that the growth of local software industries depends critically on the existence of strong copyright laws. In the absence of such protection, profiteers can steal with impunity new computer programs, and software companies will suffer substantial revenue losses that will impede their future growth and product development.

To counter this threat effectively, BSA believes that copyright laws and regulations must contain several critical elements. These should include not only the essential provisions needed to create substantive software rights, but also the enforcement provisions needed to make these rights effective in practice. These provisions are outlined below.

* [Business Software Alliance, 1201 Pennsylvania Avenue N.W., Suite 250, Washington, D.C. 20004. TEL 202.737.7060; FAX 202.737.7063]. [Document dated February 1991]

¹ BSA represents eight of the world's leading producers of software for personal computers: Aldus, Ashton-Tate, Autodesk, Digital Research, Lotus, Microsoft, Novell, and WordPerfect. BSA has played an active role in enforcing software rights in numerous countries throughout the world.

SUBSTANTIVE SOFTWARE RIGHTS

Protection As Literary Works Under Copyright Law: Governments should protect computer programs as literary works under copyright law.

Rationale: Although computer programs may qualify for various forms of intellectual property protection, copyright law has provided the central framework for these legal rights. For over a decade the overwhelming international trend has been for governments to protect computer programs as literary works under copyright law. This type of protection has several advantages. Perhaps foremost among these is the fact that there exists a well-developed body of copyright legal principles applicable to literary works. This includes not only the rules developed under national laws, but also under the Berne Convention for the Protection of Literary and Artistic Works, which provides a well-developed system of rules applied throughout the world on the basis of the member nations' reciprocal recognition of copyright protection. By applying these to computer programs, governments can promote legal certainty that in turn encourages software companies to develop new products.

In addition, by adding to the widespread international trend in favor of copyright protection, governments enacting such legislation contribute to the development of consistent legal rules on a worldwide scale. This consistency encourages a country's trade and technological development by making it easier for foreign software companies to bring their existing products into a market without the risk associated with new and untested legal rules. Equally important, it encourages domestic authors to create new computer programs with the assurance that their products will be protected under well-developed and consistent rules, both at home and abroad.

Protection of Expression But Not Ideas: Copyright law should protect the expression in any form of a computer program.

Rationale: In contrast to the broad protection typically found under patent law, the protection afforded by copyright is more limited in nature. It is universally recognized that a copyright protects the expression in any form of a literary work, but not the ideas underlying that work. This means that the author of a computer program can stop others from copying the expression in a computer program, but not from copying or incorporating the underlying ideas.

Governments' laws and regulations for computer programs should contain this standard. This straightforward test provides courts and agencies with a clear analytical basis to grant or deny copyright protection on a case-by-case basis, adjusting flexibly to changing circumstances or differing characteristics associated with new software products. A broad standard of protection under copyright law is preferable to inevitably inconsistent rules which attempt to define tests for granting or denying protection to certain aspects or parts of programs, such as interfaces or programming languages.

Originality Requirement: Copyright law should protect all computer programs that are original, and should define the term "original" as any program that is not a copy.

Rationale: Copyright laws throughout the world protect only works that are "original". It is therefore important that copyright law incorporate this requirement for computer programs.

To provide clarity, the copyright law should also define the term "original". Although different nations have chosen slightly different approaches to this question, several leading countries have defined "original" to include any program that is not a copy. This is the approach, for example, in the United States and the United Kingdom, as well as in several developing countries. This definition provides a straightforward test that agencies or courts can apply to determine whether a computer program qualifies for copyright protection. It would foster widespread protection for computer software and substantially enhance the legal certainty that authors need in order to invest in developing new programs.

Definition of Authorship: The author of a computer program should be entitled to claim copyright protection. The definition of this term should include the following:

- A. As a general rule, the author of a computer program should be the natural or legal person who created the program.
- B. Where a computer program is created in the course of employment, the employer should be considered the owner of the program, unless otherwise provided by contract.
- C. Where a computer program is created under a contract other than a contract of employment, the individ-

ual or group commissioned to create the program should be considered the author, unless otherwise provided by contract.

Rationale: Because copyright law contains important rights concerning protected works, it is important to define who is entitled to invoke these rights. It is widely accepted that these rights lie with the author of a program. However, a program can be created in a variety of situations, and copyright law should clearly state who is entitled to invoke these rights as the "author". As a general rule, the author should be the natural or legal person who created the program. This is well-accepted in the world's copyright laws and by the Berne Convention.

But, special clarification is needed in two circumstances—when a program is created in the course of employment or pursuant to a contract. In the first case, it is well-accepted that when a program is created in the course of employment—whether employment for the government or a private company—the employer should exercise at least all of the economic rights in the program, unless otherwise provided by contract. This is necessitated both by fairness and common sense. A government or firm that pays an employee to write a program should be entitled to retain the copyright to the resulting work. Moreover, any other alternative would likely be unworkable. In practice, most programs are created by more than one employee, which would result in fractured and confused ownership if the employer were not deemed to be the "author".

This is not the case, however, when a natural or legal person is commissioned by contract to create a program. In this context, there exists a well-defined, arms-length relationship that militates against the payor's right to control the copyright to the final product unless the contract provides otherwise. Most national copyright laws have generally recognized that ownership of a copyright in this context should remain with the person commissioned to create the work. In part, this is also based on the recognition that a different result would discourage work by new software authors—particularly those that create numerous customized programs for outside clients. Because these authors must incorporate some of the same specific program subparts, called modules, in a variety of ways in many different products, it is essential that they retain the copyright to their works, unless provided otherwise in a contract.

Restricted Acts: The author of a computer program should have the exclusive rights to do or to authorize:

- A. The reproduction of a computer program in any form (including source code or compiled object code), by any means, and in whole or in part.
- B. The adaptation, alteration or modification of the program or the creation of a derivative work based on the program.
- C. The translation of a program, including the translation from one computer language into another and one human language into another.
- D. The distribution of a computer program, including by means of sale, licensing, lease, rental, and importation for any of these purposes. The right to control the sale (but not the rental or leasing) of a copy of a program should be exhausted upon the first sale of that copy by the right holder or with his consent.

Rationale: The most important aspect of copyright law is the grant of exclusive rights to the work's author. These rights enable an author to protect a work against copying and other forms of theft.

This protection takes several forms. First is protection against copying—or reproduction—of a computer program. Strong protection against reproduction is essential in order to discourage the widespread copying of programs, both by pirates who might sell the copied product for a profit and companies that might make numerous copies for their internal use. Copyright laws throughout the world provide authors with strong broad protection against reproduction.

It is also important to protect authors against the unauthorized adaptation and translation of their works. Computer programs are often used on a variety of machines and in a number of natural and computer languages, and an author's exclusive right to adapt a program for use on a variety of machines in a variety of languages represents a significant part of the value of a copyright. For this reason, virtually all copyright laws protect the author's exclusive right to control these derivative works.

Finally, copyright law customarily preserves the author's right to authorize the distribution of a program. In the absence of such protection, unauthorized rental or leasing, for example, is likely

to lead widespread piracy. To prevent such conduct, copyright laws throughout the world give authors widespread rights over the distribution process. To ensure fairness, this is typically coupled with a provision stipulating that an author's right to control the distribution of a particular copy of a program is exhausted after the first sale of that copy, so that the individual who purchases that copy can distribute it at a later date. In this manner, a program copy that is sold can subsequently be rented, but a program that has been licensed or rented cannot.

Exceptions to Restricted Acts: The law should provide an exception to the author's exclusive rights to the extent necessary for the essential use of a program on a machine in accordance with the authorized purpose for which the program was made available.

Rationale: In order to protect against software piracy, the exceptions to an author's exclusive rights should be well-defined. Otherwise there is a serious risk that these exceptions will create confusion and seriously weaken software protection. Copyright laws in the United States, Japan, and Europe recognize that there should be an exception to the "no copying" rule to permit computer users to use a program on a machine as intended by the program's author, as well as to make a back-up copy. It is critical, however, that this exception not permit broader "personal use" that could amount to unlimited internal copying.

Secondary Infringement: The law should make it an infringement to import, use, or distribute an infringing copy of a program.

Rationale: One of the pernicious aspects of software piracy results from the fact that an individual can make numerous illegal copies of a program and then immediately put them into the stream of commerce. In order to combat such piracy successfully, the law must not only make it an infringement to reproduce the program in the first place, but also to import, use, or distribute the illegal copies after receiving them from others. In the absence of such a provision, software authors and government authorities cannot hope to put an end to what is otherwise a very lucrative illegal trade.

Protection Against Parallel Imports: Copyright law should protect a rightholder effectively against unauthorized parallel imports.

Rationale: Computer programs are designed for use in specific countries. This is reflected in such features as the language of

the commands, use of currency units, and the specific spelling of words used in word processing dictionaries (even in the same language some words are spelled differently in different countries). The unauthorized importation—even of a legitimate product—creates substantial problems both for the individual who licenses the product and the rightholder who must cope with the differing features and ensuing customer complaints. To prevent these problems, copyright law should protect effectively against unauthorized parallel imports.

Term of Protection: The law should accord the same term of protection for computer programs as for other literary works under the Berne Convention—the life of the author plus fifty years.

Rationale: It is increasingly important that countries throughout the world accord the same term of protection to computer programs. Given the ever-increasing flow of trade between nations, an inconsistent term of protection may distort trade by discouraging development of new software programs in countries with shorter terms of protection. This in turn would discourage investment and technological development in countries that have a shorter term of protection, both by foreign companies and their own software authors.

In recognition of this need for consistency, governments throughout the world have joined the Berne Convention. This treaty has over 80 signatories, including the United States, which signed last year. Article 7(1) of the Convention protects literary works for “the life of the author and fifty years after his death.”

This term of protection is as appropriate for computer programs as it is for other forms of literary works. It provides a fair term that ensures new authors that they will be able to protect their programs for at least a substantial part of the programs' useful lives. Although the use of computer programs is still a relatively new phenomenon, it is quite possible that important copyrightable aspects of programs will be used far beyond this term of protection, ultimately entering the public domain. By adopting the term used in the Berne Convention, governments can strike a fair balance between the need to encourage innovation by protecting property with the desire to allow this technology ultimately to be used in an unprotected manner by the public at large.

Finally, this term of protection will best contribute to the consistent treatment of all aspects of computer products. Since these

products include instruction and other manuals which are treated as literary works, uniform application of the Berne Convention rules is needed to ensure that all parts of the product are accorded the same term of protection.

Copyright Registration: To the extent that copyright law requires the registration of computer programs, it should conform to the terms of the Berne Convention by not making such registration a requirement for copyright protection of works created by foreign authors.

Rationale. Article 5 of the Berne Convention requires that “the enjoyment and exercise of [copyright] shall not be subject to any formality” in “countries of the Union other than the country of origin.” Therefore, the signatories to the Berne Convention cannot make registration a prerequisite for copyright protection of works created by foreign authors.

This view is shared by the United States, which altered its copyright registration requirements when it became a signatory to the Berne Convention in 1988. The new law continues to require U.S. authors to register their works in order to recover statutory damages and/or attorney fees in an infringement action, but registration is not required to obtain copyright protection for works which originate in other Berne Convention nations. This means that software developed in a Berne Convention country is protected without registration; software developed in other non-Berne countries is not accorded the same privileged status.

As the numerous signatories to the Berne Convention have recognized, a legal provision requiring the registration of foreign works would cause a major hardship on foreign authors of computer programs. Such an obligation would require firms to master foreign law and comply with unfamiliar procedures in distant jurisdictions. The creation of such obstacles would violate the reciprocal legal obligations of the Berne Convention, thereby denying a country’s nationals the benefits that they otherwise would obtain through adherence to this treaty. Moreover, such obstacles are inconsistent with the goal of encouraging international trade, investment, and technological development through consistent copyright protection. For this reason, copyright law should not require the registration of foreign works.

In addition, the absence of registration requirements will not in any way create a hardship for national copyright systems. The signatories to the Berne Convention have long administered

copyright systems without requiring registration formalities, even for such items as edited publications which, like computer programs, may be created by numerous individuals.

Application of other Legal Provisions: Copyright law should not in any way derogate from other laws that may protect computer programs.

Rationale: Although copyright law provides the most important form of legal protection for computer programs, other laws—such as patent law, for example—also protects these programs in certain circumstances. Strong copyright law should not undermine these other forms of protection.

ENFORCEMENT OF SUBSTANTIVE RIGHTS

An effective copyright law must protect an author's rights in practice as well as on paper. This requires enforcement that includes fast and inexpensive remedies for copyright infringement.

Preservation of Evidence Through Piracy Inspections: Copyright law should provide for court-ordered and court-appointed inspections, on an *inaudita altera parte* basis (without advance notice to the defendant), of businesses and agencies suspected of piracy.

Rationale: Unlike most acts of thievery, evidence of software copying can be eliminated quickly by entering a command to delete and wipe clean software files. As a result, the prosecution of piracy, whether in the civil or criminal context, requires inspections without advance notice to the suspected software pirate.

To ensure fairness, this should be supervised by a court. The copyright law should enable a rightholder with evidence of piracy to obtain, without advance notice to the defendant, a court order for an inspection by a court-appointed expert of the computers and other premises of the business or agency suspected of piracy.

Copyright Procedures: Copyright law should permit a plaintiff to prove the existence and ownership of copyright by affidavit, if not challenged.

Rationale: On a practical level it is extremely important that judicial procedures permit plaintiffs to establish the essential facts necessary for their cases in a prompt and efficient manner. One effective way to achieve this is by permitting a plaintiff to prove the existence and ownership of a copyright by affidavit, if not challenged on these issues by the defendant. Since these issues

are often not in dispute in infringement litigation, such an approach—which is used in Hong Kong, for example—helps both courts and the parties by moving litigation along more quickly and efficiently and without excessive cost.

Proof When Copyright Is At Issue: Once a plaintiff establishes a *prima facie* case of copyright existence and ownership, the burden of proof regarding those issues should shift to the defendant.

Rationale: Prompt and efficient procedures for establishing the essential facts necessary to support an infringement claim are of little value if the defendant is able to require the plaintiff to make a time-consuming and costly showing by merely putting the existence or ownership of copyright at issue. Emerging companies are particularly vulnerable to lengthy and expensive court proceedings. Shifting the burden of proof once a *prima facie* case is made would discourage defendants from challenging the existence or ownership of copyright without good cause, and thereby enhance both the efficiency and economy of the judicial process.

Interim Remedies: Upon discovery of piracy, there should be a procedure for interim hearings to determine whether the plaintiff copyright owner is likely to prevail in the case, accompanied by judicial power following such hearings to enjoin the alleged infringement until a final proceeding on the merits.

Rationale: Software authors need quick and effective interim remedies in order to enforce their rights effectively. In the absence of such remedies, lengthy court proceedings can effectively prevent a copyright owner from halting widespread piracy.

Such remedies are best provided through interim hearings to determine whether the defendant has copyright authorization to use all of the computer programs on its premises. If the defendant has a valid authorization, such a hearing will quickly protect its rights to continue using the software. If there is no valid authorization, then a court should be authorized to protect the author's rights by enjoining all further use of the software until a final proceeding on the merits.

Civil Remedies: Copyright law should provide for strong civil remedies including permanent injunctions against infringement, seizure of all illegal software and any articles used to defeat copyright protection, compensation, and fines.

Rationale: Copyright law will deter software piracy only if the fi-

nal remedies for infringement are substantial. At a minimum, these should include a final injunction against continued infringement and the confiscation of the hardware used in the infringement. In addition, there should be damages and strong fines to deter piracy in the future: for example Taiwan applies fines equal to 500 times the value of the pirated article, which for computer programs should be defined as the suggested retail market price of a legitimate software copy. All nations should apply fines based on this approach.

Criminal Remedies: The copyright law should include minimum criminal penalties when piracy is committed knowingly and is carried out for a commercial purpose or to satisfy internal demands of any business or other entity.

Rationale: Although copyright is ordinarily a civil matter, copyright laws throughout the world also include criminal penalties for piracy in certain circumstances. For example, Singapore imposes a prison sentence of up to five years per infringement. Governments should apply this type of penalty when a defendant has engaged in copyright infringement and has carried out the infringement for profit or for internal organizational purposes. This should explicitly include situations where a business or public or private agency knowingly and systematically copies software for internal use.

Government Investigations: Customs and other governmental agencies should investigate and enforce the law vigorously against software pirates.

Rationale: In most countries the most effective enforcement is by the governments themselves, through investigations of large-scale piracy by customs and other governmental agencies. The Hong Kong Customs and Excise Department has demonstrated the effectiveness of this approach through raids and seizures of goods from large-scale piracy rings—in one case confiscating over 100,000 computer diskettes and manuals. This type of action sets an example for what can be done to curb software copying in countries throughout the world.

EUROPEAN COMMITTEE FOR INTEROPERABLE SYSTEMS*
("ECIS")

STATEMENT OF PRINCIPLES

ECIS members support the following principles of intellectual property protection for computer software:**

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** The current membership of ECIS includes: ACTIVE MEMORY TECHNOLOGY LTD.—Manufacturer of massively parallel computing systems (data array processors) and software developer; AMDAHL CORPORATION—Major international manufacturer of mainframe computers and peripherals and software developer; AMSTRAD PLC—Major international manufacturer of PC-compatibles; APD, COMPANIA ESPAÑOLA DE INFORMATICA—European manufacturer of micro and mini-computers and participant in Eureka and Esprit programs for the development of European super computers and workstations; APPLIED NETWORK RESEARCH LTD—Telecommunications networking and research; APRICOT COMPUTERS PLC—Systems integrator, software developer and manufacturer of compatible PC's; ARDIS N.V.—Small European software developer; AUTOMOBILE ASSOCIATION (U.K.)—Major user of computer equipment (the largest motoring organisation in the world and the largest motor insurance broker in Europe); BICC TECHNOLOGY—Systems integrator for industrial automation systems; BOLDON-JAMES LIMITED—Communications software house specialising in open systems interconnection; BULL S.A.—Major European full-service computer company; CALIDUS SYSTEMS LTD—Business application software developer; CHORUS SYSTEMES—Small European software developer; CLEBERN INTERNATIONAL LTD—Systems integration and development of specialist software for travel and executive information markets; COMPAREX INFORMATIONSSYSTEME GmbH—Major international manufacturer and distributor of large computer systems; COMPUTER SERVICE TECHNOLOGY LTD—Value-added distributor of Unix-based computer systems; COOPERS & LYBRAND DELOITTE—Largest U.K. firm of accountants and management consultants with an extensive information systems practice ranging from strategy development to systems implementation. Also a major user of computer equipment; DANSK DATA ELEKTRONIK A/S (DDE)—Major Danish and international supplier of commercial computer systems and tools; DISTRIBUTED INFORMATION PROCESSING LTD—Design and development of hand-held computer products for business applications; EUROPEAN INFORMATION INDUSTRY ASSOCIATION (EIIA)—Represents over 150 computer users in the European information industry; FUJITSU ESPANA S.A.—Manufacturer of computer and communications products; GAN BELGIUM—Major user of computer equipment (large insurance company); GETRONICS NV—Software development, maintenance and project management; HEADLAND GROUP PLC—Accounting/business application software developer; INGRES INTERNATIONAL (previously Relational Technology)—Developer of relational database systems; INSIGNIA SOLUTIONS LTD—Small European software developer; INSTRUCTION SET LTD (A Hoskyns Group Company)—Consultancy and system development services concerning open systems technology; INTEGRATED MICRO PRODUCTS LTD—Designer and manufacturer of multiprocessing and fault-tolerant Unix-based computers; JOHNSON-LAIRD, INC.—Developer of software for specialised applications; KERNEL GROUP—Developer of software for open systems users and manufacturers; MACRO 4 PLC—Developer of systems software for mainframes; McDONNELL DOUGLAS INFORMATION SYSTEMS—Major international computer services supplier; MEMOREX TELEX SERVICES BV—Major international designer and manufacturer of plug compatible computer equipment and supplies; MIER COMMUNICATIONS S/A—A Spanish communications company that designs, develops and manufactures T.V. transposers and transmitters for professional applications, in addition to designing and developing subsystems for on-board satellites; MISYS PLC—Computer services company with software and systems house subsidiaries; N.C.R. CORPORATION—Major international full-service computer company; NOKIA DATA—Major international manufacturer of PC's, workstations, data systems and local

- *Computer programs comprise valuable intellectual property and deserve strong legal protection.*
- *Copyright law presents a viable form of legal protection; therefore, copyright protection should be accorded to computer programs as literary works, consistent with the Berne and Universal Copyright Conventions.*
- *The proposed Directive on the Legal Protection of Computer Programs properly excludes ideas, principles, logic, algorithms and programming languages from protection; copyright law should not protect or restrict access to the unprotectible elements of a program.*

area networks. Software developer for insurance, banking, retail and government applications; OLIVETTI SYSTEMS & NETWORKS S.p.A.—Major European full service computer company; ORACLE CORPORATION EUROPE—Leading developer of relational database software; ORMAS B.V.—Small Dutch software house; PERFORMANCE SOFTWARE LIMITED—Development of systems software for transaction processing and practical volume testing and capacity planning for VMS systems; PHOENIX TECHNOLOGIES—Developer of PC-compatible system software; PRAXIS PLC—Designer and producer of software systems and tools; PSION LTD—Manufacturer of hand-held and lap-top computers and software developer; RC INTERNATIONAL (Regrecentralen International)—Major Danish IT supplier and developer of information and telecommunications systems; RESEARCH MACHINES LTD—Manufacturer of PC-compatible personal computers and software developer; SAFEWAY PLC—Major user of computer equipment (a large supermarket chain); SCHNEIDER RUNDfunkWERKE A.G.—Manufacturer of lap-top and desk-top pc-compatibles and peripherals; SECURICOR LIMITED—Major user of computer equipment (a large security company); SITRE (Sociedad Iberica de Transmisiones Electricas S.A.)—Professional electronics company, manufacturer of telecommunication equipment and systems integrator; SOCIETY OF INFORMATION TECHNOLOGY MANAGERS (SOCITM)—Represents over 300 local government computer users in the U.K.; SOFTWAREWORKS, INC.—International software developer; SØREN T. LYNGSØ—A process computer company that designs, develops, manufactures and markets advanced electronics and computer systems; SPIDER SYSTEMS LTD—Systems networking design and implementation; STORAGE TECHNOLOGY CORPORATION—Major international manufacturer of computer peripherals; SUN MICROSYSTEMS—Leading international supplier of distributed computing systems based on standards including professional workstations, servers, UNIX system software, data communications products and networking software; TADPOLE TECHNOLOGY PLC—Developer of VME and Multibus II products for original equipment manufacturers (OEM's); TELMAT INFORMATIQUE—Small European software developer; THORN EMI SOFTWARE—Major European software developer, systems integrator and facilities manager; TORUS SYSTEMS LTD—Networking software designer; TRANSTOOLS, S.A.—Development and production of database software, 4th generation languages, Unix operating systems and office data processing software; TULIP COMPUTERS INTERNATIONAL—Major European manufacturer of PC-compatible systems; UNISOFT GROUP LTD (Not associated with Unisoft Portugal)—Leading independent company for porting the Unix operating system; UNISOFT PORTUGAL (Not associated with Unisoft Group)—Small independent software developer; UNISYS LTD—Major international full service computer company.

This list is not exhaustive. The ECIS position statement is an open petition. More companies and organisations are in the process of reviewing it and are planning to join the Committee in the near future.

- *Copyright law should not prevent the development of interoperable computer products, i.e., those that can attach to, or substitute for, existing computer products, as long as they do not copy the protected expression of existing programs.*
- *While programs that incorporate interfaces may be protected under copyright, such protection should not extend to the rules or principles that define a computer program's interfaces, i.e., the "specifications of interfaces".*
- *Traditional principles of copyright law do not restrict human perception, viewing, observation, study or analysis of distributed copies of literary works. Hence, contrary to the proposed Directive, copyright law should not restrict analysis of computer programs for the purpose of determining the unprotected elements, including interface specifications; otherwise, there will be less competition, less choice, and fewer opportunities for incremental innovation.*
- *Copyright law should encourage and not discourage the concept of open systems, the availability of compatible interoperative computer products, and healthy innovation and competition within the European computer industry.*

AN INTRODUCTION TO THE PROPOSED DIRECTIVE ON THE LEGAL PROTECTION OF COMPUTER PROGRAMS

The importance of the software industry in the European Community cannot be overstated. As the Commission noted in its Green Paper, the EC software market was valued at \$9.5 billion in 1985. The industry has grown rapidly since 1985 and is likely to continue growing so long as a competitive environment is maintained. It is estimated that approximately two million software engineers are employed in Western Europe.

The importance of the proposed Directive to the European software industry is obvious. Less obvious is the impact of the proposed Directive on the many industrial, commercial and administrative institutions that depend upon computer products. These institutions rely on computer systems to perform a vast array of commercial and governmental functions. To be competitive and efficient, these institutions must have available new computer products that are fairly priced and interoperable with existing systems.

Independent programmers and personal computer users

also will be affected by the proposed Directive.¹ Their interests should not be overlooked. After all, some of the largest computer companies in the world today began with a few individuals taking apart computer hardware and software in their garages and creatively improving on existing technology. Europeans should be not only allowed, but positively encouraged to do the same.

Personal computer users currently enjoy a wide range of choice among hardware and software products at generally reasonable prices; the tremendous competition in the personal computer market has made computers affordable throughout most of the European Community. The proposed Directive must ensure that the personal computer market remains competitive for the benefit of European users. The Directive in its present form will not.

The Commission's focus prior to the proposed Directive has rightly been on ensuring competition, interoperability and open systems in the computer industry.² The Commission has traditionally recognised that competition, interoperability and open systems benefit the computer industry, the public and private institutions that depend upon computer products, and the individuals who use computers to improve their daily lives. The proposed Directive should further the Commission's efforts by creating a legal environment favourable to competition, interoperability and open systems.

THE ECONOMIC CONDITION OF THE EC COMPUTER INDUSTRY

The positions on the proposed Directive advocated by different computer companies are best explained by the economic interests of such companies. As a general rule, hardware and software companies dedicated to open systems and interoperability of computer products support revising the proposed Directive to ensure that it does not threaten their ability to produce competitive, interoperable products. These companies have come together to form the European Committee for Interoperable Systems (ECIS). On the other hand, hardware and software companies that already dominate some segment of the computer

¹ A more detailed analysis of the impact of the proposed Directive on European consumers is presented in Appendix 4 [on file in Journal office].

² The Commission undertook proceedings against IBM on December 6, 1980 related to IBM's unwillingness to make interface information available to its competitors. The proceedings were suspended in 1984 after IBM entered into an Undertaking to provide certain interface information to companies competing within the EC.

industry are pressing for an increase in the scope of copyright protection for computer programs to protect their market dominance. These companies have formed the Software Action Group for Europe (SAGE) in an effort to counter ECIS. Large users, software houses and service firms that have an economic stake in open systems and interoperability are joining with ECIS to advocate changes in the proposed Directive.³

To understand the economic motivation of computer companies and users, it is necessary to have a grasp of the basic economics of the computer industry in Europe. As noted in the Green Paper,

the dominant suppliers of software in Western Europe are of U.S. origin. Taken together, U.S. firms in 1985 supplied in the region of 65% to 85% of the Western European market for systems software depending on the class and about 55% of the market for applications software. It is also striking that computer hardware manufacturers are the largest suppliers, even in the case of package software. Amongst the computer hardware firms, IBM leads the field with a 41.5% share of the package software market in Western Europe (1985).

The overwhelming dominance of U.S. firms in the European computer industry is reflected in the revenues earned by these firms. The chart on the following page is the "European Top 25" from the July 1, 1989 edition of *DATAMATION*. The chart reveals much about the economic condition of the European market. For instance it shows that,

- IBM dominates the revenues of the top 25 companies, with a share almost four times that of its nearest competitor.
- IBM and DEC collectively account for 39% of the total.
- U.S. COMPANIES collectively account for 54% of the total.
- WESTERN EUROPEAN COMPANIES collectively account for 43% of the total.
- JAPANESE COMPANIES collectively account for 3% of the total.

The dominant position of American companies like IBM, DEC and Apple in the hardware market, and Microsoft and Lotus in the software market, is largely explained by their early entrance into

³ ECIS includes in its membership many users (including the Automobile Association and the Society of Information Technology Managers), small and medium-sized software houses (including Telmat Informatique and APD, Compania Espanola de Informatica) and computer service firms, especially systems integrators (including Misys PLC, Spider Systems Ltd and Thom EMI Software).

such markets. These companies developed original products that became widely accepted by users and thus became *de facto* standards for their respective market segments. Their position as owners of products that established the standard for a market segment enables these companies to reap enormous profits from their proprietary products. Consequently, IBM, DEC, Apple, Microsoft and Lotus are understandably anxious to avoid changes to the proposed Directive that would allow ECIS members like Olivetti or Sun Microsystems to offer new, innovative products that would reduce the established firms' profit margins by competing with their dominant products.

GOALS FOR A SOFTWARE DIRECTIVE

The Commission's stated purpose in proposing the Directive is to harmonize law throughout the Community in a manner that will foster the development of European computer companies. In its final form the Directive should meet the needs of:

- *Large European computer companies*, by ensuring that major national producers (e.g. Bull and Olivetti) will be able effectively to offer new products that compete with the products of dominant vendors in the post-1992 market.
- *Small and medium-sized software companies*, by ensuring that they are able to engage in the research and development required to create new programs free of intimidation, and by ensuring that they are able to protect their new products.
- *Computer service companies*, by ensuring that they continue to be able to offer users solutions that integrate the products of many vendors, coupled with unique software solutions where necessary.
- *Computer and software users*, who increasingly need and demand interoperability among proprietary systems and, ultimately, open systems. Users' support for changes in the proposed Directive along the lines proposed by ECIS is evidenced by the positions adopted by the two largest European user organisations—CECUA and EIIA.

The hard question is how to meet all these goals. Set out below are the reasons why ECIS believes that excluding interface specifications from copyright protection and permitting research and analysis of computer programs for commercial purposes will ensure interoperability, enhance competition and encourage open systems in Europe.

THE INTERFACE ISSUE

The central issue in the proposed Directive is whether the owner of a computer program should be able to claim monopoly protection under copyright law for interface specifications. This issue is critical because interface specifications are the key to interoperability—they are the rules that dictate how a computer program works with other hardware or software products.

This question has not been resolved in the proposed Directive, which states in Article 1.3 only that “Where the specification of interfaces constitutes ideas and principles which underlie the program, those ideas and principles are not copyrightable subject matter.” In other words, the present text of the Directive begs the question whether the specifications of interfaces are or are not protectible.

ECIS advocates that the portion of a program *implementing* an interface should be granted copyright protection.⁴ On the other hand, the *specifications* (i.e., rules) underlying the program pursuant to which the program communicates with another program or piece of hardware should not be protectible. The reason is simple—if specifications are protectible, only one company (the copyright holder) will have the right to make products that interoperate with the original program: a classic monopoly situation. That company can retain for itself the ability to make new, interoperable products or license to others, on its own terms, the right to do so.

Users today demand, and deserve, interoperability among computer products. A computer system comprises numerous hardware and software components, including, for example, a central processing unit, external memory, internal memory, a printer, system software and application software. No single manufacturer will ever achieve excellence in the design and production of all these components. It is natural, then, for a user assembling a computer system to want to take advantage of the particular strengths of different vendors. The key to a user’s ability to select among different vendors’ products at competitive prices is interoperability, which in turn depends upon open interfaces.

The alternative is a phenomenon known as “lock-in”. Lock-in arises where a user invests heavily in products built around a particular vendor’s proprietary interfaces. Unless other vendors

⁴ Appendix 5 describes the significance of interfaces and explains the technical issues involved in more detail. [On file in Journal office].

are able to offer products that independently implement the original vendor's interfaces—that is, interoperable products—the user will be confronted with a choice between buying products only from the original vendor or replacing the entire system and effectively writing off its original investment. Software lock-in drastically limits a user's options and precludes maximising the functionality and performance of its computer systems. Interoperability is the key to unlocking users' dependence on dominant vendors.

Users have advocated open systems as a way to end lock-in. Some have suggested that the proposed Directive need not specify that interface specifications are unprotectible because open systems will solve the problems. While open systems are a laudable goal and fully supported by ECIS, members of ECIS recognise that progress toward open systems has been slow and is ultimately dependent upon the voluntary cooperation of dominant vendors, which is unlikely to be forthcoming while there is any chance that interface specifications may be protectible.

Dominant vendors are in fact not prepared to embrace open systems. One person in a position to know says the only way interoperability will become reality is if software vendors sit around a table and agree among themselves on how to make a connection.⁵ ECIS members believe that copyright law should not be available as a tool to help dominant computer companies retard the movement toward open systems and increased interoperability of computer products. Should the Directive leave open the argument that interface specifications may be protectible, such vendors will have no incentive to bargain in good faith to make open systems a reality.

THE SO-CALLED REVERSE ENGINEERING ISSUE

This issue is whether or not computer companies, software houses, systems integrators and users should be allowed to conduct research and analysis on programs for the purpose of developing new interoperable programs, modifying existing programs and/or maintaining existing programs. In its present form, the proposed Directive forbids *all* such research and analysis without the copyright holder's express consent. Article 4 of the proposed Directive prohibits, unless the copyright holder consents,

⁵ Statement of Robert Dunkil, IBM Europe Group Director of Commercial and Industrial Relations as cited in Blackwell Professional Information Systems 115/6, February 12, 1990.

the reproduction of a computer program by any means and in any form, in part or in whole. In so far as they necessitate a reproduction of the program in part or in whole, loading, viewing, running, transmission or storage of the computer program shall be considered restricted acts. . . .

The sweeping prohibition contained in Article 4, in the absence of meaningful exceptions elsewhere in the proposed Directive, is unprecedented.⁶ It would render illegal the research and analysis routinely carried out by honest companies, large and small, throughout the European Community.

Any company engaged in creating a new, interoperable product (whether an attaching or a competitive product) must study existing programs to ensure that the new product will properly implement the existing interfaces in the anticipated environment.

Companies engaged in systems integration also must employ research and analysis techniques. Typically, a systems integrator will be asked to assist a user in building a computer system, integrating products from different vendors. Since neither interoperability nor open systems is fully realised in the computer industry, the systems integrator must study the interfaces and functionality of various vendors' products to determine how to modify the existing programs or develop new programs to create a successful computer system.

Research and analysis are also required in order to perform either hardware or software maintenance. In order to understand properly where problems are occurring in their system (problems which frequently must be solved immediately at the risk of millions of dollars of lost "downtime"), users must analyse the portions of programs where "bugs" are occurring.

Software developers, systems integrators and software engineers all utilise common research and analysis techniques. These techniques include reading manuals, conducting test runs, connection tests, line traces, storage media dumps, memory dumps, disassembly and decompilation.⁷ The preferred technique is reading manuals, since that is the easiest and cheapest means of studying another program. Unfortunately, the detailed information required to ensure interoperability is rarely available in manuals, which are almost invariably incomplete, inaccurate or out-dated. Therefore, engineers are compelled to engage in research and analysis beyond

⁶ Appendix 9 presents a detailed discussion of U.S. and Japanese law on reverse analysis of computer programs. [On file in Journal office].

⁷ Appendix 6 presents a more detailed discussion of the techniques employed in research and analysis of computer programs. [On file in Journal office].

reading manuals. The problem is that the proposed Directive bans all such research and analysis unless performed with the copyright holders consent: the Directive makes it impossible to conduct a test run, connection test, line trace, storage media dump, memory dump, disassembly or decompilation, since these all require “loading”, “viewing” and “running” a program. *Any* form of research on computer programs *necessarily* involves a prohibited act of “reproduction” under the terms of the proposed Directive. Accordingly, the proposed Directive must be revised to expressly permit these legitimate research techniques.

It has been suggested that modifying the Directive to expressly permit research and analysis of computer programs will open the door to software piracy.⁸ Software pirates have no use for difficult research and analysis techniques. Research and analysis is a time consuming and complex task, used to decipher small parts of a program, not to copy entire programs. Moreover, the interests of the copyright holder remain protected where research and analysis of computer programs is allowed, because if the new program copies protected expression from the original program, the copyright holder will have a claim for infringement regardless of what techniques were employed.

SUMMARY AND RECOMMENDATIONS

- Only competition, interoperability and open systems will meet the needs of computer companies, software houses, service companies and users in the European Community.
- In its present form, the proposed Directive will:
 - stifle competition, interoperability and open systems because it fails to provide that interface specifications are not protectible by copyright, and it prohibits the research and analysis techniques required to produce interoperable products
 - harm large European computer companies dependent upon interoperability and open systems
 - stifle small firms in Europe by preventing them from developing new interoperable products and subjecting them to litigation and (equally effective) threats of litigation from dominant vendors.
 - harm computer service companies in Europe by preventing them from performing research techniques

⁸ Appendix 7 presents a response to claims that decompilation is an easy way to copy programs. [On file in Journal office].

required for systems integration and software development

- jeopardize users by enforcing “lock-in” and limiting competition
- harm personal computer users by curtailing the compatible pc market
- enhance the dominant position of certain large computer companies and software houses

Rather than enrich already dominant companies, the proposed Directive should be revised to further the Commission’s historical support for competition, interoperability and open systems.

ECIS recommends that the final Directive provide:

- that computer programs are protected from piracy by copyright protection
- that competition, interoperability and open systems are ensured by
 - Exempting interface specifications from copyright protection
 - Permitting those research and analysis techniques required to produce interoperable products

The full text of the proposed ECIS amendments to the proposed Directive are set out at the end of Appendix 3.⁹

⁹ As is discussed in Appendix 10, the proposed amendments are fully consistent with the Berne Convention. [On file in Journal office].

SOFTWARE ACTION GROUP FOR EUROPE*
("S.A.G.E.")

QUESTIONS AND ANSWERS
ON THE LEGAL PROTECTION OF COMPUTER
PROGRAMMES**

This information sets forth the views of the Software Action Group for Europe (SAGE) on the proposed directive for the legal protection of computer programmes. It outlines SAGE's view on the decompilation issue and provides SAGE's position on the decompilation provision approved by the European Parliament's Committee on Legal Affairs and Citizens Rights.

What is SAGE?

SAGE consists of over 200 European producers of hardware and software products. SAGE's signatories include major IT producers such as Siemens, Philips, Apple, Digital, and IBM, leading software companies such as Microsoft and Lotus, and major associations of software producers, such as the Federation Against Software Theft in the United Kingdom, the Syndicat National des Professionels du Logiclei Micro-Informailque in France, and the Associazione Italiana per la Tutela del Software in Italy. Most important, SAGE's supporters include dozens of new and emerging European software and hardware developers. These companies represent a critical force in the future of Europe's computer industry, and could be affected dramatically by the final shape of the EC Directive.

SAGE's members recognize that the future of European Industry requires a fair and balanced treatment of intellectual property rights for computer programmes. They are committed to an EC directive that preserves the equitable balance struck under existing member state laws, avoiding any radical departures that would jeopardize one of Europe's (and the world's) most important and successful industries.

What Is The Debate About Decompilation?

Much of the debate on the directive has centered on one particular process, called decompilation. When a computer programme is distributed by its creators, it typically comes in what is called

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object code. This code is easily read by a computer, and can be read by individuals as well, although not without some significant effort. Decompilation is a process that involves the taking apart, or disassembly, of the object code, followed by translation of the programme into what is called source code, which is the type of code the original computer programmers most likely used when they wrote the programme.

By engaging in decompilation, a competitor can take apart a program, study how its various parts operate together, and even take certain aspects of the code and incorporate it into its own programmes. Rather than develop a new product itself, a competitor might use decompilation to figure out what others have done, and then seek to copy parts of that work in its own programmes. Unfortunately, such copying can be especially difficult to police, because a competitor can try to hide its copying in its own source code, which in turn will be altered further when it is translated into object code before the programme is made available to the public.

Do EC Member State Laws Permit Decompilation?

In the last decade, five EC member states (Denmark, France, Germany, Spain, and the United Kingdom) have enacted legislation according copyright protection to computer programmes. Not one of these states has enacted a specific provision to permit decompilation. Nonetheless, the members of another industry group, the European Committee for Interoperable Systems (ECIS), now insist that such a provision is needed in order to preserve the movement towards interoperable, or open, systems. SAGE in turn believes that the strong successes of the computer industry have resulted precisely because these existing member state laws have struck the proper balance in intellectual property protection. SAGE therefore opposes provisions that would alter these existing laws and upset the commercial functioning of the industry.

What Are Interoperable Systems?

The debate on decompilation has increasingly focused on one concept—interoperable, or open, systems. Open systems typically consist of hardware or software components, made by different producers, that attach together. The concept is sometimes difficult to explain, but illustrations are helpful. SAGE agrees fully with an ECIS position, set forth earlier this year, which an-

swered the question "What are interoperable products?" by comparing interoperability to the process involved in fitting automobile tyres to wheel rims. As ECIS stated:

"If you wish to buy new tyres for your Renault, for example, you must look for tyres that fit your Renault's wheel rims—in other words, tyres that are "interoperable" with those wheel rims. . . . In the computer industry, we have similar needs. Users may, for a variety of very good reasons, prefer to purchase central hardware produced by one manufacturer and software and peripheral equipment produced by others. For such a system to work, hardware, software and peripherals must, like tyres and wheel rims, fit together. They must be "interoperable".

As this makes clear, an interoperable developer designs a new product to connect to, or fit with, the first. Or as ECIS has stated, it makes a tyre that fits into a wheel rim, or peripheral equipment that connects to central hardware. In practical terms, such interoperability may require work to study one programme (such as the programme for the central hardware) to develop a second connecting programme (such as a programme to drive the peripheral equipment). It does not, however, require the development of products that will substitute for or replace the original products.

What Is SAGE's Opinion on Interoperability?

SAGE's members strongly support interoperability. Indeed, virtually all companies believe that interoperability represents the future of the computer industry. This is not because of any legal rules, however, but because of market forces. Customers want interoperability, and all companies will have to meet this need if they are to succeed. Most software and hardware developers believe, however, that a company simply doesn't need to engage in decompilation in order to develop an interoperable product.

What Are SAGE's Concerns About the Legal Affairs Committee's Recommendation?

The Legal Affairs Committee has recommended that a new section be added to the proposed directive (article 5a) to permit the "modification of a program's code" in certain circumstances. In SAGE's view, if the European Community chooses to adopt such a provision, it is most important that this not upset the very practices that have permitted the computer industry to advance dramatically in the first place. In SAGE's view, there are important

problems in the text approved by the Legal Affairs Committee. Among these problems, the text fails to prevent the use of decompilation to develop products that would substitute for the decompiled product, introduces a new derogation for maintenance of programmes without any limits to its application, and would override contractual agreements between private parties. These concerns are explained below:

What Are SAGE's Views on Substitute Products?

One of SAGE's biggest concerns is that the EC directive, if not carefully drafted, could open the door to the use of decompilation for much more than interoperability. Some ECIS members are now seeking to use arguments on interoperability to try to gain a provision that would permit decompilation for much more than this limited purpose. For example, a critical aspect of the whole concept of interoperability—even as recognized by the ECIS quotation on page one—is that it permits one programme or product to attach to another. Now, however, ECIS is suddenly arguing that the Community should permit a company to use decompilation even to replace its competitor's products on the market. Indeed, as ECIS stated in a paper commenting on a proposal discussed in the Council of Ministers, "interoperable programs should explicitly be defined to include both programs which are designed to work with one another and programs which are designed to replace existing programs."

In SAGE's view, this clearly goes far beyond the accepted definition of interoperability—even the definition endorsed by ECIS itself. It is one thing to allow a company to decompile its competitor's programme so as to develop a new product that will attach to it. It is quite another, however, to decompile a competitor's programme as part of an effort to replace that programme on the market. Such a practice would depart radically from the existing laws in EC member states and the legal rules in other industrial countries, such as the United States and Japan. It would benefit a small number of companies that have staked their future on copying their competitors' products, but it would hurt the overwhelming majority of the industry, both in Europe and elsewhere.

In SAGE's view, any provision on decompilation should expressly prohibit the use of decompilation for the purpose of developing a programme that will substitute for or replace the decompiled programme. The text of the Legal Affairs Commit-

tee does not include this restriction, and in this respect it is deficient.

What Are SAGE's Views on the Derogation for Maintenance?

SAGE is also concerned by the exception to the rights of the copyright holder which permits reproduction, translation and adaptation of a program for the purpose of maintenance without his authorization, which has been introduced in the text voted by the Legal Affairs Committee. The word 'maintenance' is not defined and no limits to the application of the exception is given. This will moreover open the door to piracy. Adding this new exception whose need has not been debated within the industry will, at the end diminish drastically the level of protection given to computer programs.

What Are SAGE's Concerns About the Effect of the Directive on Contractual Practices?

The text approved by the Legal Affairs Committee also would mandate decompilation even in spite of "all contractual agreements to the contrary"—in other words, decompilation would be permitted even when two parties expressly agreed in a contract that they would not engage in this practice. In SAGE's view, the European Community should not use intellectual property directives to override parties' freedom of contract.

The computer industry depends critically on literally thousands of contracts that have been (and will continue to be) concluded between companies. For example, a hardware company may frequently license its software technology to another—but only on the condition that the license will use this technology in a specified manner. Similarly, many software companies (including many smaller firms) license their programs to (much larger) hardware manufacturers, but again only on the contractually-agreed assurance that the licensees will not turn around and decompile the programs for their own ends. Finally, virtually all companies in the industry rely on contracts to limit the extent to which their employees can obtain access to information or use this information after their employment ends.

The text approved by the Legal Affairs Committee would override all of these contracts. In other words, an individual or company could engage in decompilation even if it promised not to do so. In SAGE's view, this is unfair and would threaten the very commercial transactions that have helped encourage the wide-

spread dissemination of new computer programmes. As long as companies adhere to the Community's competition rules, freedom of contract should prevail. SAGE is therefore concerned that the Legal Affairs Committee has chosen to reject the sanctity of contract in this manner.

Is It True That the Directive Would Prohibit Even the Reading of a Programme's Object Code?

Some [have] argued that this is the case, but in SAGE's view, it certainly is not, especially under the other amendments endorsed by the Legal Affairs Committee. The Committee endorsed an amendment (amendment number 10) to allow a lawful acquiror of a programme to study, observe, and test the programme's functioning while loading, storing, displaying, and running it. This would permit someone to read a programme's object code in the same manner that people can read other copyrighted works. Many SAGE members have supported this amendment, precisely because it would provide fair access to the ideas and principles in a programme, without allowing others to translate or take apart a programme or engage in other acts than ordinarily are not permitted under copyright law. In SAGE's view, this amendment effectively ensures that computer programmes will be treated in the same manner as other copyrighted products such as books—with a level of protection that is no higher or lower than for these other works.

What Is SAGE's Position on Interfaces?

SAGE believes that a programme's interfaces should be protected to the same extent as all other aspects of a programme. If the interface contains expression, that expression should be protected under copyright law in the same manner as expression in other parts of the programme and expression in other copyrighted works. If the interface contains ideas and principles, those ideas and principles should not be protected, just as they are not protected in other parts of the programme or in other copyrighted works.

How Would Small Companies Be Affected by Decompilation?

Perhaps more than anyone, smaller firms need strong protection against copying and unrestricted decompilation. The history of the computer industry includes stories of numerous smaller firms that rose to prominence because they developed new and innova-

tive products that, put simply, were better than anyone else's. Indeed, since smaller firms can seldom match the advertising and distribution channels of larger competitors, strong legal protection of their products is one of the most critical aspects of their success. This helps explain why the vast majority of small developers have endorsed the SAGE statement. They recognize that if larger firms can take apart and expropriate their most innovative products and then market them through better-developed distribution channels, smaller firms—more than anyone else—will lose.

How Would Users Be Affected by Decompilation?

Ultimately, users need the same level of intellectual property protection as everyone else. Users want, on the one hand, access to the newer, faster, and better products that result only when strong intellectual property laws encourage companies to take risks and engage in innovation. At the same time, users want vigorous competition and lower prices. In other words, users, like the industry itself, benefit from a proper balance between copyright and competition principles.

In SAGE's view, existing laws in the member states have struck this balance. Indeed, the computer industry represents one of recent history's most dramatic success stories, for users and producers alike. The industry has grown dramatically, creating jobs and tax revenues in the EC, while providing large and small users alike with the means to improve productivity and develop new inventions in their own businesses.

Above all else, SAGE hopes that the European Community will not upset the balance set by existing Member State laws. Interoperable systems represent a positive development for the computer industry, but legal provisions that encourage open systems will do more harm than good if they are not carefully drawn. Such provisions should not upset the myriad web of contractual provisions that now govern commercial relations in the industry, or open the door to sophisticated copying by permitting the development of substitute or replacement products. The amendment endorsed by the Legal Affairs Committee incorporates many important principles, but in these respects it is not sufficient to protect the European Community's common interest in the continued and vibrant growth of the hardware and software industries.

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¹ Submitted by: Autodesk Inc.; BMC Software, Inc.; CompuServe, Inc.; Computer Language Research, Inc.; Concept Omega Corp.; COVIA; DataEase International Inc.; Digital Research Inc.; Information Builders, Inc.; Lotus Development Corp.; McDonnell Douglas Corp.; Microcom, Inc.; Novell, Inc.; SofTech, Inc.; Softlab, Inc.; SPSS, Inc.; Sybase; System Software Associates, Inc.; WordPerfect Corporation.

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