

## The Answer to the Machine is in the Machine: technical devices for copyright management in the digital era<sup>1</sup>

THOMAS HOEREN

*University of Münster, Universitätsstr 14-16, D-48143 Münster, Germany*

**ABSTRACT** *Multimedia means multilegia. The creation of a CD-Rom product needs a number of licenses for the implementation of pictures, texts and music. The process of getting all the necessary rights constitutes a big logistic adventure that can be overcome only via technical means. In the following article (based upon a report written by the author for the European Commission/DG XIII) Thomas Hoeren describes the present technical devices for license management in the digital era. These devices differ from mere identification systems and copyright clearance tools to complex electronic copyright management systems. The use of all these instruments is however related different legal problems ranging from data protection to questions of evidence.*

The multimedia industry is rapidly expanding. The digital integration of text, music and picture is regarded as the key technology which changes all parts of life. Digital broadcasting, video on demand, interactive TV, digital highways will become the main topics of the twenty-first century.

The development of these technologies is, however, endangered by copyright law. The multimedia producer needs several licenses in order to establish his product. He has to ask and often pay for the permission of all rightholders, including the copyright owners of pre-existing texts, music, films and photographs and the holders of neighbouring rights. Even smaller parts of a work, such as sounds or pixels of photographs, may be regarded as copyrightable or at least subject to neighbouring rights held by music producers or photographers.<sup>2</sup> This complexity is intensified via the international structure of the industries concerned. Therefore, harmonization of national copyright law including private international law is required. Harmonization of copyright law should be promoted. Until now only a few details have been considered by the EU authorities, such as the term of protection, rental and software protection.

But multimedia is not only linked to problems of copyright doctrine. It is also a problem of license management. In practice, the necessity of copyright clearance has caused many problems. The Japanese Institute of Intellectual Property recently gave instances of companies unable to distribute a multimedia product due to the high number of licenses required<sup>3</sup>. For instance, a Japanese firm planned to develop a 30-minute multimedia programme introducing its corpo-

rate history. It was planned to include a newspaper clip with a picture of the company's major product, four magazine covers featuring the product, five pieces of recorded background music and a 30-second clip from a TV programme. The company had to negotiate "with the publisher of the newspaper, the four magazine publishers, the composers, song writers, singers, five record companies, a television broadcast station, an advertising company and a dozen other people who appeared on the TV program"<sup>4</sup>. When one participant in the TV programme died "the company had to seek permission from the surviving family members"<sup>5</sup>.

In addition, the licensors may use different terms and conditions. The divergence of licensing terms complicates the copyright clearance for the multimedia producer. The Japanese report mentioned above describes the case of a New York venture company who planned to develop a multimedia programme based on a famous science-fiction novel<sup>6</sup>. The author of the novel supported this idea. The product was aimed at integrating a TV interview by the author. The TV station, the producer, the production studio and the labour union were only willing to accept the project subject to exorbitant copyright fees. The project therefore could not be realized.

Digitalization of copyrightable works therefore has to be accompanied by the establishment of some electronic tools for effective copyright management. Where thousands of rightholders are involved in the development of a multimedia product, electronic clearing of rights is essential. This article describes the present status of electronic copyright systems<sup>7</sup> varying from mere information systems, and copyright clearance tools to copyright management devices and considers the problems of these systems with a view to suggesting some solutions.

### 1. Copyright information systems

First, there are copyright information systems. These are electronic means applied to identify protected material<sup>8</sup>. These electronic means integrate digital signature techniques and are ways for embedding authentication within the text itself. A similar technology (*steganography*) tries to embed a digital signature in a picture image. Digitalized works would carry their codes through practically every contact, transfer and modification<sup>9</sup>. Identifying numbers are at present used in the distribution of books (ISBN)<sup>10</sup>, journals (ISSN)<sup>11</sup>, records (ISRC)<sup>12</sup> and CDs (SID)<sup>13</sup>. Recently, there are some considerations for applying these concepts to digital technology (apart from CD)<sup>14</sup>. The idea of an international digital numbering system has been part of the WIPO programme for the 1994-95 biennium, adopted by the Governing Bodies of WIPO at their 24th series of meetings held in Geneva, 20-29 September 1993. According to the programme, WIPO will study "the setting up of an international system of assigning, on request, identifying numbers to certain categories of literary and artistic works and to phonograms". These identifying numbers "may also be used for the electronic (particularly digital) means applied to control the extent of use and, possibly, to identify the protected material used ..."<sup>15</sup>. The French Agency for the Protection of Programs (APP) has developed such an international identification system for software at the request of WIPO<sup>16</sup>. The rightholders voluntarily register and deposit software (and other digital works) at the APP.

The work gets a codified identification number comprising the country of deposit, the organization holding the work, deposit number, the date of deposit, type of work (primary, collection, adaptation ...) and licensing conditions. A similar concept has been proposed by the Multimedia Subcommittee of the Copyright Council of Japan's Agency for Cultural Affairs. In their Preliminary Report of 1993, they considered the establishment of a centralized organization for copyright information<sup>17</sup>.

### 2. Copyright clearance systems

Apart from the mere registration, technical devices could be used within copyright clearance systems. These systems do not just provide the facility for deposit of identifying numbers. They also contain digital access to licensing terms and handle the transfer of license fees and royalties. In Japan, Zentaro Kitagawa and others developed the idea of "Copymart"<sup>18</sup>. "Copymart" is a contract-based model for the collective licensing of copyright. It consists of two different databases: the copyright market (CRM) and the copy market (COM). Within CRM individual rightholders can file their copyright information, especially a brief description of their works and the sale or license conditions. Within COM, copies of works are distributed to customers upon request and payment. A similar concept has been proposed by the Multimedia Committee of the Institute of Intellectual Property (MITI)<sup>19</sup>. A collective administration centre should be established where the rightholders can register their works and the user gets information on licensing terms. Finally, the centre collects royalties from users on behalf of the rightholders and in turn reimburses the rightholders. In Great Britain, the Copyright Licensing Agency (CLA) has applied a "CLA's Rapid Clearance Agency" (CLARCS)<sup>20</sup>. CLARCS represents a system where the user can get information about written texts and the licensing fees for photocopying permissions. When the user agrees to the charge, he gets an (oral) copying license and an authorization number.

### 3. Electronic copyright management systems

Finally, the concept of electronic copyright management systems (ECMS) has to be taken into account. The electronic system, may, too, be used to transfer copyright information, handle the licensing of copyrighted works and deliver digital copies. This concept is normally linked to the idea of the so-called "smart cards" containing information about the user's identity and used in a similar way to credit cards.

Up to now only a few systems allow this additional service of electronic delivery. In Canada, Ted Nelson has thought about "Xanadu", a digital storage delivery centre<sup>21</sup>. Here the author can store his work in the system and collect royalties from subsequent users but has to pay a handling fee to service providers. The user pays a royalty and a handling fee for the delivery.

In Japan, NIFTY-SERVE provides for an on-line software distribution through networks. Vendor and prospective purchasers first conclude a licensing agreement via NIFTY-SERVE. NIFTY-SERVE then collects the licensing fee upon downloading software and sends them to the vendor after subtracting a handling charge. In addition, Professor Ryiochi Mori of Tsukuba University (Japan) has promoted the concept of a "Superdistribution system" delivering

software programs<sup>22</sup>. The system counts the frequency of the use of software and charges the user. It has so far been designed only for software programs.

In the USA, the Software Envelope System is being developed by Infologic Software Inc. The system offers protected works, including multimedia programs and related material, to users in encrypted form packaged in a "software envelope". In order to decrypt the work, a certain program has to be used which also documents every transaction regarding the work and details the information provided. Firstly, the user is given information as to copyright, title of the work, names of the author and publisher, a description of the work and relevant key index works. When the user wants to use the work, he can obtain licensing information, so he enters an identification number to decrypt the work.

The European response to the American and Japanese plans is called "CITED", a project financed by the European Commission as ESPRIT Project 5469<sup>23</sup>. CITED represents a generic harmonized reference model applicable to all kinds of possible distributions of digital information. CITED includes the following functions:

- (a) registration of information actors, identification, digital signature, specific acquired use rights and information product types, usage operations, tariff;
- (b) accountancy of use right credits and performed usage operations;
- (c) statistics of all registrations and operations.

The License Contract is fully integrated into the system; it is translated into the CITED system in a triple package (User, Usage, Information). The use rights are defined by the electronic use-right manager; he determines the scope of the licenses.

The architecture of CITED consists of

- (1) an information sub-system including the information product itself and the software necessary for information retrieval and storage;
- (2) a protection and usage monitoring sub-system.

In addition, digital signature techniques are integrated in the sub-systems; on the part of the user, a copyright smart card can be installed for the payment of copyright fees.

Four software tools for PCs have been realised up to now<sup>24</sup>.

- (1) the Event Capture Tool (ECT) traps all basic events and assembles them into CITED complex events, each of which corresponds to an usage operation;
- (2) the Use Right Collector (URC) stores all data necessary for decisions on the acceptance or denial of usage operations;
- (3) the Clearance Service Agent (CSA) takes decisions about the acceptance or denial of usage;
- (4) the Notarisator (NOT) stores the relevant data in order to permit the non-repudiation by concerned actors and usage monitoring to the benefit of publishers/producers and/or distributors.

CITED has not been actually implemented in real life cases. The model will be implemented and tested by two demonstrators which will embody the distributed components in specified environments within the information industry<sup>25</sup>. One project (titled COPYCAT<sup>26</sup>) is aimed at developing CITED in the field of distance learning<sup>27</sup>. COPYCAT stands for "Copyright Ownership Protection in

Computer Assisted Training". It aims to provide a basis for confidence in electronic copyright protection. Apart from the CITED model, it comprises a special security model. It will provide independent assurance of the effectiveness and correctness of specified aspects of the workpackage.

#### 4. Problems

The problems of technical devices partly depend on the implementation. Where technical devices are used for direct licensing, they share the disadvantages of this way of licensing. Where they are implemented by a collective licensing organization, the disadvantages here need further consideration.

##### 4.1. Preparatory status

As stated above, electronic licensing devices are not in use as yet. As the Committee on New Technologies reported at the 1993 IFRRO Annual General Meeting, the devices are "still in relatively rough form, and do not address the problems inherent in persuading the entire electronic universe to operate within the framework of a single particular product or technology"<sup>28</sup>.

The present state of CITED has been described by Graham Cornish<sup>29</sup> who said that CITED may be used when documents are copied from paper into electronic formats or from electronic formats on to paper. Difficulties arise where CITED is used when downloading from one electric format to another. The model offers no protection against further copying and distribution once the work has been downloaded. There is no mechanism for monitoring or controlling the use of electronic text after the downloading. As Cornish mentions, the publishers are therefore "reluctant to allow document delivery centres and other intermediaries to undertake this action"<sup>30</sup>.

##### 4.2. Evidential value of electronic documents

Electronic delivery is only possible where electronic documents are accepted as evidence in court. Otherwise, the user may claim that he has never received the electronic copy of the work. Or the net provider may claim that he has never agreed upon any license. The proposals mentioned above therefore try to solve the problem by integrating digital signatures in their systems<sup>31</sup>.

However, the problem is the acceptability of electronic signatures (however secure they are) in courts. Unlike the United States<sup>32</sup> or Great Britain<sup>33</sup>, the German legislator is unwilling to accept electronic documents as deed. Proposals for an amendment to the German Civil Procedure Act have been rejected or not been discussed by Parliament<sup>34</sup>. Therefore, EDI documents will not be accepted as private deed in the future (with the exception of documents fixed in a WORM storage<sup>35</sup>). This is one of the main reasons why the German banks are unwilling to accept EDI.

It has been suggested that the problem could be solved by contract. Some authors have held that agreements regulating the means of proof are generally binding<sup>36</sup>. This view has however been rejected by the courts<sup>37</sup> on the reasoning that statutory rules of proof are part of the public law and public law is mandatory unless the Act itself provides that a regulation may be derogated. Therefore, the parties cannot derogate from the statutory conditions set up for

private deeds<sup>38</sup>. This means they cannot state that an electronic document has the same evidential force as a private deed. The judge and not the parties of a contact are responsible for the admissibility of evidence in court. As a consequence, it is not forbidden to conclude agreements referring to the behaviour of parties during a case; for instance, the parties can determine that they will not reject certain statements before a court<sup>39</sup>. However, all agreements on matters of proof are not binding on the judges especially where they try to extend the means of proof<sup>40</sup>.

#### 4.3. Voluntary use of identification numbers

The use of technical devices depends on the voluntary decision of third persons. This may lead to negative effects for the establishment of an international numbering system. This code can only be integrated in a product if the producer (i.e. of a CD) agrees. The producer may mistakenly forget to use the code. Also he may refuse to use the code system. Finally, it may be too expensive for the producer to implement the numbering system in his product. In all these cases, the work cannot be identified digitally. CITED and similar systems could then not be used.

#### 4.4. Different, incompatible technical standards

The systems mentioned are themselves not compatible. If the Japanese efforts remain independent from the European attempts, this will result in "device havens". Europe and Japan will be isolated from each other which is in contrast to the international nature of multimedia. Where digital systems are created, the works of authors from all parts of the world are going to be used and if these authors belong to different management systems, the interoperability will be endangered. Information goods could no longer be distributed via an electronic management systems, the interoperability will be endangered. Information goods could no longer be distributed via an electronic management systems and the monitoring facilities of these systems would end at national borders.

#### 4.5. Data protection

Copyright management systems embody facilities for the registration of user data. For instance, Mori's "Superdistribution" allows free distribution of software products, but controls the use of the product<sup>41</sup>. Therefore, identification numbers related to each user and vendor are essential to the superdistribution network. Accounting information can be communicated via modem or by physically presenting the memory card. Therefore, a lot of personal data will be distributed throughout the world.

This transborder data flow is not sufficiently regulated in the national data protection acts<sup>42</sup>. The statutory regulations on data protection have always referred to a technological standard that was outdated by the time the regulations were enacted. This legal time-lag may be exemplified by looking at the situation in Germany. The Federal data protection act which entered into force on 1 June 1991<sup>43</sup> refers to personal computers and online facilities. But unfortunately, it does not deal with transborder data flow<sup>44</sup>.

In addition, electronic copyright management systems (ECMS) are not limited by national frontiers. The exchange of data and the establishment of networks takes place irrespective of national borders. Although this aspect might be fortunate for the collecting societies, it is dangerous from the lawyer's point of view: Law is in general national, created by national legislators, enforced by national courts and authorities. Therefore, there are immense differences in national data protection laws. The collecting societies implementing ECMS might try to circumvent national data protection acts. If a society disapproves national data protection acts and the corresponding state control, it may realize all computer applications from foreign territories; that is, all important personal data (especially those of employees and customers) could be stored in a foreign data processing centre from where the transfer can be effected anywhere in the world.

#### 5. Possible solutions<sup>45</sup>

These problems could perhaps be solved through a combination of legal harmonisation and technical unification. At the technical level copyright management systems should use uniform standards in an international context and the idea of an obligation to use technical devices should be considered (see 5.1 and 5.2 below). At the legal level national regulations on electronic evidence and data protection need to be harmonised, at least at an EU level (5.3 & 5.4 below).

##### 5.1. Unification at an organizational level

The best solution is the establishment of a single, world-wide organization which is responsible for the implementation and use of the technical devices. This corresponds to the proposal mentioned above. One central institution will then install the international numbering system, provide necessary information on the product and licensing terms, collect and distribute royalties and deliver digital copies of the work. In this case, there will be no compatibility problems.

However, this organization may be regarded by some groups as a kind of bureaucratic nightmare. It must be taken into consideration that there will be much opposition with regard to such an organization. Technical devices have to be created on the basis of international co-operation. Japanese, US and European organizations have to co-operate in establishing interoperable copyright management systems. This co-operation could be supported by WIPO in the same way as the idea of an international numbering system has been promoted.

##### 5.2. Mandatory use of technical ways

Several organizations have promoted the idea that hardware producers shall be obliged to use the technical devices. At the WIPO discussion on the International Numbering System, the rightholders' organizations regarded the problem of voluntary use. They held that WIPO should prepare a treaty

which would make it mandatory (a) for rightholders to put a SID code (or an equivalent thereof) on all (recorded) digital carriers before they could be sold or imported into a territory (i.e. a country, customs union, etc.); (b) for contracting States, to provide stiff penalties for importing

or selling a recorded digital carrier not bearing a proper code, or importing or selling a carrier with a false code (bearing in mind that putting a false code would be quite costly and difficult to do for most "pirates").<sup>46</sup>

The representative of DACS promoted at the CIACP congress in Stockholm that

"hardware and software manufacturers and distributors, and network providers, have a legal obligation to include effective systems for both monitoring, recording and charging for use of individual works."<sup>47</sup>

In the past, there have been national acts on the mandatory use of anti-piracy devices. For instance, the US Audio Home Recording Act 1992 pushed for a copy-code device which could prevent copying (the Serial Copy Management System/SCMS)<sup>48</sup>.

A legal obligation is however difficult to implement on a global scale. An international treaty is only binding on the states signatory to it. The states are thereby obliged to implement the treaty through their national legislation. In addition, sanctions combined with obligations are difficult to measure. The failure to comply with numbering or clearing obligations cannot result in the elapse of copyright. This would contradict Art. 5 (2) of the RBC (Paris Version) which prohibits any formality required for the enjoyment and the exercise of copyright.

#### 5.3. Harmonization of evidential rules at the EU level

The evidential value of electronic documents needs further consideration. The EU authorities should try to harmonize regulations on this topic<sup>49</sup>. First efforts have already been made.<sup>50</sup> However, these efforts should be strengthened. Until now, the only efforts have been in the harmonization of material law. The nationality of different procedural acts has yet to be accepted. This attitude arises from a one-sided conception developed in the 19th century: for a long time procedure and material law have been regarded as different aspects. This distinction still disregards the substantial links between the establishment and enforcement of rights. The value and strength of material law depends upon its enforcement through the courts. Therefore, electronic management systems are weak where the documents provided by these systems cannot be used before the courts. For the completion of a European common market, it is therefore very important to harmonize the material system of economically valuable rights. It is also important that these rights are enforced by every member state in a similar way.

#### 5.4. Harmonization of data protection laws

The data protection problems can only be overcome by harmonizing national data protection regulations. As a first step<sup>51</sup>, the European Commission published an amended proposal for a Council Directive on the Protection of Individuals with regard to the Processing of Personal Data and on the free Movement of such Data on 15 October 1992<sup>52</sup>. The directive, if adopted, will solve the problems of data transfer within the European Union. According to Art 1 (2) of the Directive, the Member States shall neither restrict nor prohibit the

free flow of personal data between Member States for reasons to do with the data protection. Consequently, personal data may be freely transferred throughout Europe for ECMS purposes.

The situation is different with regard to transfer to non-EU countries. According to Art. 26 of the proposal, the transfer of personal data to non-EU countries shall only be lawful if these countries ensure "an adequate level of protection". But what is meant by "adequate level of protection"? Does this term refer to the EU standard of protection or to the national data protection regulations of an EU member state? The member states will in fact have different data protection laws even after the implementation of the directive because the directive leaves a lot of questions to be solved differently by the member states (cf. arts. 5, 8 (3), 9, 10 (2), 14 (1), 14 (3), 18 (5), 20, 23 (2), 28 et al.). It has thus to be defined whether the 'adequacy' refers to a national or a European standard of data protection<sup>53</sup>.

## 6. Conclusions

Licensing management in the digital era can only be performed via digital technologies. These technologies do not solve all problems related to the use of multimedia insofar as the answer to the machine is not only in the machine. But electronic devices might be very helpful in the management of digital licensing. However, lawyers have to deal with some legal problems linked to electronic licensing systems. In addition, technicians have to implement these systems. The European Commission should support concepts like CITED; furthermore, it should co-operate with Japanese and American experts (and of course with WIPO) to create an international, uniform standard of digital licensing.

## Notes

1. The author is a professor of law ("Privatdozent") at the University of Münster (Germany). The paper takes into account decisions and literature available up to 30 October 1994.
2. Cf. Hoeren, T. (1989), Sounds von der Datenbank—Zur urheber- und wettbewerbsrechtlichen Beurteilung des Samplings in der Popmusik, in: *Gewerblicher Rechtsschutz und Urheberrecht*, pp. 11–16.
3. Institute of Intellectual Property, Exposure '94. A proposal of the new rule on intellectual property for multimedia, February 1994, p. 10 *et seq.*
4. Institute of Intellectual Property, Exposure '94 (Note 3), p. 10.
5. Institute of Intellectual Property, Exposure '94 (Note 3), p. 10.
6. Institute of Intellectual Property, Exposure '94 (Note 3), p. 11.
7. Anti-copying devices, such as SCMS in the United States, are not dealt with. See A. Chabcau, (1990) The unlawful decoding of encrypted television signals and the protection of authors and producers of audiovisual works, in: *Copyright 1990 371 et seq.*
8. Details may be found in a Memorandum prepared by the International Bureau of WIPO entitled "Questions concerning the establishment of a voluntary international numbering system for certain categories of literary and artistic works and for phonograms", INS/CM/91/1 (10 January, 1994), p. 7 *et seq.*
9. The voluntary deposition of a copy is regarded as a necessary element in this international system. Partially, the system is combined with a unique authentication document setting forth claims of authorship rights, and rebuttable presumption of entitlement in favour of the registered person.
10. The International Standard Book Number (ISBN) has been in use since the 1970s. It consists of ten digits identifying the group, publisher and title.
11. The International Standard Number (ISSN) is used to identify periodicals. Its eight digits are assigned to the title of a serial.

12. The International Standard Recording Code (ISRC) consists of 12 digits including information as to the original producer, the year of recording and the country of origin.
13. The Source Identification (SID) uses nine digits representing the manufacturer, the country and city of manufacturer and the manufacturing equipment identifier. In addition, there are proposals for a digital finger-printing systems in US film producing systems (Cybertech Systems).
14. These systems have partly been described in WIPO, INS/CM/94/1, p. 9 *et seq.*
15. Document AB/XXIV/2, pp. 23, 24.
16. The project has been described in the speech held at a WIPO-symposium at Harvard University by Laurence Guédon (APP). See INS/CM/94/1, p. 12 (sub note 35).
17. The CAE list and the "World List" of "active" works administered by ASCAP cannot be regarded as digital numbering systems. Here information on authors and their works are held on a CD-ROM. But the information is separate from the work itself. A different view has been taken by the International Bureau of WIPO, INS/CM/94/1, p. 9 *et seq.*
18. See Kitagawa, Z. (1989) Copyright clearance or copy sale—a thought on the problem of "mass right", *Aippi Journal*, 213 *et seq.*; *idem.*, (1994): a new concept—an application of digital technology to the collective management of copyright, in: WIPO, 139 *et seq.*; *idem.*, (1994) Computers, digital technology and copyright, *WIPO Worldwide Symposium on the future of Copyright and Neighboring Rights*, June 1994.
19. See the report of the Institute mentioned in Note 3.
20. The system has been described by Charles Clark at the WIPO symposium at Harvard University.
21. Cf. Kitagawa: (1991) Copyright clearance or copy sale? a thought on the problem of "mass right", in: UFITTA 117, p. 65 *et seq.*
22. Cf. Mori, R., Kawahara, M. (1990) Superdistribution: the concept and the architecture, *Transactions of the IEICE*, E 73, p. 1133 *et seq.* The system has also been described by Cox, B. (1992) Superdistribution and electronic objects, *Dr. Dobbs's Journal*, October, p. 44 *et seq.*
23. Cf. Van Slype, G. (1993) Natural language version of the generic CITED model. Volume 1: Presentation of the generic model, Internal Draft Report (Version 3.0), Luxembourg, September 1993; Menard, E. & Schulze, J. (1992) Definition and specification of the CITED model, Version 3.2., November 1992.
24. The author has not succeeded in receiving these software tools. Therefore, a technical evaluation of these tools could not be performed.
25. The development of networks for distribution is also part of the JUKE-BOX project, supported by the Commission. The project is aimed at improving public access to audio archives by using telematics technology. The project consists of a database of digitized sound recordings and a multimedia terminal able to provide search facilities and to play sound recordings.
26. Esprit Project 815.
27. Cf. Barrow, F. (1994) The copicat problem, 14 March, Draft; Ghani, D. Copicat enterprise modelling, 31 March, Draft.
28. Report of the Committee in New Technologies to the 1993 IFFRO Annual General Meeting, Lugano, October 13, 1993, p. 3f.
29. Cornish, G. (1993) Copyright management of document supply in an electronic age, *Interlending & Document Supply* 21 pp. 13-20.
30. *Ibid.*, p. 18.
31. The discussion has been summarized in GMD (Ed.) (1992) Projekt: Bestandsaufnahme über die elektronischen Signaturverfahren". Auftragsnr. 1219/91, St. Augustin.
32. Cf. Rule 1001 (3) of the "Uniform Rules of Evidence": "If data are stored in a computer or similar device, any printout or other output readable by sight, shown to reflect the data accurately, is an original."
33. Cf. Sect. 5 of the Civil Evidence Act 1968. In September 1993, the English Law Commission published a report on the use of "hearsay" evidence in civil proceedings which proposes the evidential treatment of computer records as the same as paper records.
34. Cf. GDD/AWV (Eds.), (1993) Besteht Handlungsbedarf seitens der Bundesregierung und des Gesetzgebers im Hinblick auf elektronische Signaturverfahren?, in: *AWV-Informationen* 39, Heft 5, 3 *et seq.*; Seidel, (1992) Das elektronische Dokument als Regelungsobjekt gesetzgeberischen Handlungsbedarfs, in: *Proceedings of the BIFOA-Congress. SECUNET 1992*, Wiesbaden; *idem.*, Signaturverfahren und elektronische Dokumente. Rechtliche Bewertung und Regelungsvorschläge, in: GMD (Ed.), *Projekt "Bestandsaufnahme"* (Note 187), 76 *et seq.*
35. See Seidel *supra*, in: GMD (Ed.), *Projekt "Bestandsaufnahme"* (Note 31), p. 25; Sponeck, (1991) Der Beweiswert von Computerausdrucken, in: *Computer und Recht*, 269, 273.
36. Schlosser, (1968) *Einverständliches Parteihandeln im Zivilprozess*, p. 25. Cf. Behrle, Die Beschränkbarkeit der Beweisaufnahme, Diss. Freiburg 1950.
37. See Reichsgericht, Judgment of 23 May 1919—11 22/19 = RGZ 96, 957, 959; Court of Appeal of Cologne, Judgment of 13 June 1960—3 O 319/59 = MDR 1960, 846; Zöller/Stephan, *Zivilprozessordnung*, 18. ed. Cologne 1993, § 286 Note 8.
38. Cf. Reed, C. (1993), Electronic data interchange, in: C. Reed, (Ed.), *Computer Law*, 2nd edn, p. 266, London: "Whilst at first sight it seems attractive to include a provision in the interchange agreement that there shall be rebuttable presumption that the parties' records are accurate, there appears to be no precedent deciding that such a clause can override the basic principles of the laws of evidence".
39. Stein/Jonas/Leipold (1979) *Zivilprozessordnung*, 20. ed. Tübingen, § 286 Note 133.
40. The same view has been taken by Baumgärtel, (1957) *Wesen und Begriff der Prozeßhandlung einer Partei im Zivilprozess*, Berlin, 252 ff.; Eickmann, (1987) *Beweisverträge im Zivilprozess*, Bochum, 74 ff.
41. Cf. Mori & Kawahara, *Transactions of the IEICE*, E 53, pp. 1133, 1136.
42. In addition, the registration and control of use could involve problems of participation. The German Act on the participation of employees ("Betriebsverfassungsgesetz") provides that technical devices controlling the behaviour and work of employees can only be installed with consent of the works council (§ 87 (1) No. 6).
43. *Bundesgesetzblatt* 1990 I, 2954.
44. See the critical comments of Simitis, S. & Darmann, U. (1981) *Bundesdatenschutzgesetz*, 3rd edn, Baden-Baden, § 22 Note 51; Simitis, S. (1978) *Grenzüberschreitender Datenaustausch—Notwendige Vorkehrungen zu einer dringend erforderlichen Regelung*, Festschrift für Murad Ferid zum 70. Geburtstag, Munich, pp. 354-375.
45. Preparatory Paper Concerning the Fourth Framework Programme for Community Research and Technological Development (1994-1998), Arcas: Peripherals and Multimedia, 16 February 1994, Version 06, p. 19.
46. Note on the Meeting on the Establishment of an International Numbering System for Digital Carriers, Geneva, May 24, 1994, p. 10.
47. Ibbotson, J. (1994) The use of works of art and photographs in the new technology. A report for the CIACP congress, Stockholm, June, p. 4.
48. Davies, (1991) Digital audio tape and new technology, *IFPI Review*, p. 8. Cf. Gyertyányi, P. (1993) Conflicts and changes. The new technologies in the protection and administration of copyright, in: WIPO (Ed.), *Symposium on the Impact of Digital Technology on Copyright and Neighboring Rights*, Harvard, Geneva 1993, 157 *et seq.*
49. See, too, the German proposal for an amendment to the Civil Procedure Act which stresses the importance of authenticity and identification; cf. Arbeitskreis für wirtschaftliche Verwaltung (ed.) (1993) *Handlungsbedarf für elektronische Signaturverfahren?*, *AWV-Nachrichten* 39 Heft 5, 3 *et seq.*
50. See PROBAT, (1990) La valeur probatoire des documents informatiques, Commission of the EC, Brussels (1992). Proof in the electronic age, discussion paper for the legal advisory board, Commission of the EC, October.
51. For the historical background of the EC plans see Ellger, R. (1991) Datenschutz und europäischer Binnenmarkt. *Recht der Datenverarbeitung* 57 *et seq.*; 121 *et seq.*; Papapavlou, G. Überlegungen (1990) der EG-Kommission zum Datenschutz im Informationsdienstleistungssektor, *Recht der Datenverarbeitung* 113-116.
52. KOM (92) 422 final—SYN 287 = C] C 311/30 of 27 November 1992.
53. For further problems of these provisions see Hoeren (1993) Information management and data protection within the EC: the amended proposal for a council directive on data protection and its impact on German industry, *International Journal of Law and Information Technology*, 1 pp. 129-143.