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Group of Experts on Information Security and Privacy

PRELIMINARY DRAFT: INVENTORY OF CONTROLS ON CRYPTOGRAPHY TECHNOLOGIES

This preliminary draft represents a first step towards compiling an inventory of laws in the OECD Member countries concerning cryptography technologies, focusing on domestic controls, and export or import restrictions. The inventory report will provide a mechanism to exchange information amoung Member countries in the field of cryptography policy to promote a further discussion of related issues, and it forms a part of the continuing work of the OECD in this area.

This preliminary draft of the inventory report is not comprehensive, but should be viewed as a consultation paper to prompt further input from Member countries to complete the survey of the legal treatment in this area. Member countries are invited to review this preliminary draft, to provide comments on the text, and to contribute further materials to assist the Secretariat in producing an inventory report which reflects the current state of affairs as fully and accurately as possible.

Inputs from Member countries is requested no later than 6 April 1998. The Secretariat will modify this draft based on Member Country input, and a revised version will be submitted to the Group of Experts on Information Security and Privacy at its meeting on 18-19 May 1998.

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SECRETARIAT NOTE

1. At its meeting on 20-21 October 1997, the Group of Experts on Information Security and Privacy agreed to undertake a study to review the existing laws in Member countries related to cryptography technologies. Specifically, the Group agreed that, drawing upon the input of the Group of Experts, the Secretariat will prepare a report covering the following three topics:

- To what extent do countries have domestic controls on encryption, and what amendments to domestic laws, if any, are contemplated?

- To what extent do countries have import or export controls on encryption, and what amendments to such import or export laws, if any, are contemplated?

- To what extent are the law enforcement personnel of member countries encountering encryption, and what effect has this had on protecting public safety?

2. This preliminary draft represents a first step toward compiling an inventory of laws in OECD Member countries concerning cryptography technologies, focusing on domestic controls, and import or export restrictions. This preliminary draft of the inventory report is not comprehensive, but should be viewed as a consultation paper to prompt further input from Member countries to complete the survey of the legal treatment in this area. Member countries are invited to review this preliminary draft, to provide comments on the text, and to contribute further materials to assist the Secretariat in producing an inventory report which reflects the current state of affairs as fully and accurately as possible. In preparing contributions to this document, national delegations are invited to take the following questions into consideration:

1. Are your country's domestic controls on encryption accurately reflected in this preliminary draft? Are any amendments to these domestic laws contemplated? Is there any further information which could be reported in this regard?

2. Are your country's import or export controls on encryption accurately reflected in this preliminary draft? Are any amendments to these import or export controls contemplated? Is there any further information which could be reported in this regard?

3. To what extent are the law enforcement personnel of your country encountering encryption, and what effect has this had on protecting public safety?

3. This inventory does not include laws on the use of cryptography for authentication and certification, which will be covered by a separate report directed specifically at that issue, "Preliminary Draft: Inventory of Approaches to Authentication and Certification in a Global Networked Society" [DSTI/ICCP/REG(98)3]. These inventory reports will provide mechanisms to exchange information among Member countries in the field of cryptography policy to promote a further discussion of related issues, and they form a part of the continuing work of the OECD in this area.

4. **Input from Member countries is requested no later than 6 April 1998.** The Secretariat will modify this draft based on Member country input, and a revised version will be submitted to the Group of Experts on Information Security and Privacy at its meeting on 18-19 May 1998.

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INTERNATIONAL INSTRUMENTS

The Wassenaar Arrangement

1. For over four decades, export controls on cryptography were governed by the Coordinating Committee for Multilateral Export Controls (COCOM)[1]. COCOM was created in 1950 to respond to the threat of the Cold War by preventing the sale of arms, and controlling the export of strategic products and technical data from COCOM Member countries to the Warsaw Pact countries. Under the COCOM regime, cryptography was considered a strategic good with military applications, and thus was subject to trade restrictions. In 1991, COCOM decided to allow the export of mass-market cryptographic software (including public domain software); most COCOM Member countries reflected these changes in their national regulations.

2. In response to the diminishing Cold War threat, and in light of emerging new risks to global security, COCOM was dissolved in March 1994 as part of a plan to make a transition to a different kind of agreement. The focus had shifted from a Western screen for controlling the transfer of military technologies, toward a mechanism for addressing the proliferation of weapons of mass destruction and stemming the transfer of dual-use equipment and high technology. Negotiations were initiated by former COCOM countries to develop a regime which would differ significantly in both its goals and procedures, highlighting mechanisms for transparency. During the interim period pending the signing of a new treaty, most members of COCOM agreed in principle to maintain the status quo, and cryptography remained on export control lists.

3. Since 1995, the main international instrument dealing with export controls on cryptography technologies has been the Wassenaar Arrangement on Export Controls for Conventional Arms Dual-Use Goods and Technologies.[2] The Wassenaar Arrangement was formally approved by 33 countries, including 27 of the 29 OECD Member countries, in July 1996.[3] The Wassenaar Arrangement is a collaboration of countries that defines a set of preliminary guidelines covering both armaments and sensitive dual-use goods and technologies which need to be fully implemented at the national level. It focuses on threats to international and regional peace and security by providing for greater openness through information sharing about arms and technology transfers world-wide. The agreement provides an initial framework which depends to some extent on the way participating countries interpret it, and Member governments sometimes have differing views about how the agreement should be implemented. Sanctions for non-observance are unclear.[4]

4. Basically, the Wassenaar Arrangement provides a global mechanism for controlling transfers of conventional armaments and sensitive dual-use items, and a venue in which governments can consider collectively the implications of various activities on international and regional security. Agreement is by consensus, and membership is open on a global and non-discriminatory basis to all countries meeting the agreed criteria. For membership countries must be producers or exporters of arms or dual-use equipment;

adhere to the major non-proliferation regimes; have responsible export policies toward states whose behaviour is a cause of concern (particularly those countries with military end-uses for sensitive technologies); and implement adequate export controls. The agreement outlines a formal process of transparency, consultation, and where appropriate, multilateral restraint.

5. Participants agree to control through their national laws, regulations and policies those items and technologies contained in a list of Dual-Use Goods and Technologies and a separate Munitions List. 1 November 1996 was set as a target date for implementation of the Lists at the national level. The Arrangement also established a Secretariat in Vienna and participants agreed to meet regularly (at least once a year). The first formal conference to review the agreement will be held in 1999. Aggregate data on transfers, denials and under-cuts is exchanged every six months.

6. There are four principal objectives of the Arrangement. It aims to contribute to regional and national security by:

- promoting transparency and greater responsibility with regard to transfers of conventional arms and dual-use goods and technologies, thus preventing destabilising accumulations;

- seeking through national policies, to ensure that transfers of these items do not contribute to the development or enhancement of military capabilities which undermine these goals, and are not diverted to support such capabilities;

- complementing and reinforcing, without duplication, the existing control regimes for weapons of mass destruction and their delivery systems, as well as other internationally recognised measures designed to promote transparency and greater responsibility, by focusing on the threats to international and regional peace and security which may arise from transfers of armaments and sensitive dual-use goods and technologies where risks are judged greatest; and,

- enhancing co-operation to prevent the acquisition of armaments and sensitive dual-use items for military end-uses, if the situation in a region or the behaviour of a state is, or becomes, a cause for serious concern to the Participating States.

7. The “Initial Elements” of the Wassenaar Arrangement include two lists of items and technologies which Member countries agree to control[5]: (1) a munitions list which covers conventional arms; and (2) a list of dual-use goods and technologies, i.e., goods that can be used both for a military and for a civil purpose. The latter list is divided into Tier 1 (basic list) and Tier 2 (sensitive list). The agreement imposes a reporting requirement for the transfer or denial to a non-participant country of listed dual-use goods and technologies. The Tier 1 list requires notification be given aggregately on the usual six-monthly basis. However, sensitive Tier 2 goods and technologies have a higher standard requiring individual notice to be given upon each transfer or denial to non-participant states, in no later than 60 days after the date of the occurrence.

8. The Arrangement also requires participating countries to inform one another when a listed product is shipped to an end-user to which another participating country has denied a licence within the preceding three years (“under-cutting”). Although participating countries are encouraged to exercise vigilance in the control of listed items, there is no specific obligation to require licenses, this is left to national discretion.

9. Cryptography technologies appear on the List of Dual-Use Goods and Technologies under Category 5, Part 2, “Information Security”. Both hardware and software cryptography technologies are listed for control. The exceptions to the provisions covering cryptography technologies are noteworthy:

5.A.2. does not control:

a. "Personalised smart cards" or specially designed components therefor, with any of the following characteristics:

1. Not capable of message traffic encryption or encryption of user-supplied data or related key management functions therefor; or

2. When restricted for use in equipment or systems excluded from control under entries 1. to 6. of the Note to 5.A.2.a.3. or under entries b. to h. of this Note;

b. Equipment containing "fixed" data compression or coding techniques;

c. Receiving equipment for radio broadcast, pay television or similar restricted audience television of the consumer type, without digital encryption and where digital decryption is limited to the video, audio or management functions;

d. Portable or mobile radiotelephones for civil use (e.g., for use with commercial civil cellular radiocommunications systems) that are not capable of end-to-end encryption;

e. Decryption functions specially designed to allow the execution of copy-protected "software", provided the decryption functions are not user-accessible;

f. Access control equipment, such as automatic teller machines, self-service statement printers or point of sale terminals, which protects password or personal identification numbers (PIN) or similar data to prevent unauthorized access to facilities but does not allow for encryption of files or text, except as directly related to the password or PIN protection;

g. Data authentication equipment which calculates a Message Authentication Code (MAC) or similar result to ensure no alteration of text has taken place, or to authenticate users, but does not allow for encryption of data, text or other media other than that needed for the authentication;

h. Cryptographic equipment specially designed and limited for use in machines for banking or money transactions, such as automatic teller machines, self-service statement printers or point of sale terminals.

10. According to the “General Technology Note” of the Dual-Use List, controls do not apply to "technology" "in the public domain", to "basic scientific research", or to the minimum necessary information for patent applications. The “General Software Note” states that:

The Lists do not control "software" which is either:

1. Generally available to the public by being:

a. Sold from stock at retail selling points without restriction, by means of:

1. Over-the-counter transactions;

2. Mail order transactions; or

3. Telephone call transactions; and

b. Designed for installation by the user without further substantial support by the supplier; or

2. "In the public domain".

European Union

Export controls

11. The Regulation and Decision of the Council of the European Union of 19 December 1994 concerning the control of the exports of dual-use goods[6] is the basis for the EU regime which governs the export of cryptography technologies.

12. The EC Regulation sets forth a license requirement for the export of certain cryptography products outside of the EU. For a transitional period, the Regulation also requires a licence procedure for intra-Community trade of certain particularly sensitive encryption products, which amounts to EU domestic controls on products shipped between Member States. However, the Regulation does not set out in full the scope, content and implementation practices of national controls. As a result, there is some divergence in national practices among EU Member States.

13. The Decision which implements the Regulation includes specific exceptions to the export controls that have an effect on the export of cryptography, and which indicate that the export of cryptography via the Internet does not fall within the scope of the Regulation. In particular, the Decision states that the control of technology is limited to tangible form[7]. Furthermore, the “General Technology Note” of the Decision states that controls on technology do not apply to information “in the public domain”, and the “General Software Note” indicates that the export control list does not include software which is “in the public domain” or “generally available” to the public by being (1) sold from stock at retail selling points, without restriction by means of over-the-counter transactions, mail order transactions, or telephone order transactions; and (2) designed for installation by the user without further substantial support by the supplier.

Domestic controls and import regulations

14. There are no import controls on cryptography technologies applicable to the European Union.

15. The Treaty of Rome which founded the European Union ensures the free movement of goods within the Community, which has implications for national cryptography policies of the Member States.

16. The European Council Resolution of 17 January 1995 on the lawful interception of telecommunications[8] contains a requirement for network operators and service providers, if they use encryption, to provide intercepted communications to law-enforcement agencies "en clair", that is, to provide the signal as they received it.

General Policy Developments

17. In October 1997 the European Commission published a Communication “Ensuring security and trust in electronic Communication - Towards a European Framework for Digital Signatures and Encryption[9] which describes both the authentication and integrity functions of cryptography, as well as confidentiality functions. The communications addresses lawful access to encryption keys (key recovery or key escrow schemes) under the latter section, on the basis that such schemes might be interpreted as domestic controls of cryptography. The Communication recognises that there are a number of commercial applications of “encryption”, including pay TV which operates commercially by using encryption where once the subscriber pays a fee to the transmission is decrypted.

18. The Communication endorses the use of encryption to enable law-abiding citizens and companies to protect themselves against criminal attacks, although noting that criminals cannot totally be prevented from using the technologies for their own ends. It states that "the public needs to have access to technical tools allowing effective protection of the confidentiality of data and communication against arbitrary intrusions. Encryption of data is very often the only effective and cost-efficient way of meeting these requirements." The Communication goes on to indicate that the Commission will be diligent in seeing that Member States’ national restrictions in the area of national security and law enforcement are justified and abide by the EU free circulation provisions, and Data Protection Directive. With regard to regulations on the use of encryption, it notes that "divergence between regulatory schemes might result in obstacles to the functioning of the Internal Market."

19. The Communication also points out that Member States must report to the Commission any proposals to impose technical rules for marketing, use manufacture or import of cryptographic products - [10]

20. The Communication advises that the dual-use Regulation should be adapted in view of the requirements for the cryptographic products market. It states that Article 19 of the Regulation contains a provision which should be re-examined, in particular to:

- progressively dismantle intra-Community controls on commercial encryption products (although not necessarily for very advanced encryption);

- launch a discussion on the scope and interpretation of certain provisions, such as the “General Software Note” (which stipulates that public-domain software is not subject to controls); and

– deal with problems like intangible means of transmission (such as fax or e-mail).

21. Finally, the Communication advocates co-operation between police forces on a European and international level, as well as international action to create a framework for electronic commerce which would involve mutual recognition of certificates and common technical standards.

22. The Commission Green Paper on Legal Protection for Encrypted Services In the Internal Market of June 1996 provides an overview of the legislation on illicit reception of encrypted services in each of the 15 members of the EU. The Green Paper proposes a Directive to be drafted which would provide equal levels of protection in the Community for services which are encrypted to ensure payment of a fee (such as pay television and video-on-demand) by harmonising national laws to prohibit the manufacture, sale, import, possession, and promotion of illicit decoders, as well as unauthorised decoding[11]. It states that the lack of equivalent levels of protection in Member States represents an obstacle to the smooth functioning of the Internal Market.

Other European Fora

23. On 11 September 1995, the Council of Europe adopted a Recommendation[12] concerning problems of criminal procedural law connected with information technology. The document states that, "[m]easures should be considered to minimise the negative effects of the use of cryptography on the investigation of criminal offences, without affecting its legitimate use more than is strictly necessary." The Recommendation does not however require Member states to implement any specific policy on encryption in their jurisdictions.

24. A Ministerial level conference on Global Information Networks was held in Bonn on 6-8 July 1997. The Declaration of European Ministers[13] issued following the conference recognises the importance of strong cryptography, and declares that cryptographic products should be available internationally and users should have free choice of cryptographic technologies, subject to applicable law. It urges that measures to safeguard lawful access should be proportionate and effective.

OECD MEMBER COUNTRIES

Australia

Export controls

25. Australia is a member of the Wassenaar Arrangement. Furthermore, export regulations for Commonwealth countries fall generally under the Commonwealth Regulations.[14]

26. The export of cryptographic hardware and software from Australia is regulated under the Defence and Strategic Goods List under the authority of the Department of Defence.[15] Written permission from the Department is needed for exporting “systems equipment and components” designed or modified to use cryptography or ensure information security or perform cryptoanalytic functions. This does not expressly include cryptographic software transmitted electronically, for example over the Internet. The export controls do not exclude public-domain or “generally available” cryptographic software; however,

public-domain "technology" is excluded.[16] The relevant export licence is reviewed by the Defence Signals Directorate of the Department of Defence. In practice, export approval is now granted on a routine basis for encryption software with key lengths of 56 bits or less.

27. The Australian export restrictions on cryptography technologies include the same exemptions as those outlined in the Wassenaar Arrangement. The restrictions also include a personal-use exemption for the temporary export of limited amounts of cryptographic hardware or software by Australian citizens or lawful permanent residents, according to the following limitations:

a) no transfer of hardware, software or technology takes place as a result of the exportation of the cryptographic products;

b) the cryptographic products remain under the control of and in the possession of the exporter;

c) the cryptographic products are not to be reproduced or copied;

d) the cryptographic products must be returned to Australia when the exporter returns to Australia; and

e) the cryptographic products shall not be used for demonstration, marketing or sales of controlled cryptographic products.

The quantity of cryptographic hardware or software products which may be exported under the authority of this permit is limited to one each of any hardware product, and one copy of each software product per exporter, per trip outside of Australia. Records of temporary exports and re-imports under this permit should be maintained by the exporter for a period of 3 years from the date of each temporary export.

Domestic controls and import regulations

28. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Australia.

Austria

Export controls

29. Austria is a member of the Wassenaar Arrangement and the European Union. Export rules in Austria follow EU regulations on export of cryptographic technologies. “Generally available” software and software and technology “in the public domain” do not fall within the scope of the controls.

Domestic controls and import regulations

30. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Austria.

31. The *Betriebsfunkverordnung* forbids the use of cryptography for in-house (i.e. internal to an organisation) radio transmissions.

Belgium

Export controls

32. Belgium is a member of the Wassenaar Arrangement and the European Union. Export rules in Belgium follow EU regulations on export of cryptographic products. An export license for exporting cryptography hardware or software outside of the Benelux countries is required. "Generally available" software and software and technology "in the public domain" do not fall within the scope of the controls.

Domestic controls and import regulations

33. There are no import restrictions on cryptography technologies, currently in place in Belgium. However, the use of cryptography systems have to be approved by the Belgian Institute for Posts and Telecommunications (BIPT).

34. In 1996, there was a review of previously passed legislation[17] containing provisions which could be interpreted as forbidding the use of encryption equipment that would prevent telephone tapping by the authorities, and may require that private keys for decryption be deposited with a third party. The Belgian Ministry of Justice has stated that it is not their intention to prohibit the use of encryption, and the legislation has yet to be implemented. The agency for Belgium Information and Security (Belinfosec) is reportedly studying the issue. Recently proposed legislation would remove the provisions in question, and emphasise the everyday applications for cryptography, such as in health information systems and electronic banking. The Belgian Parliament is currently considering these issues further under a proposed amendment to the telecommunications law.

Canada

Export controls

35. Canada is a member of the Wassenaar Arrangement.

36. The Canadian Export Control List[18] includes hardware and software technologies designed or modified to use cryptography, however there are a number of exceptions, including:

- decryption functions specifically designed to allow the execution of copy-protected software;
- software designed to authenticate a message's content or the parties to a message, so long as it does not allow the encryption of the actual data or text being transmitted (includes digital signature functions);

- cryptographic functions designed or limited for use in machines for banking or money transactions, such as automatic teller machines, self-service statement printers, and point of sale terminals; and

- certain personalised smart cards.

37. In addition there are general exemptions from obtaining export licenses for any mass market software or software “in the public domain”.

38. US-origin goods not otherwise controlled under Canadian rules may require an export permit. All types of cryptography can be transported between Canada and the United States; however US-origin cryptography which is not included in the Canadian Export Control List remains under US export rules and cannot be exported from Canada if the US does not allow export. Public domain and mass-market software can be freely exported, unless it contains US-origin goods.

39. Export permits for controlled products are reviewed by the Export Controls Division of the Department of Foreign Affairs and International Trade. In practice, export approval is now granted on a routine basis for encryption products with key lengths of 56 bits or less.

Domestic controls and import regulations

40. No domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Canada.

41. ”A Survey of Legal Issues relating to the Security of Electronic Information” has been published by the Electronic Commerce Secretariat of the Department of Justice of Canada[19]. The Government of Canada Communications Security Establishment has produced the “Government of Canada Public Key Infrastructure White Paper” to give guidance to the Federal Government in providing electronic commerce and confidentiality services to public servants. The planned commencement of this program is late 1998[20].

Czech Republic

Export controls

42. The Czech Republic is a member of the Wassenaar Arrangement. The Czech Republic recently enacted the "Control of Exports and Imports of Goods and Technologies Subject to International Control Regimes."[21] This act is implemented by decree, incorporating the EU and Wassenaar lists of controlled dual-use goods.

43. Export permits for controlled products are reviewed by the Ministry of Industry and Trade. There are two kinds of licenses for export of cryptography products: an "individual license" or an "individual open license". Exporters typically receive an individual license with a written statement about the transaction. An individual open license is used for expected recurring exports of specific controlled goods within a particular territorial scope and a certain time period.

44. The Czech Republic's restrictions only apply to tangible technology and technical knowledge and, like the EU, exempt “generally available” software and public domain software and technology.

Import controls

45. The Czech Republic's export control regime described above also applies generally to the import of these controlled goods.[22] However, the Ministry has granted a general license for the import of cryptographic products[23]. Thus, while the government retains authority to control imports of encryption, an importer of products incorporating cryptography does not currently need any special authorisation for such imports.

Domestic controls

46. No domestic controls on the use of cryptography are currently in place in the Czech Republic.

Denmark

Export controls

47. Denmark is a member of the Wassenaar Arrangement and the European Union. Export controls have been implemented according to the Wassenaar Arrangement. The authority for licensing is the Danish Agency for Trade and Industry.

Domestic controls and import regulations

48. No domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Denmark.

General Policy Developments

49. An Expert Committee On Cryptography under the auspices of the Ministry of Research and Information Technology, including representatives from other Danish Ministries, released a Report in April 1997[24]. The Committee studied the advantages and disadvantages of introducing regulation covering the use of cryptography, and the sale of cryptography. The Committee recommended that no regulation of cryptography should be introduced but that Danish cryptography policy should be viewed in light of international developments. The Expert Committee resolved to carry out an analysis to assess the possibilities and consequences of introducing incentive schemes to induce people to use key-recovery systems.

50. In June 1996 the Danish Government's IT Security Council recommended that no limitations on the right of the individual to encrypt electronic communications should be introduced. However it was agreed that telecommunications companies using encryption integrated into the telecommunications network would be under a duty, when ordered by the court, to decode an encrypted communication in connection with the authorities investigating criminal activity.

Finland

Export controls

51. Finland is a member of the Wassenaar Arrangement and the European Union. For export of cryptographic products, a license is required through a 1996 law which implements the EU recommendation on export of dual-use goods. The licensing authority is the Ministry of Trade and Industry. A license is not needed for “generally available” software and public domain software and technology. However, Finland restricts the export of "technical assistance" and other "services,". Also, Finland restricts the export of "intangible technology," e.g., via the Internet.

Domestic controls and import regulations

52. No domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Finland.

France

Export/ import controls restrictions and domestic controls

53. France is a member of the Wassenaar Arrangement and the European Union. The government agency in charge of implementing laws and policy related to cryptography is the “Service Central de la Sécurité des Systèmes d’Information”[25] (SCSSI), which comes under the authority of the Secretary General for National Defence.

54. The controls on encryption in France are governed by:

- law 90-1170 of 29 December 1990 (Official Journal of 30 December 1990), notably article 28; modified by law 91-648 of 11 July 1991 (Official Journal of 13 July 1991); and further modified by law 96-659 of 26 July 1996, notably article 17 on penalties (Official Journal of 27 July 1996);

- decree 92-1358 of 28 December 1992 in application of the preceding laws (Official Journal of 30 December 1992, pages 17914 to 17916);

- order of 28 December 1992 concerning declarations and requests for authorisations with regard to means of encryption and services (Official Journal of 30 December 1992, pages 17916 and 17917, Official Journal of 9 January 1993, pages 507 and 508);

- order of 28 December 1992 defining the particular conditions which apply to encryption services (Official Journal of 30 December 1992, page 17917);

- decree 95-613 of 5 May 1995 on the control of the export of goods with a double use (Official Journal of 7 May 1995, page 7547);

- order of 5 May 1995 on the control of export to third party countries and the transfer to member states of the European Community of goods with a double use (Official Journal of 7 May 1995, page 7561);

- order of 5 May 1995 defining the general G.502 licence for the export of encryption methods and setting out the means for establishing and using this licence (Official Journal of 7 May 1995, page 7578);

- decree 96-67 of 29 January 1996 relating to the powers of the Secretary General for National Defence (SGDN) on security in information technology (Official Journal of 30 January 1996); and

- law 96-659 of 26 July 1996 on telecommunications regulations (article 17 - Official Journal of 27 July 1996).

55. In summary, the Law of 29 December 1990 states that for use, supply and export of cryptography with no other object than authentication of data or assuring data integrity, a prior declaration must be submitted. A copy of the acknowledgement of declaration must be presented to customs at each export. For temporary export, a user declaration will serve as an export declaration in the case of cryptography exclusively for personal use by an individual. For any other kind of cryptography, a prior authorisation is needed.

56. In June 1996, France passed a telecommunications law[26], referred to as the "26th July Law", partly aimed toward relaxing restrictions on cryptography by amending the Law of December 1990. Article 17 of the new law deals with cryptography. The supply, import from countries outside the European Union, or export of an encryption device or service is subject to authorisation if it performs functions of confidentiality, and the supply and export of all other cryptography products also remains controlled. However, the new law relaxes restrictions on the use of cryptography products in France.

57. Article 17 of the 26 July law relaxes restrictions on the use of authentication devices, stating that no prior declaration will be required for "encryption devices or services which do not provide confidentiality but are used to authenticate or guarantee the integrity of messages; where the device provides for confidentiality functions based solely on secret conventions managed under approved procedures and by an organisation approved under the conditions defined in Part II of the Article i.e. a licensed trusted third party."

58. Article 17 also relaxes restrictions on the use of cryptographic methods for confidentiality services, provided that the confidentiality services used are managed by an authorised "trusted third party". The trusted third party will be a government licensed organisation which manages encoding keys for users. The licenses will be conditional upon the trusted third party submitting encoding keys to the appropriate authorities according to the law so that the State can, if necessary, access the information. Cryptographic products remain subject to authorisation even if they are used in conjunction with a trusted third party.

59. The French Government describes a trusted third party's function as follows:

> *The trustworthy third party is a recognised organisation which manages encoding keys on the user's behalf. The user signs a contract with the trustworthy third party which regularly transmits the keys to use to encode information to the user. A clause is written into the licensing agreement with the trustworthy third party which stipulates that it must submit the encoding keys*

to the proper authorities according to the law. Thus, users can use an encryption professional who guarantees a high quality service to them, while the State can, if need be, have access to the information.

60. Until the 26th July Law is fully implemented, the previous restrictions remain in place. As of February 1998, all of the decrees required to implement the law have not been passed. Two of the outstanding decrees relate to Article 17 dealing with cryptography, covering in particular (1) the conditions and procedures for submitting declarations and granting of licenses for import, export, use and supply of encryption products; and (2) the framework and responsibilities for trusted third parties.

Germany

Export controls

61. Germany is a member of the Wassenaar Arrangement and the European Union. Export of cryptographic products is regulated by implementation of the EU Dual-Use Regulation. "Generally available" software and software and technology 'in the public domain' do not fall within the scope of the controls. The administrating authority is the Federal Ministry of Economics (BMWi).

Domestic controls and import regulations

62. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Germany.

General Policy Developments

63. The approach of the Ministry of Economics to electronic commerce is generally reflected in the Electronic Commerce Initiative of the Federal Government[27] of 29 October 1997. The statement declares that "[t]he German government does not presently intend to regulate by statute the marketing and use of encryption products. In Germany, encryption systems may thus be freely chosen and used."

64. At the Global Internet Project Summit in April 1997, the German Federal Government set out its views on the elements of a responsible government's cryptography policy:

1. define the conditions for the establishment of a trustworthy security infrastructure (trust should be encouraged by an officially guaranteed security level, resulting on official approval "stamps" on products);

2. guarantee that cryptographic methods are not misused by criminals;

3. promote international co-operation (cross-border key management, where copies of private keys should be escrowed anywhere in the world);

4. undertake an intense and open-minded discussion with all relevant governmental and non-governmental groups.

Greece

Export controls

65. Greece is a member of the Wassenaar Arrangement and the European Union. It has followed the EU Dual-Use Regulations.

Domestic controls and import regulations

66. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Greece.

Hungary

Export controls

67. Hungary is a member of the Wassenaar Arrangement and has implemented controls according to the Wassenaar dual-use list. Export of "generally available" software and public domain software and technology is exempted. The licensing authority is the Ministry of Industry, Trade and Tourism.

Domestic controls and import regulations

68. There are import controls mirroring the export controls, requiring an import license if an export license would be needed in Hungary. There are no domestic laws regulating the use of cryptography.

Iceland

Export/ import controls restrictions and domestic controls

69. There are no domestic controls on the use of cryptography, nor are there export or import restrictions on cryptography technologies, currently in place in Iceland.

Ireland

Export controls

70. Ireland is a member of the Wassenaar Arrangement and the European Union and has implemented the EU Dual-Use Regulations.

Domestic controls and import regulations

71. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Ireland.

Italy

Export controls

72. Italy is a member of the Wassenaar Arrangement and the European Union and has implemented the EU Dual-Use Regulations.

Domestic controls and import regulations

73. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Ireland.

Japan

Export controls

74. Japan is a member of the Wassenaar Arrangement and has implemented export restrictions on cryptography products according to the Wassenaar dual-use list. An export licence is required for all cryptographic products and decisions on applications are made on an individual basis by the licensing authority, the Ministry of International Trade and Industry (MITI).

Domestic controls and import regulations

75. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Japan.

General Policy Developments

76. The development of cryptography policy in Japan is generally focused in two Japanese Ministries: the Ministry of Posts and Telecommunications (MPT)[28] and the Ministry for International Trade and Industry (MITI)[29]. Recently, the National Police Agency and the Ministry of Justice have also taken a role in this area.

77. MITI published a paper in May 1997 "Towards the Age of the Digital Economy - For Rapid Progress in the Japanese Economy and World Economic Growth in the 21st Century"[30] presenting MITI's approach to electronic commerce issues generally. Cryptography is seen as an important tool for establishing information security in electronic commerce. Development of cryptography and investigative projects should be promoted, and network users should be provided with much more information about the various initiatives underway.

Korea

Export controls

78. Korea is a member of the Wassenaar Arrangement and has implemented controls on cryptographic hardware and software accordingly. The licensing authority is the Ministry of Trade, Industry and Energy.

Domestic controls and import regulations

79. There are import controls mirroring the export controls, requiring an import license if an export license would be needed in Korea. There are no domestic regulations specifically governing the use of cryptography, although there may some related restrictions under general telecommunications law.

General policy developments

80. The Ministry of Information and Communication of Korea is currently studying these issues.

Luxembourg

Export controls

81. Luxembourg is a member of the Wassenaar Arrangement and the European Union and has implemented controls on cryptographic hardware and software according to the EU Dual-Use Regulations.

Domestic controls and import regulations

82. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Luxembourg.

Mexico

Export/ import controls restrictions and domestic controls

83. There are no domestic controls on the use of cryptography, nor are there export or import restrictions on cryptography technologies, currently in place in Mexico.

Netherlands

Export controls

84. The Netherlands is a member of the Wassenaar Arrangement and the European Union, and controls exports accordingly. The export of public domain and mass-market software and technology generally does not require a license. The administering authority is the Central Agency of Import and Export, under the authority of the Ministry of Economic Affairs.

Domestic controls and import regulations

85. There are no import restrictions on cryptography technologies currently in place in the Netherlands.

86. Regarding domestic regulations, the use of cryptography on closed terrestrial radio systems (not public mobile systems) is restricted. A recent amendment to the Telecoms Act conferred an obligation on public network operators and public service providers to provide the plain signal where there is a legal interception.

87. At present there is no law on cryptography, nor official policy in the Netherlands, however, the Government is actively studying the issue.

New Zealand

Export controls

88. New Zealand is a member of the Wassenaar Arrangement and has implemented Wassenaar controls accordingly. The export of cryptographic products is regulated through the 1966 Customs Act and the Export Prohibition Regulations of 1953, which were updated by an Order in October 1996. A license is required from the International Security and Arms Control Division of the Ministry of Foreign Affairs, which considers applications on a case-by-case basis.

Domestic controls and import regulations

89. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in New Zealand.

Norway

Export controls

90. Norway is a member of the Wassenaar Arrangement and the European Union, and has implemented Wassenaar controls accordingly. Export controls are administered by the Ministry of Foreign Affairs.

Domestic controls and import regulations

91. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Norway.

General Policy Developments

92. The Norwegian IT Security Council recently presented a report to the Ministry of Trade and Industry covering inter alia: purposes of confidentiality, integrity and authentication; OECD guidelines; Norwegian projects; technological trends; existing laws and regulations; lawful access; and export and import controls. Two key policy areas highlighted by the report for consideration were (1) the review of regulations with regard to lawful access in situations characterised by heavy use of cryptography (to be addressed when these situations are more clarified), and (2) the existing regulations and agreements on export controls.

Poland

Export controls

93. Poland is a member of the Wassenaar Arrangement and intends to become a Member of the European Union. A license is required for exporting cryptographic software or hardware, in accordance with the EU Dual-Use Goods Regulation.

Domestic controls and import regulations

94. There are no domestic controls on the use of cryptography currently in place in Poland.

95. The import of cryptography is regulated by a 1993 law which provides that a general authorisation or import certificate is required to buy cryptographic products abroad. The end-user must detail the kind of information to be encrypted and where the cryptography is to be installed.

Portugal

Export controls

96. Portugal is a member of the Wassenaar Arrangement and the European Union and has implemented controls according to the EU Dual-Use Regulations. The licensing authority is the Directorate General for Commerce.

Domestic controls and import regulations

97. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Portugal.

Spain

Export controls

98. Spain is a member of the Wassenaar Arrangement and the European Union, and controls export of cryptographic products according to the EU Dual-Use Regulations. The Ministry with responsibility in this area is the Ministry of Economy and Finance.

Domestic controls and import regulations

99. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Spain.

Sweden

Export controls

100. Sweden is a member of the Wassenaar Arrangement and the European Union, and controls export of cryptographic products accordingly. The licensing authority is the Inspectorate for Strategic Goods at the Foreign Ministry. Products are classified according to the advice of the Radio Institute of the Swedish Armed Forces (FRA).

Domestic controls and import regulations

101. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Sweden.

General Policy Developments

102. The Swedish Cabinet Office is currently studying issues related to cryptography policy, and guidelines are being prepared. The October 1997 report by the Swedish Cabinet Office "Crypto policy: Possible Swedish lines of action"[31] includes the following principles:

- everybody has the right to use cryptography in order to secure stored data and communication;
- prerequisites for Swedish users' voluntary deposit of their keys in Sweden should be created in response to the requirements of key deposit";
- in order to enable law enforcement agencies to fight terrorism and drug dealers, rules and regulations for lawful access to plaintext and keys must be installed";
- import of cryptography will continue to be free;
- that the export controls will remain;

– necessary regulation of Swedish cryptography issues should be introduced in co-operation with other countries and with due account to international development.

103. The Swedish Information Technology Commission, which advises the Government on strategic questions in the information technology field, released a report in May 1997, "Towards a Swedish Policy for Secure Electronic Communications" which recommended that no restrictions on the use of cryptography should be introduced.

Switzerland

Export controls

104. Switzerland is a member of the Wassenaar Arrangement and has implemented controls accordingly. The licensing authority is the Federal Office of Foreign Economic Affairs. General licenses may be granted for export to designated destinations.

Domestic controls and import regulations

105. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Switzerland, although restrictions affecting use of cryptography may exist under general telecommunications laws.

106. Based on a decree issued by the Federal Council of Security in 1991 and a decision made by the Information Technology Security Committee in June 1997, the Swiss Federal Office for Information Technology and Systems (BFI) issued several site security policies and a network security policy. These policies address the minimum requirements and measures which need to be satisfied by all IT systems and include the use of cryptography.

Turkey

Export controls

107. Turkey is a member of the Wassenaar Arrangement and has implemented controls accordingly.

Domestic controls and import regulations

108. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in Turkey.

United Kingdom

Export controls

109. The United Kingdom is a member of the Wassenaar Arrangement and the European Union. Export of cryptography technologies is controlled in accordance with the EU Dual-Use Regulation, implemented through the Export of Goods (Control) Order 1994 as amended by the Dual-Use and Related Goods (Export Control) Regulations 1996. The controls do not apply to "generally available" software or software and technology in the public domain. Exporters must apply for a two year export license for any products using cryptography. The responsible authority is the Export Control Organisation of the Department of Trade and Industry (DTI)[32]. In some circumstances the DTI will issue a more general Open Individual Export License, good for three years, which may contain specific conditions. All exporters must keep detailed records on the exports authorised by a license.

110. Applications for "Open Individual Export Licences" (OIELs) from exporters for encryption products which contain the 56-bit DES algorithm (or algorithms of an equivalent strength) are considered. Such OIELs will, depending on the individual circumstances, be limited in terms of the applicable country destinations, the type of end user, the specified use of the products and, inter-alia on any international discussions taking place on exports of cryptographic products. In addition, in line with the Government policy regarding Trusted Third Parties, it may be appropriate, in certain circumstances, for the exporter to demonstrate that their products have (or will have) the capability to inter-work with licensed TTPs.

111. From 28 January 1998 the DTI will issue a new kind of "Open General Export Licence". The new licences will permit, without further authority but subject to certain conditions, the export of goods which are not capable of on-line voice encryption or decryption which are designed to be used in conjunction with digital computers for personal use when accompanying their user.

Domestic controls and import regulations

112. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in the United Kingdom.

General Policy Developments

113. A June 1996 DTI policy paper on provision of encryption services on public telecommunications networks states that export controls on encryption products (hardware or software) including digital encryption algorithms will remain in place, but that the Government, along with their EU partners, would try to simplify export controls for encryption products used by licensed TTP's. The government would introduce legislation for licensing and regulating Trusted Third Parties (TTPs), with aims to preserve law-enforcement access to encrypted data. Prior to legislation, a consultation process with all interested parties would be held.

114. The consultation process was launched with a "Consultation Paper on Licensing of Trusted Third Parties for the Provision of Encryption Services"[33] issued by the Department of Trade and Industry (DTI) on 19 March 1997. The Consultation paper covers aspects of cryptography related to the licensing of TTPs, their use for confidentiality purposes, lawful access for confidentiality, legal recognition of digital signatures and international issues. The proposals are directed solely towards the provision of

encryption services to subscribers in the UK and not the use of encryption. The proposals would not apply to intra-company TTPs, nor encryption services as an integral part of another service(such as pay-TV). Although the licensing for all organisations providing cryptography services to UK clients would be mandatory under the proposal, users would remain at liberty to choose whether to make use of TTPs, or to make other arrangements for their encryption requirements. However it adds that the "Government recognises that further legislation may be required in the future to enable the appropriate authorities to obtain private encryption keys other than those held by licensed TTPs." The Department of Trade and Industry has been nominated as the initial licensing authority.

115. Currently Britain holds the presidency for the European Union. During a conference of EU Justice and Home Affairs Ministers at the end of January 1998, the Home Secretary stated that the UK would be using this opportunity to raise awareness of the task facing law enforcement agencies on the Internet.

116. During 1997 there was a change in government in the UK. The new Labour Government is currently studying this issue, and is expected to issue a revised policy statement in January 1998.

United States

Export controls

117. The US is a member of the Wassenaar Arrangement. Cryptography exports in the US have traditionally been controlled by the International Traffic in Arms Regulation (ITAR) and the Arms Export Control Act (AECA), administered by the US State Department. However, at the end of 1996, the regulation of non-military cryptography exports was transferred to the Department of Commerce, Bureau of Administration (BXA); at the same time cryptography technologies were moved from the US Munitions List to the Commerce Control List (CCL).

118. US export controls are implemented by the Export Administration Regulations (EAR)[34]. In 1996, the US Administration called for a relaxation of restrictions for key recovery products.[35] Interim rules implementing this policy outline export licensing policies for different categories of encryption items, and criteria for key escrow or key recovery products, agents, and development plans.[36] The new export rules distinguish five categories of "encryption items" (EI)[37]:

1. *Certain mass-market encryption software may be released from EI controls after a one-time review.*

2. *Key escrow, key recovery and recoverable encryption software (meaning that government can access keys or plaintext with a lawful warrant) will be eligible for "License Exception KMI (key management infrastructure)" to non-embargoed countries.*

3. *After a one-time review, (up to) 56-bit EIs may be granted a six-month export license, provided the exporting business commits itself to develop, produce or market encryption items and services with recoverable features within two years from January 1, 1997. This relaxation will last until 31 December 1998, after which, the export of non-recovery 56-bit cryptography will be prohibited again, and the same situation as before will hold (maximum 40-bit key length, with exceptions for financial institutions).*

4. *All other encryption items may be eligible for encryption licensing arrangements in accordance with ITAR; applications for the export and re-export of items not authorised under a licensing arrangement will be considered on a case-by-case basis.*

5. *"Encryption technology" will be considered for licensing for export on a case-by-case basis.*

119. Also in 1996, the Bureau of Export Administration elaborated a policy on Licensing of Key Escrow Encryption Equipment and Software and modified the EAR further. The interim rule outlines "Key Criteria" that key escrow equipment and items must meet in order to be eligible for a license.[38] Key escrow encryption items and software do not fall within the mass market provisions. Licenses are required for all destinations except Canada.

120. The BXA is now further reviewing the US export controls. On 8 October 1997, it released a statement "seeking comments on how existing foreign policy-based export controls have affected exporters and the general public.... BXA is particularly interested in the experience of individual exporters in complying with the proliferation controls, with emphasis on economic impact and specific instances of business lost to foreign competitors".

121. Temporary export of products for personal use is exempt from the need of a license, provided the exporter take normal precautions to ensure the security of the product. In addition the product must not be intended for copying, demonstration, marketing, sale, re-export, or transfer of ownership or control. In transit, the product must remain with the exporter's accompanying baggage. The exporter must keep records of each export for five years. Export to embargoed countries is prohibited.[39] Making cryptography available on the Internet or a bulletin board system is considered export in the US, unless appropriate measures are taken to prevent foreigners from accessing the cryptography.

Domestic controls and import regulations

122. There are no domestic controls on the use of cryptography, or import restrictions on cryptography technologies, currently in place in the United States.

General Policy Developments

123. The US Administration's "Framework for Global Electronic Commerce" of July 1997[40] stated that "governments should encourage self-regulation....and support the efforts of the private sector organisations to develop mechanisms to facilitate the successful operation of the Internet". The government's Framework for Global Electronic Commerce restates the (voluntary) key recovery approach.

124. On November 15, 1996, the US Government appointed Ambassador David Aaron as "special envoy for cryptography". He works to promote international co-operation and co-ordinate US contacts with foreign governments on encryption matters.

125. A 1996 law[41] includes an amendment requiring the US Sentencing Commission to report annually on the use of computer encryption to conceal criminal activity.

126. The Office of Management and Budget (OMB) published a white paper on "Enabling Privacy, Commerce, Security and Public Safety in the Global Information Infrastructure" in May 1996. The paper proposes the establishment of a key management infrastructure (KMI) that incorporates key escrow.

Participation in the KMI would be voluntary, and choice of encryption algorithms would be free. A "Policy Approving Authority" would certify certification authorities (CAs); it would also be responsible for setting CA performance criteria to meet law enforcement needs. Users would store keys with an "Escrow Authority" (either the CA or an independent entity) in order to get a public-key certificate. Self-escrow would be considered an acceptable option under specific circumstances, including independence from the rest of the organisation and handing over keys to law enforcement. The white paper states that such a key management infrastructure, voluntary and supported by private sector key management organisations, is the prospect of the near future. It would permit users and manufacturers free choice of encryption algorithm, facilitate international interoperability, preserve law enforcement access, and, most importantly, provide strong system security and integrity."

127. A technical advisory committee met for the first time in December 1996 to develop a Federal Information Processing Standard (FIPS) for key recovery. The next meeting is scheduled for 25 February 1998.[42]

128. The June 1996 National Research Council study "Cryptography's role in Securing the Information Society", which was prepared at the request of Congress, states that the Government should promote widespread commercial use of cryptography[43]. It recommended that export controls be progressively relaxed, but not eliminated, and that adoption of escrowed encryption (or of any other standard) should be voluntary. Products providing confidentiality at a level that meets most general commercial requirements should be easily exportable.

129. There are several pieces of proposed legislation currently at various stages of the law-making process, some seeking to impose domestic restrictions on the use of encryption technologies, others requiring mandatory or voluntary government key-recovery or key escrow provisions, and others seeking to permit free use and export of cryptography and cryptographic products:

- Representative Goodlatte's Bill, "Security and Freedom through Encryption (SAFE) Act of 1996" (H.R. 3011), reintroduced on 12 February 1997 (H.R. 695);

- Senator Leahy's Bill, "the Encrypted Communications Privacy Act", proposed on 5 March 1996 (S. 1587), reintroduced 27 February 1997 (S. 376.);

- Senator Burns' Bill, "Promotion of Commerce Online in the Digital Era (Pro-CODE) Act of 1996", proposed in May 1996 (S.1726), reintroduced 27 February 1997 (S. 377); and

- The McCains-Kerrey Bill, "Secure Public Networks Act", introduced 17 June 1997, (S.909).

130. There have been three separate court challenges to the US export regulations, claiming that the regulations violate the First Amendment of the US Constitution which protects free speech.[44]

Country name	European Union member	Wassenaar member	Export controls	Import controls	Domestic controls
Australia	No	*	*	No	* (telecom)
Austria	*	*	*	No	* (minor)
Belgium	*	*	*	No	* (telecom)
Canada	No	*	*	No	No
Czech Rep.	No	*	*	*	No
Denmark	*	*	*	No	No
Finland	*	*	*	No	No
France	*	*	*	*	*
Germany	*	*	*	No	No
Greece	*	*	*	No	No
Hungary	No	*	*	*	No
Iceland	No	No	No	No	No
Ireland	*	*	*	No	No
Italy	*	*	*	No	* (Treasury)
Japan	No	*	*	No	No
Korea	No	*	*		
Luxembourg	*	*	*	No	No
Mexico	No	No	No	No	No
Netherlands	*	*	*	No	No
New Zealand	No	*	*	No	No
Norway	No	*	*	No	No
Poland	No	*	*	*	No
Portugal	*	*	*	No	No
Spain	*	*	*	No	No
Sweden	*	*	*	No	No
Switzerland	No	*	*	No	No
Turkey	No	*	*	No	No
U.K.	*	*	*	No	No (proposed)
United States	No	*	*	No	No (proposed)

NOTES

1. The 17 COCOM members were Australia, Belgium, Canada, Denmark, France, Germany, Greece, Italy, Japan, Luxembourg, The Netherlands, Norway, Portugal, Spain, Turkey, United Kingdom, and the United States. Co-operating members included Austria, Finland, Hungary, Ireland, New Zealand, Poland, Singapore, Slovakia, South Korea, Sweden, Switzerland, and Taiwan.

2 Prior to it's final adoption, the agreement was provisionally called the "New Forum".

3. Wassenaar Arrangement Members are: Argentina, Australia, Austria, Belgium, Bulgaria, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, the Republic of Korea, Romania, the Russian Federation, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom and the United States.

4. For further information on the Wassenaar Arrangement see the US Arms Control and Disarmament Agency (ACDA), *http://www.acda.gov/* .

5 See Appendix 5 of the "Initial Elements", Wassenaar Arrangement.

6. Regulation (EC) 3381/94 (OLJ 367/1, 31.12.94) and Decision 94/942/CFSP (OLJ 367/8, 31.12.94) of the Council of the European Union of 19 December 1994 set forth controls on the export of dual-use goods and established the list of dual-use goods which fall under the Regulation.

7. See the notes to Annex 1 of Decision 94/942/CFSP (OLJ 367/8, 31.12.94) of the Council of the European Union of 19 December 1994.

8. European Council Resolution 96/C329/01.

9. COM(97)503, see *http://www.ispo.cec.be/eif/policy/.*

10. See Council Directive 83/189/EEC (OJL 109, 26.4.83*).*

11. See Com(97)356, of 7 September 1997.

12. Recommendation [R(95)13] of the Council of Europe, see *http://www.privacy.org/pi/intl_orgs/coe/info_tech_1995.htm.*

13. See the Bonn Declaration at *http://www.2.echo.lu/bonn/final.html.*

14. Customs (Prohibited Exports) Regulations Reg 13E, see *http://www.austlii.edu.au/au/legis/cth/consol_reg/cer439/s13e.html*

15. Cryptography is addressed under Part 3 Category 5 "Telecommunications & Information Security" of the Defence and Strategic Goods List. See the Australian Department of Defence at *http://iic.spirit.net.au/imat/publications/excontrl/excohome.htm.*

16. For more practical information on export of cryptography technologies refer to the Guide "Australian Controls on the Export of Defence and Strategic Goods".

17. Laws of 21 March 1991 and 21 December 1994.

18. For information about the cryptographic hardware and software controlled, see the relevant sections of Canada's Export Control List at *http://axion.physics.ubc.ca/ECL.html,* in particular the following sections: 1000 "General Technology Note" providing definitions and including the "General Software Note" which defines key terms*;* 1151 "Equipment Assemblies and Components" (controls cryptographic hardware); 1154 "Software"; and 1155 "Technology" (encryption technology includes any information necessary for the development, production or use of controlled cryptographic equipment or software, covering "technical data" and "technical assistance").

19. See *http://canada.justice.gc.ca/Commerce/toc_en.htm.*

20. See *http://www.cse.dnd.ca/cse/english/index.html.*

21. Act No. 21/1997, Decree Number 43/1997.

22. See Act No. 21/1997.

23. Pursuant to Decree No. 44/1997 and § 16 of Act No. 21/1997.

24. See *http://www.fsk.dk:80/fsk/publ/1997/crypt/index/htm*

25. Central service for the security of information systems.

26. No. 96-659 of 26 July 1996. For a transcript of the law (in French) see the French government site: *http://www.telecom.gouv.fr/francais/activ/telecom/nloi.htm.* For further information on the law from the French government *http://www.telecom.gouv.fr/english/activ/telecom/.*

27. See *http://www.bmwi.de.*

28. See *http://www.mpt.go.jp.*

29. See *http://www.miti.go.jp.*

30. See *http://www.miti.go.jp/intro-e/a228101e.html.*

31. In Swedish, with English summary.

32. See the DTI web site at *http://www.dti.gov.uk.*

33. See *http://www.dtiinfo1.dti.gov.uk/pub.*

34 See *http://jya.com/eartoc/htm.*

35. This policy was announced in a statement by the Vice President on 1 October 1996 and further elaborated by an Executive Order dated 15 November 1996.

36. The interim rules are set out in the Commerce Department draft Export Administration Regulations of December 30, 1996.

37. EAR Sec. 742.15.

38. See Interim final rule of 13 October 1996.

39. In February 1996, the ITAR rules were amended as regards personal use of cryptography. Thereafter, under the new EAR, the ITAR personal use exemption was replaced by EAR 15 CFR Part 740 License Exceptions*:* 740.9 - TMP (temporary imports, exports and reexports) and 740.14 - BAG (baggage) regarding personal effects that individuals may take out of the US. The Department of Commerce announced in February 1997 it would revise the new regulations to, among others, clarify the personal use exemption for laptop computers. See *http://jya.com/740.htm.*

40. See *http://www.whitehouse.gov.*

41. 2 October 1996 law (HR 3723).

42 See *http://crsc.nist.gov/tacdfipsfkmi/.*

43. See *http://www.jya.com/nrc04.txt.*

44. See Karn at *http://people.qualcomm.com/karn,* Bernstein at *www.eff.org,* and Junger at *http://jya.pdj.com.*