

Committee on Trade and Development

DEVELOPMENT IMPLICATIONS OF ELECTRONIC COMMERCE

Note by the Secretariat

1. At its meeting on 25 September 1998, the General Council agreed on a Work Programme on Electronic Commerce, according to which, *inter alia*:

" The Committee on Trade and Development shall examine and report on the development implications of electronic commerce, taking into account the economic, financial and development needs of developing countries. The issues to be examined shall include:

- effects of electronic commerce on the trade and economic prospects of developing countries, notably of their small- and medium-sized enterprises (SMEs), and means of maximizing possible benefits accruing to them;
- challenges to and ways of enhancing the participation of developing countries in electronic commerce, in particular as exporters of electronically delivered products: role of improved access to infrastructure and transfer of technology, and of movement of natural persons;
- use of information technology in the integration of developing countries in the multilateral trading system;
- implications for developing countries of the possible impact of electronic commerce on the traditional means of distribution of physical goods;
- financial implications of electronic commerce for developing countries." ¹

2. This Note has been prepared by the Secretariat as a first step in assisting the Committee on Trade and Development with its discussions on electronic commerce. The note does not attempt to give an exhaustive or in-depth coverage of issues relating to electronic commerce. Rather, it aims to set out some aspects of electronic commerce in order to help delegations better understand how developing countries' trade and economic development may benefit from or be affected by it, and what will be required for them to participate in electronic commerce and to share in the benefits it can offer. The note also aims to address, in a preliminary way, a number of issues related to electronic commerce that have been identified by developing country delegations in various WTO meetings as being of potential interest or concern.

¹ WT/L/274 of 30 September 1998.

Introduction

3. There is no universally agreed definition of electronic commerce. However, in the WTO Work Programme on Electronic Commerce "electronic commerce" is understood to mean the production, distribution, marketing, sale or delivery of goods and services by electronic means.² A commercial transaction can be divided into three main stages: the advertising and searching stage, the ordering and payment stage and the delivery stage. Any or all of these may be carried out electronically and may therefore be covered by the concept of "electronic commerce".

4. Any product that can be reduced to a digital format can be delivered electronically.³ That is the case today with music, books, films, computer software, patterns and designs, many financial services, architectural plans, and so on. Such products may also be delivered by non-electronic means (e.g. by physically transporting books or computer tapes and diskettes containing information, or by one or other of the modes of delivery used by service suppliers); it has also been possible for some time to trade many of them electronically using means such as the telephone and the fax machine.

5. The introduction and rapid spread of the Internet has established electronic commerce as an important means of carrying out commercial transactions. In this regard, electronic commerce is a result of the large technological advances that have been made in the last decade or so in facilitating telecommunications and transmitting information. As noted below, access to modern telecommunication systems is therefore a – perhaps the – defining element of electronic commerce.

6. In their broadest sense, the development implications of electronic commerce derive both from the benefits that developing countries may reap from use of these new technologies and from the physical, economic, juridical and policy constraints that may inhibit them from doing so. Knowledge and information are essential factors of production and valuable commodities in their own right in many areas of development policy. Investment in human and technical infrastructure is therefore necessary to enhance the participation of developing countries in electronic commerce; on the other hand such investment may yield significant externalities, not only in the field of electronic commerce, but in other areas of development.

Electronic commerce as substitute or complement for traditional trade flows

7. To a certain extent, electronic means of delivery may substitute for other means. In this case, an increase in the value of electronic commerce will be offset by a decrease in the value of other competing activities: an increase in the value of international commercial transactions conducted via the Internet, for example, may mean a decrease in the value of those conducted by mail, the movement of service suppliers or consumers across borders, or the physical shipment of goods.

8. Electronic commerce may also create the possibility for additional international commercial transactions. To the extent it may reduce transaction costs and increase efficiency and competition, electronic commerce can help reduce prices and increase international demand. It can thus allow new trade flows to develop which may otherwise not have been considered commercially viable because the transactions involved were either prohibitively expensive or physically difficult to undertake in the absence of electronic transmission: examples include trade in on-line education services, medical services, consulting services and databank retrievals.

9. In addition, electronic commerce can be a complement to traditional means of conducting trade. It has a place alongside the physical transportation of goods, for example, by providing

² WT/L/274 of 30 September 1998.

³ No attempt is made in this Note to enter into the question of whether commercial transactions conducted electronically involve "goods" or "services", in the WTO sense of these terms.

complementary means for international market research, advertising and marketing, purchasing intermediate inputs, and making payments electronically.

Is electronic commerce of interest to developing countries?

10. Electronic commerce may be of particular interest to developing countries if it can help their consumers and producers, particularly small and medium sized enterprises (SMEs), overcome some of their traditional drawbacks in trade, such as distance to markets and lack of information about market opportunities and available supply. However, electronic commerce cannot solve all trade-related problems of developing countries, particularly not those related to domestic supply capacity. Some developing countries may already have the capacity to produce items that can be delivered electronically, while others might, in a first phase, only use the Internet as a tool for advertising, searching or purchase of products from abroad.

Potential benefits from electronic commerce to developing country consumers

11. Electronic commerce should lead to an increased choice of products, lower priced products, products of better quality and faster delivery of products. Electronic means make it easier for a potential consumer to gather information about the available world-wide supply of a product; and may also enable new suppliers to enter the market. Lower prices and higher quality products should result from increased competition between suppliers and from reduced costs of delivery and overall transaction costs.⁴

12. An enlarged choice of products might be of particular importance to consumers in developing countries in which local supply is more limited than in most developed countries. Lower prices of higher quality items should also be of particular importance to developing country consumers who have, on average, lower incomes than developed country consumers. Reduced delivery costs may be a relatively greater advantage to consumers in most developing countries than to the majority of the consumers in developed countries, to the extent that delivery costs are a greater share of the total cost of a product in developing than in developed countries.

Potential benefits from electronic commerce to developing country producers, particularly small and medium sized enterprises

13. By opening additional market opportunities, electronic commerce has the potential to bring many benefits to developing country producers. First, the same benefits as accrue to developing country consumers will accrue to developing country producers if they import items that are traded electronically. Second, to the extent that electronic commerce opens access to new trade-related information flows for developing country companies (for example, on large government or private purchases announced for bidding on the Internet), this should, in itself, enhance the export possibilities of developing countries.

14. Electronic commerce may reduce not only the handicaps presented by physical distance from buyers but also other barriers to entry. To sell, it may no longer be necessary to maintain physical establishments abroad; "virtual shops" and contact points on the Internet may enable storage to be close to the production site (and also reduce the need for extensive – and expensive – inventories) and distribution to be made directly to the consumer. Increased advertising possibilities world-wide may be of interest to small and medium sized enterprises in developing countries that traditionally find it difficult to spread information to potential consumers abroad. Virtual shops may not necessarily need

⁴ The WTO study on electronic commerce gives examples of potential cost savings in the financial sector. For example, the cost of a banking transaction on the Internet is estimated at only half the cost of PC-based banking and one eighth of the cost of a transaction over a bank counter.

very large expenses to establish, even though complicated Internet sites do require a certain investment.

15. Electronic commerce may also enable developing country companies with no physical establishment abroad to eliminate or reduce costs associated with middlemen in selling their products (for instance in tourism, it may be possible for hotels, tour-organizers etc. to establish direct contact with their customers, complementing or avoiding middlemen and potentially building new capacity).

16. Other gains for developing countries may include increased efficiency in public procurement through greater speed, efficiency, accuracy and transparency. Electronic commerce has the potential to improve procurement processes by making business opportunities easily accessible to a wider audience, increasing the efficiency of the procurement workforce, improving the quality and accuracy of procurement-related documents, reducing procurement lead/order times and increasing competition.

17. Many products ordered and sold electronically may still need to be physically delivered. Electronic commerce may therefore increase the potential for delivery services. Electronic commerce is also expected to increase demand in all sectors linked to the infrastructure necessary to conduct electronic commerce. Increased demand offers new export opportunities and it is possible that electronic commerce will boost international trade in general, providing new export opportunities to companies in both developed and developing countries.⁵

18. On the other hand, suppliers of items currently sold exclusively by local producers on developing country markets might face increased competition from foreign companies selling the same type of products electronically. In order to survive, local suppliers must then be flexible and efficient enough to meet such competition. There is thus an urgent need for developing country companies in businesses likely to face competition from suppliers using electronic means to prepare themselves to face this increased competition.

Physical infrastructure requirements for conducting electronic commerce

19. The physical infrastructure requirements for conducting electronic commerce depend on the type of electronic commerce in question. Delivery of an item through the Internet requires more advanced technology than ordering a product by telephone which is later delivered physically. A well functioning, modern telecommunication infrastructure and a satisfactory distribution of electricity are two basic requirements for electronic transactions. Access to computer hardware, software and servers are other requirements for conducting electronic commerce through the Internet.

20. The Internet is the only means that allows all stages of a commercial transaction to be conducted electronically. Apart from sending electronic messages (E-mail) or browsing information on the World Wide Web, the Internet is also used for closed networks to which only a limited group of users have access, most commonly within or between companies in the form of Intranet or Electronic Data Interchange (EDI). It is through the latter use of the Internet, commerce among businesses, that Internet commerce is expected to show the greatest growth.⁶

21. The number of computers in the world directly connected to the Internet has grown from less than a million in 1992 to almost 30 million by January 1998, with the number of users of the Internet estimated to be about 100 million in January 1998.⁷ However, this growth is geographically unevenly distributed. The United States has by far the largest number of Internet users, estimated at 21 million

⁵ WTO, Special Studies 2, p. 32.

⁶ WTO, Special Studies 2, page 25.

⁷ ITU, 1998, World Telecommunication Development Report, Geneva page 83.

already in 1996, and about 70 per cent of the Internet websites are located in the United States.⁸ The geographical concentration is even more pronounced in terms of the value of transactions as more than 85 per cent of world Internet revenue in 1996/97 was generated in the United States.

22. In general, developing countries lag far behind developed markets in the availability of technical requirements for conducting electronic commerce. For example, 65 per cent of households in the world have no telephone, whereas 90 per cent of households in high income countries have a telephone.⁹ Furthermore, telecommunications service in developing countries may often be unreliable, high cost or both. There are also enormous differences in access to telecommunications both between and within developing countries. For instance, while the majority of the population in developing countries live in rural areas, over 80 per cent of the main telephone lines are located in urban areas.

23. Technical innovations and new financing and management approaches might help speed up teleaccessibility in the future. Government policy can also affect telecommunications access (see below). Radio or satellite based telecommunications networks may be used to extend telecommunications infrastructure to remote parts of developing countries; however, whether a country can skip the stage of fixed-line telecommunications and only rely on radio-based networks is debatable. Most countries will probably need to rely on a combination, for example, of fixed-line networks in urban areas and radio-based networks in rural areas.

24. A recent study by the International Finance Corporation (IFC) on the use of Internet by corporations in developing countries shows that within developing country companies using the Internet, fewer people in each company have access to the Internet than in developed country companies.¹⁰ The primary benefit of the Internet mentioned by developing country companies is the use of E-mail, used for communications both within the company and externally. However, many of the developing country companies that use the Internet already have their own homepages and use the Net to make searches. Other uses such as financial and credit transactions are relatively less frequent, possibly reflecting the state of financial regulation, contract law and other general business legislation or practice in the countries concerned.

25. In addition to the cost of basic computer equipment, the cost of using the Internet depends on several factors, including the price of routers and other computing facilities and to a lesser degree on the wages of operators. Such charges may be significantly higher in developing than in developed countries, reflecting inefficiency of telecommunications; thus, the average cost of a subscription to a dial-up Internet connection in Africa is quoted by ITU as USD 75 per month compared to USD 10 in the United States and USD 15 in the United Kingdom, significantly higher in real terms once lower incomes are taken into account. Further, the cost of local or long-distance telephone calls giving access to the Internet can be significantly higher in developing countries, while, for example, in the United States local calls are generally free.¹¹

26. Like other means of communication, the Internet has an external effect in that it becomes more important the more it is used. The more people connected, the more people can be reached

⁸ ITU, 1998, page A-79, and WTO, Special Studies 2, page 25.

⁹ Access to telecommunication is often measured by "teledensity" which gives the number of main telephone lines per 100 inhabitants. About a quarter of the world's countries have a teledensity of less than one and another 47 countries only have between 1.4 to 8.6 main telephone lines per 100 inhabitants. This should be compared with a teledensity of between 27.8 and 68.3 for a group of 46 countries with the highest number of main telephone lines per 100 inhabitants.

¹⁰ John A. Daly and Robert R. Miller, Corporations' Use of the Internet in Developing Countries, 1998, International Finance Corporation, Discussion Paper Number 35, The World Bank, Washington, D.C.

¹¹ NUA Internet Surveys, Weekly Editorial, 15.05.98, "Constraints to the Development of the "Wired" Economy in Africa", Tom Butterly. <http://www.nua.ie>.

through E-mail, the more information is placed on the Internet, and the more valuable it becomes for a user to be connected to it. That externality might be particularly important for companies in developing countries. If few of their suppliers and clients are connected to the Internet it is not very important for them to be connected either. However, as Internet connectivity grows in developing countries it becomes increasingly important for developing country firms to have access to and be represented on the Internet as well.

Enhancing availability of physical infrastructure for electronic commerce

27. As noted, a functioning and reliable telecommunications network is a principal requirement for conducting electronic commerce. Among the factors affecting telecommunications access that a government can influence are the regulatory environment, prices and public information or opinion.

28. Capital investment is needed to increase telecommunication access. The initial costs of infrastructure may be high, involving the installation of a central exchange, building a satellite earth station, wiring a first loop, etc. However, ITU avers that more households than have access to private telecommunication lines could actually afford it considering the costs of telecommunications services and household income; the report suggests that the discrepancy might be due to tariffs being set higher than average cost, inefficiencies, financial constraints or market restrictions.

29. If widespread access to telecommunications at low prices can enhance the capacity of a country to participate in electronic commerce, a policy goal might be to enhance access and reduce prices. Allowing private competition in telecommunications could be one step towards that goal. This does not necessarily mean giving up the ability to control the operation of the sector; Governments can still formulate criteria for access and prices, for example, with the aim of favouring marginal classes of low-volume telephone users as well as increasing access to domestic telephone lines. However, a balance must be struck between the desire to reduce the price to increase affordability (and thereby broaden access) and the need to ensure funding for new investments.

30. Government policy can also affect access to computer hardware and software. Most developing countries do not have domestic production of computer hardware and software, even if there are important exceptions. Computer equipment therefore needs to be imported and becomes an easy target for gaining budget revenue. However, high customs duties and sales taxes effectively reduce access to computers and related equipment. One goal for a government policy aimed at increasing its country's participation in electronic commerce should therefore be to reduce the cost of computer equipment to the end user. This can be achieved through a combination of measures, including for example duty-free or low-duty access for computer equipment; ensuring competition in supply, reductions or concessions in sales, income or corporate taxes etc.

31. Access to the Internet can also be affected by policy decisions. The International Telecommunication Union has stated that even though income level is a key determinant of Internet development in a country, it is not the only one. "Other factors include sector infrastructure, policies, service and equipment pricing and social factors, such as age and education."¹²

32. Governments also have the possibility of acting at the international level by signing and following agreements (such as commitments under the GATS or the ITA) which ensure potential local and foreign investors of a climate conducive to investment.

¹² ITU, "African Telecommunication Indicators" 1998, page 14.

Human infrastructure requirements for electronic commerce

33. Apart from the physical infrastructure requirements for conducting electronic commerce, human infrastructure needs differ from those for conducting other forms of trade. The more of the stages of a commercial exchange that are carried out electronically, the more specific skills are required. Basic computer knowledge and knowledge of the Internet is needed even if only the search for a product is made through the Internet. However, if foreign Internet sites are to be browsed, extensive language knowledge may be an additional requirement. If a product is to be advertised through the Internet, skills in designing an Internet site are necessary, and if an electronic payment is to be accepted there is a need for people with skills in electronic money transfer. No matter whether a computer, a telephone, a fax or a TV is used, there is also a need for people with skills in servicing those machines.

34. Most developing countries do not yet possess a widely skilled workforce in the above-mentioned fields even if some are well advanced in the process of building up such capacity.¹³ Many entities in developing countries may experience a significant shortage of well-educated, computer-literate personnel; in addition, there is likely to be a high turnover of information technology staff.¹⁴ It might therefore be desirable to facilitate the movement of natural persons so that personnel with the necessary skills can be hired by companies experiencing shortages in such personnel. Universities may be ill-equipped to provide the training in information technology demanded by the private sector, while individuals who acquire education and skills usable abroad may be retained by the offer of well-paid jobs. In addition, given that the majority of Websites currently are in English, language may be a barrier to Internet use for some developing countries. Capacity-building in the field of information technology, in the knowledge of the existence of a global market for such skills, is therefore crucial. The development of electronic commerce therefore puts a premium on the development of education policies, to ensure that training institutions' curricula meet with the needs of industry.

Effects of electronic commerce on education and training in developing countries

35. An active policy towards new technologies is likely to have beneficial effects on demand for education and training in relevant courses. In turn, electronic commerce itself can contribute to the educational process, for example through distance courses via the Internet which may enhance educational possibilities and the quality of the education offered. Universities can link up with each other in a way that enable universities in developing countries to get access to databases and other valuable information they would otherwise be unable to access or afford. Private companies specialized in education can sell their courses on-line and provide their material through the Internet. Self-studies gain a new dimension in interactive courses. Not only do connections via the Internet provide access to vast sources of information, they can also ease contacts and cooperation between students.

36. However, it is important to note that these benefits are not automatic. The first to benefit will be the segments of the populations of developing countries that are relatively well off. It will take time and commitment from policy-makers before the poorest segment of populations can benefit. Extensive basic education and access to the required infrastructure are necessary requirements for the benefits to materialize.

¹³ A skilled workforce is not a requirement unique to electronic commerce. The lack of skilled workers is also a problem in other forms of trade. Even with unemployment as high as up to 50 percent, there are still chronic skill shortages in many industries in developing countries. (NUA Internet Surveys) The difference is, however, that electronic commerce requires a highly educated workforce in the areas of information technology and languages.

¹⁴ NUA Internet Surveys, Weekly Editorial, 15.05.98, "Constraints to the Development of the "Wired" Economy in Africa", Tom Butterly. <http://www.nua.ie>.

Effects of electronic commerce on employment in developing countries

37. Sectoral employment opportunities evolve with changes in the demand and supply of products. If electronic commerce is seen as replacing other forms of trade, increased use of electronic commerce in developing countries may lead to a relative decline of employment in traditional trading sectors as the need for outlet facilities diminishes. However, this may be offset by a rise in employment in delivery and after-sales services, as consumers order products which need to be physically delivered.¹⁵ There should also be an increased demand for manpower in all sectors expected to grow with electronic commerce; namely, sectors producing products with the potential to be traded electronically, and sectors related to development and maintenance of the infrastructure necessary for conducting electronic commerce. Even if some of the tasks demanded can be performed at a distance from the customer, others are necessarily linked to the geographical location of the customer. Delivery services of physical goods and the physical installation of computers and servers are examples of duties that need to be performed at the same geographical location as the customer. Employment opportunities will therefore arise in those sectors in the developing countries that participate in electronic commerce.

38. In addition, and most importantly for developing countries with a large and highly skilled workforce, there may be increased employment opportunities to satisfy demand for various services that can be carried out in developing countries and transferred electronically to a company located in another country. Examples of such services would be accounting, legal, computer consultancy services and other business services.

Effects of electronic commerce on the movement of natural persons

39. The development of electronic commerce may have various and sometimes opposing consequences in the area of "movement of natural persons". On the one hand, some developing countries have been able to develop expertise in areas like software development, in which their nationals become skilled consultants whose services are demanded abroad. The fulfilment of this demand may be impeded by restrictions applied on the movement of natural persons. On the other hand, as noted, skilled computer scientists attracted overseas may well be retained by the offer of well paid jobs, coupled with work permits: possibly leading to a permanent loss of skills and income for the country of origin.

40. One consequence of electronic commerce (in the sense of doing business by electronic means, as distinct from physical presence) may therefore be that more technical or consultancy-type work can be carried out in the developing country from which the consultant comes, rather than in the country where the service is demanded. As noted in the Secretariat paper for the Council for Trade in Services (S/C/W/68), this should facilitate sales of services in which developing countries have a comparative advantage that they have so far been unable to exploit because of restrictions on the movement of natural persons. This should be a net benefit to the exporting country both in terms of income and of retained skills.

Electronic commerce and transfer of technology

41. Access to technology may be a key issue for the development of electronic commerce in developing countries. It would be wrong to say that electronic commerce, by itself, necessarily leads to transfer of technology from developed to developing countries. However, a country that is engaged in electronic commerce will by necessity acquire the knowledge required for conducting such

¹⁵ WTO, Special Studies 2, p. 31.

trade. As electronic commerce develops in a country, it will have spin-off effects on the development of the information technology sector in that country. A developing country which encourages electronic commerce and with a climate conducive to investment is likely to attract foreign investment in sectors related to information technology. In addition, it is possible that developed country companies that see market opportunities in developing countries will transfer some technology in order to be able to explore those market opportunities.

Effects of electronic commerce on investment in developing countries

42. A climate conducive to investment in general is the best way to attract investment. A country open to electronic commerce and new information technologies is likely to attract additional interest from foreign investors. Despite the attraction of low production costs, communications and distance have previously discouraged foreign companies from establishing in developing countries; as noted above, electronic commerce may lessen these physical constraints. Active promotion of electronic commerce might, therefore, make foreign firms more interested in investing in a variety of sectors, including telecommunications, Internet service provision, professional services and various areas of industrial production.

Revenue implications of electronic commerce for developing countries

43. Products delivered physically, but "traded electronically" in the sense that they are advertised and searched for or ordered and paid for electronically, create no taxation or revenue problems different from those for other products. Customs duties and internal taxes apply as usual. By contrast, electronically delivered products never cross borders physically and there may be no connection between an Internet address and a physical location; thus, conventional customs duties would be difficult to apply and, in their absence, an incentive may be created to bypass taxed routes and move away from conventional trade towards electronic commerce; this may lead not only to economic distortions, but also to losses in government revenue. However, recent research comes to the conclusion that a "duty-free cyberspace" will not have serious fiscal implications for any country. Only a limited number of countries have high tariffs on products that can be digitalized, and import duties on such products only constitute a minor share of total government revenue even for those countries.¹⁶

44. When taxation issues are considered, however, potential losses in government revenue should also be considered in the light of gains that may arise from sectoral growth stimulated by trade encouraged by lower tariffs and other barriers. Moreover, it is not impossible to tax electronic transmissions, and different methods of doing so are being studied by governments. In this connection, seven principles of tax treatment – equity, simplicity, certainty, effectiveness, avoidance of economic distortions, flexibility in the face of technological development, and fairness in the division of tax revenue among countries – have been enunciated by the OECD.¹⁷

Legal issues

45. Trade and business communication through electronic means give rise to a number of questions of a legal nature. Among those are questions such as: what is the origin of electronically traded products? When is an electronically delivered product "domestic" and when is it "imported"? How do traders who use electronic means of communication deal with situations in which national laws or international conventions applicable to international trade transactions require "written"

¹⁶ Patrick Low, Aaditya Mattoo and Ludger Schuknecht, 1998, Trade Policies for Electronic Commerce, draft mimeo.

¹⁷ OECD Observer, No.206, 1997, quoted in WTO, Special Studies 2, page 40.

agreements, "original" documents or "manual" signatures? How can the authenticity of a message be secured? Uncertainty over the enforcement and potential for redress of electronically concluded contracts may create obstacles to the development of electronic commerce across borders. The use of electronic means of communicating, for instance in preparing and concluding a contract, and in delivering products require not only technological solutions but an appropriate legal framework.¹⁸

46. A number of initiatives at international level have been taken to assist Governments to deal with inadequacies in applicable laws. For example, the United Nations Commission on International Trade Law (UNCITRAL), the UN body responsible for promoting the harmonization and unification of international trade law, has undertaken work which led to the adoption of a Model Law on Electronic Commerce in 1996. The Model Law provides a set of rules which can be used by States in enacting legislation to overcome legal obstacles and uncertainties arising from the use of electronic commerce.

47. Some initiatives have also been taken by individual States, the European Communities and international organizations to deal with the legal issues related to the use of electronic commerce by commercial operators; for example through the use of contractual "interchange" or "trading partner" agreements, which address issues related to the use of Electronic Data Interchange (EDI) between trading partners. Model interchange agreements to be used at the national or regional level have been prepared by several national trade facilitation bodies as well as some regional and international organizations.¹⁹

48. Every country that wishes to participate actively in electronic commerce needs to ensure that domestic laws and regulations are conducive to the use of electronic means for trade-related communication and delivery, or at least that domestic laws and regulations do not constitute unnecessary impediments to the use of modern information technology in trade. However, developing countries have so far made few legislative reforms in order to accommodate the requirements of electronic commerce.

Controlling the content of the Internet

49. Almost all countries, developed and developing, are concerned about the content of the Internet. This is natural, as the Internet contains a wide range of more or less desired "information". There are many differing views on what may constitute risks to public morals, security or other types of offensive material. To police all the content available on the Internet is next to impossible. However, possibilities exist to prevent access to undesirable content, either through individual filtering software installed on the personal computer or, on a broader level, by Internet Service Providers (ISP).

¹⁸ One survey of legal considerations involved in electronic commerce is given in UNCTAD document UNCTAD/STDE/BFB/1, "Electronic Commerce: Legal Considerations", 15 May 1998.

¹⁹ Model interchange agreements have for example been prepared by the EDI bodies or other associations in Australia, Canada, France, New Zealand, Norway, the United Kingdom and the United States. An example of an initiative at the international level was the design of the Uniform Rules of Conduct for Interchange of Trade Data by Teletransmission (UNCID) in 1987 in which several international organizations participated (the International Chamber of Commerce (ICC), United Nations Commission on International Trade Law (UNCITRAL), United Nations Conference on Trade and Development (UNCTAD), the United Nations Economic Commission for Europe (ECE), the International Organization for Standardization (ISO), the Customs Co-operation Council (now the World Customs Organization), the Commission of the European Communities, the Organization for Data Exchange by Tele Transmission in Europe (ODETTE) and the European Insurance Committee).

Final remarks

50. The range of products with the potential to be transmitted electronically is vast and includes financial and insurance services, various audiovisual products (e.g. films, games and music), travel (e.g. airline tickets and hotel reservations) professional services (e.g. medical, legal and architectural services) news and information services (e.g. wire services online and databank retrievals), telecommunications services and services related to other information technology and software. This list is not exhaustive and it is likely that other products will be found suitable for electronic trade in the future. Today, computer software ranks first among the products sold via the Internet.²⁰

51. Some developing countries already count as significant suppliers on world markets of these products; for example, computer software and services are now India's largest export earner, and Barbados and Mauritius are but two small economies that are significant exporters of financial services. However, the use of electronic commerce in its broadest sense, may, as noted above, facilitate trade in other products of actual or potential interest to developing countries.

52. For consumers in developing countries, where the small size of the domestic market and distance from other markets may imply that international trade in some products is relatively uneconomic, electronic commerce may lead to an increased choice of products, lower priced products, products of better quality and faster delivery of products that can be transmitted electronically. Producers, in turn, can benefit by using electronic commerce for at least some aspects of their commercial activities (such as marketing, sales, etc.), even if their principal exports, primary commodities for example, can be traded only by traditional methods. In addition, electronic methods applied to customs and port services have already shown their worth through Electronic Data Interchange or use of specialized systems such as ASYCUDA.²¹

53. These considerations imply that building capacity to use the opportunities presented by electronic commerce, as a means of conducting and facilitating trade, should be one of the priorities in developing countries' trade policies. The difficulties should not be underestimated. As shown, effective use of electronic commerce requires a degree of investment in both physical and human infrastructures, including specialized education and training as well as an appropriate legal framework for conducting commerce electronically. Nevertheless, the benefits in terms of reduction of trading "distance", information on markets and reduction in transaction costs appear considerable.

²⁰ WTO, Special Studies 2, p. 29.

²¹ Automated System for Customs Data developed by UNCTAD.