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Chapter VI

Trade and Transport Efficiency



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TRADE AND TRANSPORT EFFICIENCY

This chapter provides an update on the impact of the latest developments in electronic information technology on the efficiency of transport operations and on developments in the field of multimodal transport.

A. ELECTRONIC COMMERCE DEVELOPMENTS AFFECTING MARITIME TRANSPORT

(a) Documents of title/negotiability

139. The most challenging aspect of the implementation of electronic transport documents is the replacement of negotiable documents of title, such as bills of lading, by an electronic equivalent. The bill of lading is considered a symbol or substitute for the cargo in the sense that one can buy and sell the document with the same effect as if it had been the cargo, and the possession of an original bill of lading has an effect similar to that of the physical possession of the cargo itself. As to the right of control over the goods in transit, the person in possession of a full set of originals (bills of lading are usually issued in a set of three originals) has an exclusive right over the goods in transit and can interfere with the actual performance of the carriage and thus control the destiny of the cargo in transit.¹⁹ It is this document-of-title function of the bill of lading which makes it a key element in international trade. It enables the parties to trade with the goods while in transit by using the document as a substitute, the buyer having the assurance that he can secure actual possession of the goods at the destination by presenting an original bill of lading, or that he can resell the goods by transferring the same bill of lading to a sub-buyer. The term "negotiable" used in relation to a bill of lading merely relates to its transferability and the fact that transfer of rights in goods can be achieved by transfer of the bill of lading.

140. The relationship between the carrier, shipper and consignee of bills of lading is governed by mandatory application of international

conventions, such as the Hague Rules, the Hague Visby Rules or the Hamburg Rules or their national enactments. These international conventions do not contain specific provisions requiring a written paper document for a bill of lading, but references to "writing", "document" and the obligation imposed on the carrier to issue a bill of lading at the request of the shipper are clearly made with a traditional paper document in mind. The Hamburg Rules, however, permit the signature on the bill of lading to be in any mechanical or electronic form, provided that it is not inconsistent with the law of the country where the bill of lading is issued.

141. Negotiable bills of lading have been indispensable to the financing and conduct of international trade, making possible the sale and transportation of goods between parties located in distant parts of the world. Modern technological developments, however, have resulted in the arrival of the ship at the port of destination before the arrival of the bills of lading to enable delivery of the goods. The problems caused by the late arrival of the bill of lading, including the cost and risk involved in releasing the goods against presentation of the letter of indemnity instead of an original bill of lading, have made the international community call for the use of non-negotiable transport documents such as sea waybills where goods are not traded in during transit. It has been argued that "instruments such as negotiable bills of lading are out-moded and should be discarded as business moves to EDI (electronic data interchange). Indeed, there may come a time, when commerce is so secure, trustworthy and universal. But that day is not yet here, and there are significant numbers of transactions requiring negotiable transfers. Some accommodation must be made for them, if EDI is to truly satisfy the needs of commerce".²¹

142. The challenge, therefore, is to replace negotiable documents with electronic versions which have all the legal effects attached to the piece of paper. Under the existing national and international laws governing negotiable bills of lading, legal rights are attached to the physical possession of the paper document. There is therefore a need for a legal regime to allow the parties to transfer legal rights in goods, such as ownership rights, through the exchange of electronic data messages.

143. To achieve negotiability in an electronic environment, in addition to overcoming the general problems of writing, signature, etc., questions such as the allocation of liabilities, incorporation of general terms and conditions of contract, and confidentiality need to be resolved. Efforts are currently focused on developing legal and technological means for replicating the negotiability and transferability function of a paper bill of lading in an electronic environment. The UNCITRAL Model Law on Electronic Commerce, the CMI Rules for Electronic Bills of Lading and the Bolero Project (see below) aim to achieve electronic negotiability within the framework of the existing substantive law governing the paper bill of lading. It has, however, been suggested that if a system based on the transfer of rights is developed with the purpose of replacing the paper bill of lading, it will need legal rules of its own. If such a system becomes successful, the bill of lading will gradually disappear and the bill of lading law will fade away.²⁰

(b) UNCITRAL Model Law on Electronic Commerce

144. Part two of the UNCITRAL Model Law on Electronic Commerce deals with the carriage of goods and transport documents.²¹ In preparing the Model Law, it was recognized that "the carriage of goods was the context in which electronic communications were most likely to be used and in which a legal framework facilitating the use of such communications was most urgently needed" (para. 110 of the Guide to Enactment). Chapter I of the Model Law assumes that the general provisions of the Model Law, particularly those relating to "writing, original and signature", also apply to the electronic equivalent of transport documents.

145. Article 16 of the Model Law sets out the range of activities to which provisions of the chapter

are to apply. It includes a non-exhaustive list of actions expected to be carried out in the context of carriage of goods, such as furnishing marks, number, quantity or conditions of goods, confirmation of loading, notification of terms and conditions of contract, claiming delivery, notice of loss of or damage to goods, undertaking to deliver goods to the person entitled to take delivery, granting, acquiring or transferring and negotiating rights in goods, and transferring rights and obligations under the contract.

146. The activities referred to in article 16 are not only relevant to maritime transport but also to other modes of transport, as the Model Law is intended to cover all transport modes, including road, rail, air, sea and multimodal transport, as well as all transport documents, whether negotiable or non-negotiable.

147. Paragraphs (1) and (2) of article 17 specifically establish functional equivalents of information, as well as the performance of the actions listed in article 16 through the use of paper documents. Paragraph (1) provides that:

"Subject to paragraph (3), where the law requires that any action referred to in article 16 be carried out in writing or by using a paper document, that requirement is met if the action is carried out by using one or more data messages."

148. According to paragraph (2), this provision applies whether the requirement for a written document is in the form of an obligation or whether the law provides certain consequences for failing to conduct the action in writing or to use a paper document.

149. Paragraphs (1) and (2) "are intended to replace both the requirement for a written contract of carriage and the requirements for endorsement and transfer of possession of a bill of lading" (para. 113 of the Guide to Enactment). Such provisions were considered necessary in view of the difficulties that might exist, in certain countries, with regard to recognizing the transmission of data messages as functionally equivalent to the physical transfer of a document of title representing the goods.

150. To enable the transfer of rights and obligations through the use of data messages, the

crucial issue is to establish the identity of the exclusive holder to whom the rights or obligations are to be transferred - in other words, to ensure that a right is transferred to one person only. Paragraph (3) of article 17 therefore provides that:

"If a right is to be granted, or an obligation is to be acquired by, one person and no other person, and if the law requires that, in order to effect this, the right or obligation must be conveyed to that person by the transfer, or use of, a paper document, that requirement is met if the right or obligation is conveyed by using one or more data messages, provided that a reliable method is used to render such data message or messages unique."

151. According to paragraph (4), the standard of reliability required is to be assessed in the light of the purpose for which the right or obligation is conveyed and in the light of all relevant circumstances.

152. Paragraphs (3) and (4) aim at ensuring that a right or obligation is transferred to one person only. They introduce a requirement referred to as the "guarantee of singularity", or uniqueness of the message. Since the requirement in the proviso to paragraph (3) regarding the use of a reliable method to render a data message "unique" is ambiguous, it may be subject to varying interpretations. The Guide to Enactment attempts to clarify this by stating that the words "should be interpreted as referring to the use of a reliable method to secure that data messages purporting to convey any right or obligation of a person might not be used by, or on behalf of, that person inconsistently with any other data messages by which the right or obligation was conveyed by or on behalf of that person".

153. There are also provisions to avoid duplication by ensuring that the transfer of rights and obligations or title to goods is not conducted through the use of both data messages and paper documents simultaneously. In other words, where data messages are used to effect any such action, no paper document used for the same purpose is valid unless the use of data messages has been terminated and replaced by the use of paper documents.

154. Furthermore, article 17 contains provisions to ensure that compulsory application of certain laws to contracts of carriage of goods which is in, or is evidenced by, a paper document, such as the Hague, Hague-Visby or Hamburg Rules, is not excluded by

the fact that data messages are used instead of a paper document.

155. Systems and rules have been developed, or are in the process of being developed, to assist in the practical implementation of negotiable electronic transport documents such as bills of lading. The CMI Rules for Electronic Bills of Lading (1990) already provide a contractual basis for the implementation of electronic bills of lading, while the Bolero Project (see below) will provide an electronic central registry system enabling transfer of title and ownership between users. In the absence of a paper document, a registry system would play an essential role in the negotiation process. "Any form of transferability or negotiability under electronic commerce will require some form of a registry C that is an "honest" middleman or a party that is otherwise responsible to deliver property. Someone has to hold the "stake", record the transaction, and maintain the integrity of the transaction, or there would be chaos, because no one is responsible to see that the transaction is completed."²² It remains to be seen whether the Bolero system will provide a sufficiently secure mechanism for electronic negotiability.

(c) CMI Rules for Electronic Bills of Lading

156. The Comité Maritime International (CMI), a non-governmental organization working towards the unification of maritime law, adopted the Rules for Electronic Bills of Lading in 1990. The objective of the CMI Rules is to establish a mechanism for replacing the traditional negotiable paper bill of lading with an electronic equivalent. The CMI Rules do not have the force of law: they are entirely voluntary and require a "communication agreement" between trading partners for their application. They do not interfere with the law applicable to the contract of carriage, such as the Hague, Hague-Visby or Hamburg Rules. They clearly state that "the contract of carriage shall be subject to any international convention or national law which would have been compulsorily applicable if a paper bill of lading had been issued". The CMI Rules attempt to imitate the function of negotiable bills of lading in an electronic environment. Under the system, the parties agree that the carrier does not have to issue a bill of lading to the shipper. Upon receiving the goods from the shipper, the carrier sends a notice of receipt (a "receipt message") of the goods to the shipper at his electronic address, containing information which would have

been included if a paper bill of lading had been issued, such as the name of the shipper, the description of the goods with any reservations, the date and place of receipt of the goods, a reference to the carrier's terms and conditions of carriage, and a secret code or what is called a "private key" to be used in subsequent transmissions.

157. The "private key" may be any technically appropriate form, such as a combination of numbers or letters, which the parties agree to for the purposes of securing the authenticity and integrity of a transmission. The shipper, upon confirming the receipt message to the carrier, is considered to be the "holder" of the private key. The holder of the private key is the only party that can claim the delivery of the goods, nominate the consignee or substitute a nominated consignee for any other party, transfer the right of control and transfer to another party, and instruct the carrier on any other subject concerning the goods as if he were the holder of a paper bill of lading.

158. The transfer of the right of control and transfer is effected in the following way: the current holder of the private key notifies the carrier of his intention to transfer to another person the right of control and transfer; the carrier, having confirmed that notification, transmits to the proposed new holder the description and particulars of the goods; and, upon acceptance by the proposed new holder of the right of control and transfer, the carrier cancels the current private key and issues a new private key to the new holder. The same procedure is followed in respect of subsequent transfers. The CMI Rules aim at producing the same effects as those produced by the transfer of such rights under a paper bill of lading, without relying on the physical transfer of a piece of paper. It has, however, been questioned whether the parties' agreement would be sufficient to ensure the validity and enforceability of such transfer of rights in all jurisdictions: "It will depend upon the applicable law to what extent their agreement is given effect not only between themselves but also in relation to third parties".²³

159. The carrier must accept instructions from, and deliver the goods only to, the party disclosing the valid private key. The private key is unique to each successive holder and is such that his position is the same as it would be if he had possession of the original paper bill of lading. The private key is not transferable by the holder and must be kept secret in

order to prevent its use by unauthorized persons. The carrier is under an obligation to notify the holder of the private key of the time and place of delivery, and the latter is then required to nominate a consignee, if other than himself, and to give delivery instructions. The delivery of the goods automatically cancels the private key. The carrier is further under an obligation to exercise reasonable care to ascertain the identity of the party that claims to be the consignee, otherwise he will be liable for misdelivery of the goods. "The carrier assumes liability for any financial loss incurred by shipper, transferor or transferee resulting from a breach of any of his afore-mentioned obligations and according to the same rules which would have applied if a bill of lading had been issued and unauthorized instructions had been followed or cargo delivered to the wrong party".²⁴

160. The CMI Rules also allow the parties to opt out of the electronic system, in which case the procedure under the Rules is stopped and the private key is cancelled by the issuance of a paper bill of lading. This is in conformity with international rules (such as the Hague, Hague-Visby and Hamburg Rules) or their corresponding national enactment mandatorily applicable to bills of lading, which allow the shipper to demand an original paper bill of lading.

161. Problems which may arise from a requirement under national law that the contract of carriage should be evidenced in writing are addressed by provisions which stipulate that electronic recording or a computer printout would satisfy that requirement. The parties are assumed by their very adoption of the CMI Rules to have agreed not to raise the defence, in case of a dispute, that the contract is not in writing. Again, the legal effect and validity of such contractual provisions will depend on the applicable law.

162. The CMI Rules have been criticised for placing excessive liability on the carrier, for their failure to address the allocation of liability for system breakdown,²⁵ and (by the banking community) for the lack of specified security system.²⁶ It should be recalled that the CMI Rules do not address technical issues relating to the implementation of electronic bills of lading, and the carrier's liability for misdelivery is intended to be the same as that under a paper bill of lading.

163. Although their legal effect and validity in producing electronic negotiable bills of lading will depend on the applicable law, the CMI Rules constitute an important development in that direction. In jurisdictions in which physical endorsement of a document of title is required, by mandatory legislation, for the transfer of the ownership of goods, paperless transactions under the CMI Rules will have no legal effect. The CMI Rules do, however, provide useful mechanisms for achieving negotiability with regard to electronic transport documents; and in conjunction with an appropriate legislative framework will ensure the validity of such transactions.

(d) Bolero Project

164. The Bolero Project is working to provide a platform for the secure exchange of electronic trade documentation through a central data application. A unique feature of the Bolero system will be its ability to transfer rights from the holder of a bill of lading to a new holder and thus replicate the functions of the traditional paper-based negotiable bill of lading. The Bolero Project is being developed by S.W.I.F.T., the bank-owned cooperative responsible for interbank payment messaging, and the Through Transport Club (TT Club), a mutual insurance company representing carriers, freight forwarders, terminal operators and port authorities. Bolero started life as a cross-industry initiative in 1992 and received some European Union funding in its early stages.

165. In brief, the Bolero system will provide an infrastructure platform which will enable users to send information to other users in a confidential and uncorrupted manner. It will work by affixing a user's digital signature to each message which is sent to Bolero; Bolero will forward this message to the intended recipient. In addition, different types of message, combined with a guarantee that the messages are original (usually termed "Asingular" or "Aunique" in electronic terms), will allow users to transfer rights. It is intended that Bolero will link all participants in the international trade chain. It will interface and work in partnership with established networks and software suppliers so that users' existing proprietary solutions will be enhanced, not replaced.

166. A user's digital signature will work on a public/private key basis. Each user, when registering

to use the system, will be provided with a computer-generated algorithmic private key that only the user knows. Recipients of messages from a particular user will be able to verify that the user is who he says he is by using his public key. Thus the authenticity and integrity of all messages sent via Bolero will be assured, and it will not be possible to repudiate them.

167. The Bolero Association Ltd. represents interested potential users of a Bolero service and consists of importers, exporters, carriers, freight forwarders, banks, port authorities, terminal operators and insurance companies. It is likely that the Association will form a user group to channel information between users and the Bolero service when the latter is established. The Bolero service will be based on a binding legal framework, consisting of a rule book and a service contract. A comprehensive responsibility and liability policy will be incorporated in these two central contracts.

168. The rule book will be a multilateral contract between all users of the Bolero system, and will be binding on them. Its purpose is to allow users to replicate the legal results currently achieved in the paper environment when using electronic messages instead of documents. The rule book will not interfere with the underlying contracts (such as sale, carriage, insurance, settlement and financing contracts) between users except where provisions to replicate the legal effects of these contracts in an electronic environment so dictate. The rule book includes, in addition to general terms and conditions, provisions normally found in interchange agreements, covering validity and enforceability, admissibility of electronic messages as evidence before courts or other tribunals, security, data protection and applicable law. In keeping with its aim of non-interference with underlying contracts between users, the rule book will contain a non-exclusive jurisdiction clause to allow the parties to continue to select the forum for resolution of trade disputes. The key elements of the rule book are the clauses which ensure that the handling and transfer of negotiable bills of lading through the Bolero system are legally binding and reproduce the same legal results as in the case of paper documents.

169. Service contracts will cover issues relating to

the use of the Bolero service, governing levels of service, security, confidentiality, responsibility and liability. The relationship between the Bolero service and third-party suppliers will also be set out.

170. The Bolero service is intended to provide a responsibility and liability policy to protect users' underlying business transactions and ensure confidence in the operations of the system. Although the details have not yet been finalized, it is proposed that the Bolero service will be responsible for any delays in the transmission of a message, misdelivery of a message or breaches of confidential information.

171. The "central title application" will govern the ability to transfer rights under a bill of lading. The title application will maintain a record of who has rights to a particular document, but for reasons of confidentiality this information will be available only to those authorized by the holder of the rights.

172. The Bolero bill of lading will replicate the functions of a traditional bill of lading through a series of electronic messages. The Bolero service will also permit the use of electronic non-negotiable bills of lading and electronic waybills. The Bolero bill of lading will (a) act as a receipt for the goods from the carrier, (b) contain the terms and conditions of the carriage contract, and (c) give the holder the exclusive right to control, allowing him the right of transfer to a new holder and ultimately, as the party entitled to possession, the right to give the carrier instructions regarding delivery. The Bolero bill of lading will be capable of granting a pledge regarding the goods to a bank; hence, banks will be able to use it as security for loans made in connection with international trade.

173. Most international transport conventions require a written document, but these conventions will not apply to Bolero bills of lading by force of law. For example, the Hague and Hague-Visby Rules will apply only if a bill of lading has been or is intended to be issued. Since the Bolero bill of lading will not satisfy the formalities required, the rule book provides that any international law or international convention which would have applied had the document been produced in paper form will be incorporated into the carriage contract if Bolero electronic messages are used instead.

174. For a system such as Bolero to succeed, a number of central issues relating

to confidentiality and the rights and liabilities of both the users and providers of the service will need to be satisfactorily addressed. It is hoped that current consultations with the trade industry will assist the Bolero project team to find appropriate solutions to the issues involved.

B. EDI MESSAGES FOR PORTS

175. The volume and complexity of documents required in international trade are costly barriers to trade. To facilitate international trade, the United Nations Economic Commission for Europe has developed a standard for electronic data interchange for administration, commerce and transport (EDIFACT). Electronic data interchange (EDI) is designed to facilitate trade by increasing the speed and accuracy of communication with the added benefits of lower communication costs and increased scope for automatic data processing. By 1991, a number of EDIFACT messages were approved as Standard Messages, including messages covering the documentary requirements for the arrival, stay and departure of ships and cargo in international traffic as defined in the International Maritime Organization (IMO) Convention on Facilitation of International Maritime Traffic (FAL Convention), which constitutes the basis for an implementation guide to sea cargo manifests.²⁷ In order to implement EDI, trading partners need to reach detailed agreement on information exchange scenarios, the data to be exchanged, the codes to be used, the EDI message standards to be used and how to map the data into the chosen EDI messages. An implementation guide for a particular business function establishes a standard information interchange scenario, a basic set of data requirements and a uniform mapping of the data into standard EDI messages.

176. Using generally accepted implementation guides will shorten the implementation cycle as EDI partners need only focus on exceptions. A common guide will also reduce the variation between different EDI implementations of similar business functions, which will create confidence among potential EDI users and make it easier to market EDI to new partners. Such a guide will allow faster standardization of common business scenarios and accelerated growth of EDI.

177. For the above-mentioned guide, a sea cargo manifest is defined as the total of all relevant information pertaining to a vessel and the cargo carried on that vessel on a particular voyage. The relevant information is vessel and voyage information (IMO General Declaration - 23 data fields) and cargo information from bills of lading, sea waybills and other types of transport documents. The EDIFACT messages chosen for mapping the data requirements of a sea cargo manifest are CUSREP (Customs Conveyance Report Message) and IFTMCS (International Forwarding and Transport Message, Contract Status). The information contained in the IMO General Declaration is mapped into the CUSREP message and each bill of lading or waybill is mapped onto a separate IFTMCS message. The total sea cargo manifest is thus made up of a series of EDI messages that comprises at least one CUSREP message and one IFTMCS message.

178. The EDIFACT sea cargo manifest can be exchanged between any number of partners who require the information and who have signed an EDI agreement. Depending on the requirements of the partners, the sea cargo manifest may contain information on all cargo on a vessel or on part of the cargo. Typical partnerships would be between the carrier and the shipping agent and the shipping agent and the customs authority, port authority and terminal operator.

179. The first message in a sea cargo manifest must be a CUSREP message, which provides the data elements that are required to uniquely identify the manifest and establishes the link to the IFTMCS messages (the cargo report) that may follow. One IFTMCS message is transmitted for each transport document/bill of lading. A manifest can be closed by either a cut-off date or a final CUSREP message. The transmission can be done in a single EDI interchange or in a number of EDI interchanges over a period of time.

180. CUSREP and IFTMCS messages related to the same sea cargo manifest are linked by a vessel identification code, voyage identification code and carrier identification code when several carriers share a vessel. In an EDI transmission, the segments are explicitly identified by their tags and the order in which the segments occur is specified by the message standard. Thus data elements and composite data elements are identified by their

sequential position in a tagged segment as defined in the EDIFACT segment directory. The guide describes the mapping of information into the two EDIFACT messages.

181. The use of the sea cargo manifest can provide those in the transport chain with advance information in electronic form which will speed up the processing of information and thus in the long run further reduce the cost of transport. This guide is being used in the development of the manifest module for UNCTAD's PortTracker software.

182. SMDG is a user group for shipping lines and container terminals that develops and promotes EDIFACT messages for the maritime industry.²⁸ The group was created in 1987 and its original objective was to agree a standard format for the exchange of ship stowage planning information. This information, known as the BAPLIE message, defines the position of containers in a vessel. The use of BAPLIE has grown rapidly and most carriers and deep-sea container terminals are dependent on its use for accurate and timely information. The group is in the process of implementing messages for containership stowage instructions (MOVINS) and terminal performance reporting (TPFREP). SMDG works closely with the International Transport Message Implementation Group as well as the TWG Asia EDIFACT Board Transportation Group in Tokyo, Japan, and the TMSG Tradegate Maritime Strategy Group in Melbourne, Australia.

183. Another use of EDI is the PROTECT project that has been carried out by six major ports in north-west Europe to transmit messages notifying the presence of dangerous goods on board vessels. The project has resulted in the development of the EDIFACT standard messages to support the electronic notification of the movement of dangerous goods to port authorities.

C. ADVANCE CARGO INFORMATION SYSTEM

184. ACIS (Advance Cargo Information System) is a logistics information system designed and developed by UNCTAD to improve transport efficiency by tracking equipment and cargo on the various modes (rail, road, lake/river) and at the interfaces (ports, inland clearance depots) and providing information in advance of cargo arrival. ACIS provides both public and private transport

operators and ancillaries with reliable real-time data on transport operations such as the whereabouts of goods and transport equipment, and thus improves day-to-day management and decision-making. ACIS also produces regular performance indicators which enable management to remedy deficiencies and to make full use of the existing infrastructure and equipment capacity.

185. Once installed at the national and subregional levels, ACIS can provide data for macroeconomic planning to identify optimal modal distribution patterns. It can play an important role in the development of trade relations and in reinforcing subregional integration because it enables transport operators to receive, through modes and interfaces and over borders, the vital information they need to improve their efficiency, thus reducing the costs and time of carriage along transport corridors.

186. ACIS relies heavily on information technology, and has been adapted for use in the difficult environment for which it was designed. It provides those users who have information networks with easily accessed microcomputer technology using existing communication software. Each ACIS module is designed to be a stand-alone subsystem, comprising microcomputer hardware and software packages, and can be run on either a single microcomputer or a local network of microcomputers, depending on the size and needs of the operator.

187. ACIS is currently operational in 20 transport operators' networks in 15 developing countries. Tangible results are starting to be measurable in terms of local capacity-building and increased subregional cooperation. This cargo-tracking system introduces total transparency by monitoring all events, and thereby increases operational efficiency; it also allows better use to be made of existing infrastructure facilities and leads to higher productivity. Ultimately these elements ensure better use of transport capacity and reduce the costs of imports and exports.

188. A recently commissioned independent assessment of ACIS evaluated the impact of ACIS and concluded that the use of the system in East Africa:

(a) Introduced a high degree of technology transfer to the trained users of the system;

(b) Increased the reliability of transport service providers;

(c) Introduced developing countries to the electronic trading world through EDI and adequate telecommunications;

(d) Enabled significant cost reductions in transport by reducing wagon turnaround time C increasing wagon capacity by half, on average, by reducing the average transit time of goods by up to 75 per cent, by reducing wagon hire charges between interconnected railways (for one network alone in Africa this amounted to \$1.8 million in 1997) and by increasing customer confidence.

The use of ACIS also increases fraud detection, which would be of interest to insurers.

189. ACIS RailTracker is currently starting a major project with the Southern African Transport and Communications Commission linking South African Railways and its northern neighbours in Malawi, Mozambique and Zimbabwe with an almost completed rail-tracking project financed by the European Union in Burundi, Kenya, Rwanda, Uganda, United Republic of Tanzania and Zambia. This means that by the end of the year 2000 it will be possible to monitor and locate any railway-transported cargo between Cape Town and Kampala within seconds.

190. ACIS is poised to pursue its expansion into Asia, the Middle East, and Central and Latin America; major projects are already starting up in India and Iran. ACIS RailTracker is also extending its coverage to Eastern Europe, starting with Bulgarian Railways. Finally, collaboration with the industry has been strengthened, notably through the involvement of the International Railway Union (UIC) and the International Association of Ports and Harbors (IAPH). Implementation of the system in the field is being actively pursued through the United Nations regional economic commissions, especially in Asia and the Pacific and Western Asia. ACIS continues to be funded from multilateral and bilateral sources, the European Union, the United States Agency for International Development, French and German cooperation agencies and the beneficiary countries themselves, either with direct contributions or through World Bank loans.

D. DEVELOPMENTS IN MULTIMODAL TRANSPORT

General developments in the field of multimodal transport

191. With the globalization of production, supply and distribution in many branches of industry, the logistics market has continued to grow, together with the trend to outsource logistics and to concentrate on the core business. The types of services most often entrusted to external contractors are warehousing, information logistics services, transportation with a selection of carriers and the negotiation of tariffs. Some of the value-added services in this branch include management of warranty support programmes and repair services as well as global logistics services.

192. It is expected that the use of third-party logistics services will grow in the next few years by about 10 to 15 per cent a year in Europe and by about 20 to 30 per cent in the United States. There has been welcome growth of the logistics market in some developing countries. In India, third-party logistics business has been growing at the rate of 30 per cent a year. The fast-developing economy of China has created the necessary conditions for the setting-up of a new comprehensive logistics, transportation and distribution venture jointly established by different entities to provide a logistics network, with extensive use of information technology and logistics management for fully computerized warehouse management and cargo-tracking systems, and to offer integrated and cost-effective logistics services in various parts of the country.

193. In the field of the legal regulation of multimodal transport services, new regulations for the multimodal transport of international containers were introduced in China on 1 October 1997. They include a new licensing system, a new liability regime and the prohibition of foreign operators who are not part of joint ventures with Chinese partners. The tighter licensing system means, in particular, that foreign operators will need to set up a company in China and meet a range of fiscal and business criteria. Licences will only be valid for a three-year period, after which operators will have to apply for their renewal. The new regulations cover all container moves between any inland point in China and any port or point overseas, where part of the move involves the use of road, rail or a barge or coastal ship.

194. The European Commission's Directive 91/40 identified intermodal traffic as the most suitable means for the liberalization of rail transport, introducing the concept of open access for companies outside the railway administrations operating their own trains on public tracks. While until 1993 Intercontainer-Interfrigo (ICF) was the only cross-border rail-service provider for container traffic, in 1997 there were no less than a dozen operators running their own shuttle trains on the European railways. The private sector is deeply involved in operating shuttle trains through joint ventures and partnership between the ports, the shipping lines and State railways. The operator usually leases the wagons and negotiates a price for having the train moved by the State railways' locomotives and crews to an agreed place according to an agreed timetable.

195. One of the main results of deregulation in the field of European rail transport has been the creation of the concept of "Freightways" established through routes. The main players in this field are the major intermodal companies engaged in deep-sea container traffic through the European ports. However, maritime containers form only a small portion of the total tonnage which needs to be switched from road to rail transport for a sustainable transport policy to be realized. Freightways are also intended for, and do carry, a significant number of domestic containers and swap-bodies.

196. China has been introducing updated technology to improve the efficiency of its railway network. The measures cover communication facilities, safety equipment and rolling stock and the establishment of transportation management information systems that permit the railways to meet the highest standards in these fields. In line with the development of intermodal transport facilities and block train operations in the southern provinces, the concept of inland clearance depots has been spreading to other regions of the country. An inland clearance depot with a capacity of 10,000 TEUs at Harbin in north-eastern China was inaugurated in the second half of 1997 with regularly scheduled train services between this city and the port of Dalian. A plan exists to extend this rail service to the Russian border at Suifen He and Manzhouli.

Land-bridges and other block train services

197. The Russian Ministry of Railways has taken measures to boost transit container service through the trans-Siberian route, which carried only 22,000 TEUs in 1997 as compared with the record 150,000 TEUs achieved in 1989. Technical innovations, along with streamlining of customs and other administrative procedures, made it possible to reduce transit time for container trains running from Nakhodka in the Far East to Brest at the BielorrussianBP Polish border to 12B14 days. An experimental container express train set a new record of 213 hours (less than nine days) on this route. In order to attract additional container flow to the route, tariffs for transit container traffic and port-handling charges have been reduced.

Inland navigation

198. European inland waterways saw a significant growth in container traffic in 1997. From the port of Rotterdam, 1,400,000 TEUs were dispatched by inland waterways in 1997. From the port of Antwerp, 1,011,000 TEUs were moved by this mode. An important part of this traffic (about 600,000 TEUs) was accounted for by the shuttle traffic between these two major European ports.

199. The use of inland waterway transport in developing countries remained very limited. For example, in India, the Government's target of reserving 5 per cent of the cargo managed by the ministries responsible for petroleum, agriculture, fertilizers, energy and industry for inland waterway transport could not be met owing to a lack of capacity.

200. The Brazilian Government has attached great importance to the development of the inland waterways in the country. Prominent in this development has been the TieteBParana waterway link, which saw an increase of 30 per cent in the volume of cargo transported along it between 1995 and 1997. It is expected that by 2005 this waterway will be one of the major transport corridors in the country, transporting about 35 million tons of cargo.

World container population

201. The global fleet of maritime containers reached 10.8 million TEUs in mid-1997, an increase of 8 per cent over the corresponding time in 1996 (see table 43).

Table 43

Global container fleet by main category of owner for the period 1994B1997
(thousands of TEUs)

Box fleet	Mid-1997 (estimated)	Mid-1996	Mid-1995	Mid-1994
Leasing company	5 100 ^a	4 730	4 370	3 900
Ocean carrier	5 600 ^a	5 140	4 500	4 100
Other ^b	500	430	430	420
Grand total	11 200	10 300	9 300	8 420
Regional total	400	300	250	220
World total	10 800	10 000	9 050	8 200

Source: Containerisation International Hardware Market Analysis.

^a All boxes currently leased to Cosco by Florens Container Corporation have been included in the carrier-owned section of the table in accordance with previous years.

^b Other container-owning transport companies.

Container-leasing industry

202. The Institute of International Container Lessors (IICL) reports that the container-leasing industry had an operating leasing fleet of dry freight containers of 5,211,189 TEUs at the beginning of 1998. This represents an increase of 495,914 TEUs (10.5 per cent) over the previous year's inventory of 4,715,275 TEUs. These figures do not include high-cube dry freight containers (9 foot 6 inches high), which are considered as a special type of container in the leasing companies' inventories. The major IICL leasing companies had a total fleet of 4,811,189 TEUs, while the other leasing companies had a fleet of about 400,000 TEUs.

203. The fleet of special containers in the leasing sector numbered 1,123,847 TEUs at the beginning of 1998, an increase of 233,717 TEUs or 26.26 per cent over the previous year. The composition of IICL members' fleet of special containers is shown in table 44.

204. Concerning the composition of the leased dry freight container population (see table 45), the shift towards 40-foot long containers, which occurred for several consecutive years, has resumed, but in tempered fashion. The percentage of 40-foot long containers stood at 63.42 per cent in 1998 compared

with 62.30 per cent a year earlier. The table also shows a very limited percentage of containers of non-standard length. In contrast, the number of high-cube dry freight containers had grown in 1998 by 44.18 per cent and the number of reefer high-cube containers grew by 12.7 per cent (see table 44).

205. Container-leasing companies suffered in 1996B1997 from low daily rental rates and poor utilization of equipment. It was reported that more than 20 per cent of the total fleet of the leasing companies was off-hire, though some signs of improvement in the utilization of equipment were evident by the end of 1997. The reasons for the recession in the leasing sector were seen in the downturn in the rate of trade growth and in the shift in policy of the major ocean carriers, which cut their holding of leased equipment and stepped up the purchase of containers because of the very attractive prices of new containers. Daily rates, which had already been in decline for several years, followed new box prices downwards, and dropped by over 20 per cent between 1995 and 1997. However, despite difficult business conditions, utilization of the major lessors' container fleet was gradually reviving: 84.93 per cent of the fleet was in use on 1 January 1998 in contrast to 81.55 per cent on 1 January 1997.

Table 44

Composition of lessors' special container fleet in 1997 and 1998 (inTEUs)

Type of container	1998	1997	Percentage change
High-cube dry freight	661 156	458 552	44.18
High-cube reefer	94 612	83 952	12.70
Open top/open side	127 092	120 138	5.79
Platform flats	9 200	8 002	14.97
Collapsible flats	67 860	62 457	8.65
Other flat racks	1 770	1 007	75.77
Tank containers	19 259	17 576	9.58
Reefers	119 835	122 796	-2.41
Dry bulk	1 340	1 000	34.00
Ventilated	9 867	10 400	-5.13
Cellular pallet wide	10 356	2 850	263.37
Others	1 500	1 400	7.14
Total	1 123 847	890 130	26.26

Source: 1997 IICL Special Container Survey, 18 June 1998.

Table 45

Composition of the dry freight container fleet of the major leasing companies by size in 1998

Length of container	Number of units	Percentage of capacity
20 foot	1 728 485	35.93
40 foot	1 525 643	63.42
45 foot	13 251	0.62
48 foot	668	0.03

Source: IICL Tenth Annual Leased Container Fleet Survey, 21 April 1998.

206. Most top lessors were coping with the depressed situation in the market by adopting economies of scale. Fleet mergers and takeovers were the logical outcome of this policy. 1996-1997 witnessed the creation of two huge container lessors each controlling around 1.2 million TEUs (see table 46). At the same time, the recessionary market provided the conditions for the establishment of some newcomers, who took advantage of the low prices for new containers and were in a better position to cope with low lease rates since they were not burdened with a large amount of equipment purchased at the high original prices.

Container production

207. World container production continued to decline in 1997 (down 3 per cent on 1996), with a total output of 1,250,000 TEUs as compared with 1,290,000 TEUs in 1996 (see table 47). The total container output in 1997 was 10 per cent lower than the record figure of 1,390,000 TEUs achieved in 1995. Production of dry freight standard containers fell the most, with other types (dry freight specials, reefers, tank- and regional-type containers) sometimes even increasing their level of output.

208. Manufacturers in China consolidated their leadership in this field, managing to increase their production in comparison with 1996 by up to 793,000 TEUs, accounting for about 70 per cent of all dry freight maritime container production, while other formerly important producing countries (India, Indonesia and Thailand) lost their place in the world ranking of major container-producing countries (see

table 48). Total output from plants in South-East Asia dropped by a third from the 1996 level, from 140,000 TEUs to less than 95,000 TEUs. Output also declined in the Republic of Korea and Taiwan Province of China, from a combined total of 125,000 TEUs to 95,500 TEUs. Production was static in Europe, with a high proportion of special types of containers and regional types of swap-bodies. Production in North and South America was also increasingly reliant on building domestic containers and reefers. The production of tank containers remained important in South Africa. Some dry freight container production subsisted in South Africa, in Western Europe (Denmark) and Eastern Europe.

209. In total, in 1997 there was sufficient installed multi-shift capacity to produce up to 2.3 million TEUs annually worldwide. At the end of 1997 the total Chinese installed output container capacity was over 1,200,000 TEUs. This meant that the container-manufacturing industry in China was working at under two-thirds of its theoretical capacity. Lack of sufficient profit owing to low prices for containers forced some enterprises to undergo restructuring and mergers. The Chinese Government introduced tough controls on container prices, and established a special body to enforce this measure; the Chinese Customs Bureau will enact the regulations through its regional offices. All contracts placed with container manufacturers will be reviewed to ensure that price levels are at or above the established minimum, and that appropriate payment is received or credited prior to the issuance of an export licence.

Table 46

Container fleet of major container-leasing companies in 1998

Company	Fleet (TEUs)
Transamerica Leasing	1 240 000
GE-Seaco (Genstar containers)	875 000
GE-Seaco (Sea containers)	295 000
Textainer Equipment	480 000
Triton Containers	470 000
Florens Container Corporation	450 000
Interpool Group	390 000
Cronos Group	370 000
Xtra International Group	245 000
Container Applications	220 000
Gateway Container Corporation	85 000
Capital Lease	80 000
PrimeSource Holdings	55 000
Gold Container	50 000
CE/TIP Intermodal	43 000
Catu/Maritainer	35 000
Amfico Container Leasing	28 000
United Container Systems	28 000
Bridgehead Container Services	25 000
Carlisle Leasing	17 000
Consent Equipment	14 000
Others	155 000
Total Operational Lease	5 650 000
Estimated Finance Lease	850 000
Total Leased Fleet	6 500 000

Source: *World Cargo News*, February 1998, p. 34.

Table 47

World container production by types of container in 1996B1997
(TEUs)

Type of container	1996	1997
Dry freight standard, including high-cube	1 085 000	1 030 000
	55 000	60 000
Dry freight special	77 000	78 000
Refrigerated	15 000	15 000
Tank containers	15 000	14 000
Specific regional C North America	13 000	23 000
Specific regional C Europe		
World total	1 290 000	1 250 000

Source: *Containerisation International*, January 1998, p. 61.

Table 48

World container production (all types) by countries/regions in 1996B1997 (in TEUs)

Country or region	1996	1997
China	752 000	793 000
Western Europe	84 000	82 000
Republic of Korea	75 000	56 000
India	40 000	46 000
Indonesia	61 000	45 000
Malaysia	57 000	42 500
Taiwan Province of China	50 000	39 500
Eastern Europe/Commonwealth of Independent States	35 000	34 000
Turkey	26 000	24 000
Central/South America	27 000	21 000
South Africa	22 000	14 000
North America	8 000	10 000
Japan and Singapore	19 000	6 000
Thailand	4 000	4 000
Others		
Total	1 290 000	1 250 000

Source: *Containerisation International*, January 1998, p. 60.

Box 4**Signature of selected conventions on maritime transport**

Name of Convention	Number of contracting parties or countries that have ratified/acceded to the convention	
	31 December 1995	30 June 1998
United Nations Convention on a Code of Conduct for Liner Conferences, 1974	78	78
United Nations Convention on International Multimodal Transport of Goods, 1980	7	8
United Nations Convention on Conditions for Registration of Ships, 1986	10	11
United Nations Convention on the Carriage of Goods by Sea, 1978 (Hamburg Rules)	23	25
International Convention on Maritime Liens and Mortgages, 1993	2	3