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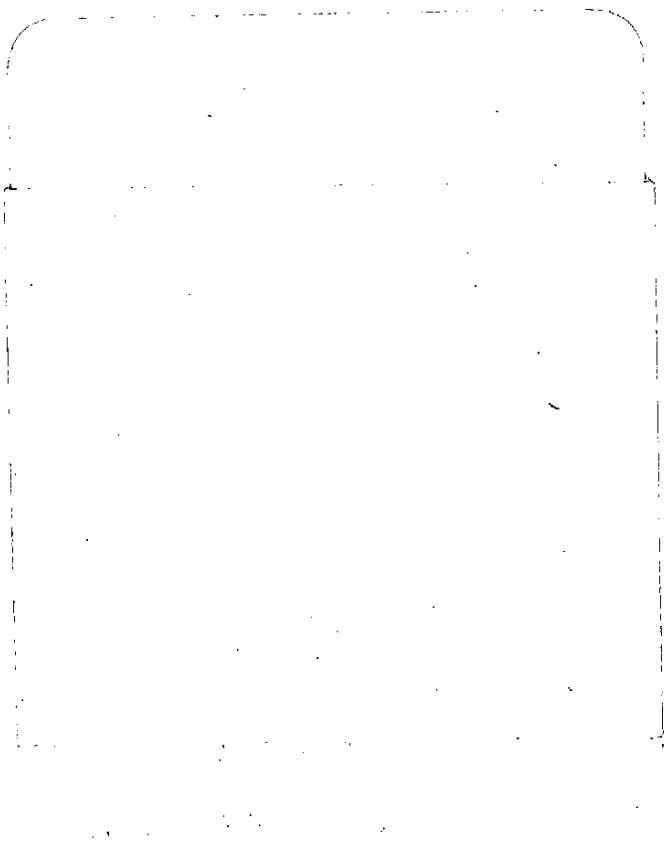
SITPRO
Project

INTERFACE

昭和49年1月

(財) 日本情報処理開発センター
総合貿易情報システム調査委員会



INTERFACE REPORT

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PART I

GENERAL PRINCIPLES

CHAPTER 1

INTRODUCTION AND SUMMARY

This chapter explains the aims of this project. There follows a summary of the main recommendations.

- Aims of the Project
- Layout of the report
- Summary of recommendations

CHAPTER 1

AIMS OF THIS PROJECT

1 The aim of this project is to test the feasibility of designing standards for the interchange of messages between participants in international trade, by producing a prototype.

2 The standards should apply to non-paper media, such as data transmission (dt) and the exchange of data processing (dp) input and output media such as magnetic and paper tapes.

3 These would supplement the existing standards for paper documentation, specifically the JLCD aligned series and other documentation conforming to ECE Layout Key standards.

4 The purpose of these standards would be to avoid the development of many incompatible dp systems, each using its own way of representing common data and thus incapable of accepting data in machine-processable form from other organisations.

5 The terms of reference specified that the project should concentrate above all on the development of a workable strategy, and thereafter to draft more detailed standards for messages and their constituent fields, in order to test that strategy.

6 They further specified that this short time-scale project should aim at taking an initial look at all main aspects and should report on difficulties encountered rather than resolve much specific detail.

See Appendix 5

LAYOUT OF THE REPORT

7 The report consists of four parts :

- the first section, devoted to PRINCIPLES, in which the requirements and an outline of the proposals are set out, followed by a chapter containing more tentative suggestions stemming from the project

- the second section containing EXAMPLES, showing how the same basic message may be used in different environments, from the basic form on Telex up to more advanced manipulations using VDU's

- the third section, laying out the details of the draft standards

- appendices, containing

  - more detailed arguments removed from the body of the report

  - the background papers covering the origins and the conduct of the project

SUMMARY OF RECOMMENDATIONS

8 That one consistent set of message and field standards can and should be created to apply to all levels of equipment used for external communication.

See Chapter 2, para 31
" " 3, para 45-52

9 That these standards give priority to simplicity, flexibility and wide-ranging applicability rather than to technical efficiency, which must nevertheless be as high as the priorities allow.

See Chapter 2, para 31

10 That while the constraints necessary for machine operation are observed, the main emphasis should be on developing standards which are easy to produce and interpret for men.

See Chapter 2, para 31

CHAPTER 1

11 That telex and machines with similar capabilities should be regarded as the minimum equipment catered for.

See Chapter 3, para 45-49

12 That all messages should consist of a combination of standard fields used as building blocks.

See Chapter 4, para 76

13 That every field used in a message should be separately identified in that message, so that all data is both unambiguous and meaningful on its own.

See Chapter 4, para 78-86

14 That standard messages should be specified, which correspond to major information flows, and which should be composed of specified fields.

See Chapter 4, para 73

15 That 'non-standard' messages may be used for other information flows, but will still use the basic fields and conform to the overall standards.

See Chapter 4, para 74

16 In addition to the above recommendations which are the formal conclusions of the project, the following recommendations emerged from discussions and were strongly endorsed by the panels.

17 That practical trials should be undertaken to test the strategy in a working environment.

See Chapter 5, para 125

CHAPTER 1

18 That urgent consideration should be given to the question of who should act as the controlling body for message standards.

See Chapter 3, para 122-4

19 That there should be a study into the problems of documents conveying title or authorisation in addition to information.

See Chapter 3, para 36-40

20 That in view of the urgency of the problem, work should go ahead towards national implementation while at the same time, pursuing international agreement.

See Chapter 2, para 31
See Chapter 3, para 119-12

CHAPTER 2

THE REQUIREMENTS FOR AN INTERFACE LANGUAGE

The pressures leading to the use of dp and dt, and thus to the need for an interface language, are set out.

The criteria which such a language should meet were established in conjunction with the Panels of trade and transport functionaries, set up within the project.

- Conventional Documentation
- The use of dp and dt
- Balancing of requirements

CHAPTER 2

CONVENTIONAL DOCUMENTATION

21 Conventional documentation is under ever-increasing pressure, due largely to the following factors :

- its production is labour intensive; with spiralling labour costs, this means that it carries a very high overhead

- even more labour intensive is the processing of documents received, since very little mechanisation can be used at this stage

- for the same reason, the shortage of skilled labour can be a major problem

- the physical movement of paper and the processing of the information on it are slow; this threatens to waste the immense capital expenditure on high-speed transport systems

- the increase in controls and information exercised by governments the world over throws an impossible burden on documents which can only be produced rapidly and economically if the alignment of information on the forms permits the use of suitable office machines; the amount of information is so great now that forms are running out of space, and alignment suffers

- the increasing use of codes (for dp purposes) along with clear-language data makes this situation worse

22 These pressures are persuading many organisations to use data processing, telecommunication and the exchange of data media to supplement or replace the conventional documentation. The need to satisfy these requirements must be fundamental to this study.

CHAPTER 2

23 Important progress has been made by the widening use of aligned documents - in particular the many series based on the ECE layout key, including the JLCD series for UK sea transport. This tackles the problem of reducing the labour content and cost of originating documents; and makes some impact on the processing of received documents by making information appear in the same place every time.

24 The aligned series was set as the starting-point of the project since it includes most of the parties, fields and problems likely to be relevant, and although not resolving all the pressures, it is the most advanced and widely used system.

USE OF DP AND DT

25 The application of data processing and data transmission to import and export systems is gathering momentum. Since these systems are being developed independently, there is little compatibility between different systems. Even if there are any developments on the lines of the mooted Compound System there will still be a multitude of Compound Systems - say separate ones for separate ports, for separate groups of functionaries, for different modes of transport and they will be of different levels of complexity and in different phases of implementation. And of course there will be many individual organisations with their own system of a complexity ranging from a telex machine up to a large real-time computer facility.

26 Within each of these systems, practices will inevitably be determined by local needs. But for external communication between systems and to and from manual systems, standards must exist. Standards are not a luxury, but a necessity : the absence of general standards for exchange of data forces users either to fall back on paperwork systems, for which standards do exist (the commonest approach) or to develop parochial

standards - thus raising new barriers between different parochial standards.

27 The control and documentation of imports and exports is essentially a communication function. Therefore the ease of communication is of great importance in producing effective systems in this area. In particular, the intercommunication aspect is very relevant to meeting the requirements set by the documentation problems in the last chapter.

BALANCING REQUIREMENTS

28 Potentially there are many approaches, which would answer these needs in varying fashions. Technically several are practical. The selection of an answer depended in essence on value-judgements on the relative importance of the various needs and interests of users.

29 Such value-judgements were not within our competence to decide. Accordingly, we set up Panels with sixty representatives from some forty organisations*, who met once, then completed a questionnaire and met again to discuss the approach which should be followed.

30 These panels represented a cross-section of interests in international trade. What emerged from the discussion pointed very clearly the way for the project to follow.

31 Some points emerged very strongly :

- any set of standards for intercommunication should be such that they are usable by any participant in trade, whether he is a small user with just telex or a major user with complex systems.

* For details see Appendix 3 & 5

- the idea was firmly rejected by the majority, for instance, that there should be a 'tiered' structure, with one set of standards for users of simple equipment and separate high-level standards for organisations possessing advanced equipment

- the standards should have simple, easily understood rules, even if this was at the expense of the greatest technical efficiency; a plain practical solution was the goal

- the standards should take into consideration the high degree of dissatisfaction with current international trade procedures, and should therefore be compatible with but not tied to current documents : the introduction of standards now should not fossilise an unsatisfactory state

- the lack of any authoritative central control body must be taken into consideration : message standards requiring intense supervision and control will not be workable

- the standards need to be cost-effective; though less importance was attached to the direct cost attributable to the number of characters in a message, than to the much larger indirect and intangible cost associated with overcoming problems of cumbersome and ill-co-ordinated procedures

- the major snags in documentation concern those documents which convey authorisation or title, rather than act as simple information carriers

- the relevance of the aligned documents (ECE layout key, JLCD etc.,) means that any messages should produce aligned print-out on basic devices

- the standards should be designed so as to be suitable for international use; but in the immediate future it would be beneficial and more realistic to go for immediately realisable national standards

32 These views almost all point to the same sort of solution, which is outlined in Chapter 4. Certain of the recommendations do conflict, though; these points and certain other related factors are dealt with first in Chapter 3.

CHAPTER 3

MAJOR FACTORS

CHAPTER 3

3 MAJOR FACTORS

INTRODUCTION

33 The recommendations in the previous chapter proved to point strongly towards one type of solution (that of the flexibly structured message made up of standard, self-contained fields). There was some conflict between certain recommendations, though as shown in the following sections, the conflicting points could be resolved without sacrificing the underlying aims of the recommendations.

34 Additionally, there were several major factors which at the beginning of the study appeared to be highly relevant, but which on closer examination were seen to be separate issues, which either require separate study or are more related to a users internal system than to the exchange of data.

35 Major factors of each of these types are covered briefly in this chapter, as providing part of the context against which the proposals should be viewed.

AUTHORISATION AND TITLE DOCUMENTS

36 The problem in transmitting documents of authorisation or title is not in the lack of common standards, but in the difficulty of authenticating messages and in the legal/commercial practices tied to specific signed documents.

37 The problem of authentication can be dealt with by :

- including in the message an extra field containing a secret code, analogous to the 'test key' employed by the banks; the proposed standards would allow for this

- authentication of the communication channel; this must be a systems design problem and is entirely irrelevant to the design of messages travelling via the secure channel

38 The bigger problem lies in the legal and commercial practices which apply to signed documents. To make any changes here would, at minimum, require the establishment of new conventions, and might require changes in the law (analogous to the Civil Evidence Act 1968).

39 We note that in other fields there have been moves away from the individual signing and authentication of documents for each transaction, and it seems likely that the same may occur in international trade. Until this happens, attempts to move information more rapidly and economically will be hampered in certain areas (notably those activities relating to a valid negotiable Bill of Lading).

40 This aspect should be the subject of separate study with stress on the legal/commercial rather than the dp/dt aspects.

RELATIONSHIP OF MESSAGES TO ALIGNED DOCUMENTS

41 At the early panel meetings, there was a strong feeling that messages should be a direct representation of aligned documents. Consequently, this aspect was given special attention.

42 It was concluded that to maintain complete equivalence would actually conflict with many other recommendations - particularly with the need to treat telex as the basic minimum equipment, and the need to maintain flexibility. Apart from this, such an approach proved both technically inefficient (imposing an overhead of 20%-60% more characters, and making for considerable difficulties in error correction) as well as carrying too many constraints of paper systems into dp/dt standards.

43 A revised objective, which keeps to the spirit if not the letter of the original recommendation, is to develop standards more appropriate to dp/dt media while maintaining compatability with the aligned series. At the last meetings of the panels this was almost unanimously agreed, the dissent being complaints that the proposed standards still adhere to the tight field-length limitations set by the aligned series.

44 As put forward here, the proposals allow for easy computer or clerical conversion of data from message form to aligned form and vice versa (by preserving the same data structure and field sizes, but avoiding the use of positional identification of fields).

More detailed argument on this point will be found in Appendix 1.

LEVEL OF EQUIPMENT AND TWO-TIER STANDARDS

45 The question of what level of equipment to aim at and whether to have two-tier standards (one for low, the other for high level equipment) caused considerable debate.

46 The technical arguments against including telex and other such telegraphic machines are quite strong, on grounds of low speed, lack of parity check, very limited character set, narrow printing area and lack of forms control. But against this are the overwhelming arguments of telex's wide use, ready availability and international compatibility and low cost.

47 In the event, other considerations have led to standards which make the constraints of telex almost irrelevant; for example, other considerations led to the move away from 'aligned' messages, thus making the telex line length unimportant.

CHAPTER 3

48 Only the limited character set remains as a constraint, but even that only to the extent that the use of symbols ( ) - in text is ruled out; other characters and control functions, theoretically available on other machines, are in practice not consistently available enough for use in standards.

49 All these factors have determined that telex should be covered; any idea of allowing for yet more primitive equipment - e.g. numeric only - was ruled out.

50 There have been suggestions that in view of the low level of equipment catered for in the standards, the needs of users having high power equipment are less well met, and that there should be a second tier of standards to take advantage of equipment capabilities, especially for the high volume messages such as the Air Waybill moving between airlines. Techniques used for condensation in such cases include dropping of field codes and even 'packing', whereby a number such as '508561' is shown in the same way as '&e/' to save characters.

51 While we cannot rule out the idea of a second tier completely, we regard it as undesirable and probably unnecessary. The arguments are set out in detail in Appendix 2. In summary the main points are that the type of condensing envisaged for the high-level tier violate the rules for the strategy, while all the reasons behind that strategy remain valid, and that the proposed standards do give what we regard as the minimum practical number of characters in a changing environment (in a test we found the number of characters in the IATA transmittable Air Waybill and in the proposed standards to be almost exactly equal). The capability to meet change seems to us to be especially important in just the rapidly developing environment where high-power equipment is in use.

52 Should it be decided that there is a need for 'condensed' messages for certain high-volume flows between a group of sophisticated users, then we feel that these should form part of a separate standard, which should be compatible with the standards set out here, but should not form part of them : to include some messages at this stage which violate many aspects of the proposed strategy might well undermine any chance of developing any uniform practice.

FACTORS DEPENDENT ON USERS' SYSTEMS

53 There are some major factors which will be of concern to senders and receivers of messages, but which will in practice be dependent on the design of the system handling the data rather than message design; as such they cannot be covered by these standards. They are touched upon here.

Establishment of contact

54 The initial transmission of dialling codes, 'addresses' on telecommunication networks, or the opening labels and controls on exchanged tapes, etc., all reflect the characteristics of the systems by which a message is being sent, and can and should be kept separate from the text of messages. In the proposals beginning and end symbols (STRX++ and ENDX++ are suggested) mark off the parts of a transmission dedicated to message exchange from those used for systems control.

Security and Protection

55 The safeguarding of data against unauthorised access ('security') and against corruption ('protection') are again primarily the concern of the systems designers. Some checks can be built into the messages; for instance, there can be a check at three levels on particularly critical fields, such as the Air Waybill Number where the field code is checkable, the number has a check-digit and each character has a parity check. But these only allow detection of errors already made.

CHAPTER 3

56 The prevention of errors and the safeguarding of confidentiality cannot be dealt with except in terms of the specific organisation of each user systems environment.

COSTS AND BENEFITS

57 Since one is considering a system for general application, it follows that one can only talk in most general terms about the costs and benefits a system such as this would bring.

58 The decision to introduce dp or dt facilities will always be one made by individual users on the merits of their individual cases. What is clear is that an increasing number are making that decision; the question here is, will standards of the type discussed in this report be cost-effective as a tool for those people.

59 The most immediate economy will be in the reduction in the amount of key-punching required - always a very expensive process. This will stem partly from the economical use of characters inherent in the proposed standards, but far more from the new facility of receiving information already in compatible form on dp media from a wide range of organisations thus bypassing the manual preparation stage. Only the functionary at the beginning of the chain will not have this advantage : but the beginning of the chain will often be the shipper, who might be able to hold most of the information (product data, customer data) on file, which often accounts for 80-90% of volume.

60 Most of the other costs and benefits are more intangible, but probably include the more important factors :

- the approach requires the minimum amount of initial development and subsequent maintenance

- both implementation and modification can take place piecemeal, which minimises problems of co-ordination

- new developments (e.g. more streamlined commercial practices or new government regulations) can be accommodated with the minimum of disturbance

- the initial programming time and cost (for variable-format messages) will be slightly higher with some computer applications; but subsequent program modification time and cost lower. (Maybe on balance a gain, since in initial setting-up, time and cost can be allowed for, whereas subsequently there may be a need to react rapidly to developments outside the users control)

- consistent standards mean that one set of input and one set of output programs may be used to interface with any functionary

- consistent standards mean that in the event of a computer being out of order, any other computer or transcription device may be used to print out incoming messages in readable form for manual processing, thus providing simple 'fall-back'

- the messages are compatible with aligned documents in both directions - they may be transcribed to or from an aligned document either clerically or by computer

- the messages are free of all the constraints imposed by aligned documents apart from box size

- the need for extensive bilateral negotiation before exchanging dp/dt data will be eliminated

- systems design will be simplified, since the form and characteristics of much data will have been already specified

61 As far as possible it has been our aim to make the standards 'neutral' in effect and spread the advantages evenly - not favouring one party more than another, nor favouring large or small concerns. The latter question we regard as being an important one, especially in the light of modern developments. The benefits that different size organisations might see are :

- small organisations : the ability to 'hook in' onto other systems with the minimum outlay (i.e. the hire of a telex machine); some protection against being squeezed out from systems suitable for larger firms only

- medium organisations : the ability to introduce dp/dt due to the simplified requirements

- large organisations : the greater consistency of communications allows effective use of high-power equipment and minimises the incidence of the highly varied but low volume communication types to which large organisations find it so difficult to respond

62 To sum up : we believe these proposed standards are characterised by low intrinsic cost, by ease of development, implementation and modification, and give the maximum flexibility for different users and changing environments, while maintaining a sufficient degree of consistency and compatibility to make for vastly simpler communication.

CHAPTER 4

THE DRAFT STANDARDS IN OUTLINE

- Introduction
- Strategy
- Messages
- Fields
- Groups
- Representation of Data within Fields
- Difficulties and Doubts

AN EXAMPLE OF A MESSAGE

A Booking enquiry

```
UNTO=CARGO BROKERS+
SERL=17892+
FROM=SWIFT FORWARDING+
TYPE=BOOKENQY+
++

SHPR=RAMSBOTHAM MILLS:
ALMA ST:COLNE:LANCS+
FWDR=SWIFT FORWARDING:
BROWN RD:L7 6BQ+
FWRF=WXYZ/981+

SPNM=SS ATLANTIS+
PTLD=LIVERPOOL+
PTDS=MONTEVIDEO+
FNDN=MONTEVIDEO+
CYDN=URAGUAY+

MKNO=7 + PACK=TEA CHESTS+
GDSD=COTTON SHIRTS+
GRWT=500:KG+ CUBE=5:M3+
EOMS++
```

Header Identifying this Message

The parties wishing to place the shipment

The destination and means of transport required

Full description of the items to be shipped

This means that the PORT OF DISCHARGE is MONTEVIDEO

CHAPTER 4

THE DRAFT STANDARDS IN OUTLINE

INTRODUCTION

63 A typical message is shown opposite. It is characterised by :

- being in the overall shape of a fairly normal telex message
- can be read easily
- having control characters (= : +) which enables a computer to analyse the message
- having every item of information preceded by an abbreviated name to identify it

There are visible signs of an established set of rules designed to ensure maximum flexibility and maximum simplicity.

STRATEGY

64 Several principles have been established to define the overall strategy. Within these, further rules govern the way messages, fields and the data in those fields are expressed.

Simplicity and Consistency

65 The first strategic rule is that there should be only the minimum possible number of rules, and that these should be applied consistently throughout. It is only the fact that in this area one is starting virtually with a clean slate that enables this most desirable of approaches to be realised. This must be an argument for speedy action : if too much time passes, then standards will have to be to a far greater extent untidy compromises.

CHAPTER 4

Independence

66 The second rule is that the component parts of messages and fields should be independent, so that one part may be changed without affecting every other part. This allows for easy variation of a general theme to meet regional or modal needs, and for gradual evolution and improvement.

Media independence

67 Thirdly, the standards will be media-independent. Whatever the medium, the message will be substantially the same. Slight differences occur, but only to an extent that does not prevent automatic conversion from one medium to another. (The differences correspond to variations in printed characters on telex machines world-wide). Such medium-independence means that best use is not made of every medium, but vastly simplifies the communication problem, which is almost certainly a greater economic benefit than sub-otpimisation of each medium.

Character sets

68 The characters used for data and for logical structuring of the messages are separate, which avoids complex rules. These are again separate from the characters used for 'cosmetics' - that is to say, characters such as 'space' and 'carriage return' used between fields to make the data look easier on the eye but not affecting the meaning at all.

Checkability

69 A further principle is the use of 'redundant' characters in some places to provide checkability, for example in the field identifier, which uses four characters where three would provide enough capacity, to allow the use of techniques whereby none of the normal transcription errors can go undetected.

CHAPTER 4

Observance

70 Lastly, a principle affecting all those already mentioned, as well as the rules in the following sections : no short cuts. There are several places where it is tempting to break some of the rules in order to economise on characters or for some other benefit. But the implications of any short-cuts can be far reaching, and not apparent till later. In our investigations for instance we found cases where a message could be shortened; but if an error occurred, correction became difficult or liable to create a further error. Problems of co-ordination occur : if you break the rules, how can you ensure that other people break them in the same way? The only solution is to apply the rules strictly - particularly since they have been designed to be as easy to use as possible.

Conclusion

71 None of the above principles are particularly new or radical. What they say, in effect, is that if one wants to communicate in a very complex environment, then the situation becomes unmanageable unless a high level of consistency is achieved. It is fortunate that the criteria laid down by SITPRO and the Panels have not only made possible but actually demanded such an approach.

MESSAGES

72 Messages are roughly equivalent to conventional documents in the information they contain. Sometimes though they will contain less information than an existing document, where the document contains more information than is necessary because it is, say, a carbon copy of a comprehensive document. At other times it may be the equivalent of more than one document, to replace, say, two documents travelling together - though a series of separate Bills of Lading would be treated as a set of separate messages.

73 For major flows of information, standard messages should be specified. At first, these will correspond to existing documents, but in time one can expect that better use will be made of the inherent flexibility, so that the pattern of information will cease to be dominated by constraints imposed by paper systems. The limit to that type of development may well be the need to ensure continuing compatibility between paper and telecommunication systems at detail level.

74 These 'standard messages' will be fairly closely defined, while leaving some flexibility for differing circumstances. 'Non-standard' messages will also be used for lesser information flows; they will conform to the overall rules and will be machine processable, but a wide degree of discretion will exist as to what should be put in them.

75 The benefits that the use of standard messages will bring, will be to guide the sender as to which information he should send, and aid the recipient by identifying the purpose of the message and providing a means of checking that he has received all the information that should be there. But, moreover, standard messages provide a focussing point for discussion and for agreeing improvements to the information flow. Note that with the standards we have developed, there is no absolute need for standard messages : they are an aid only. If, on the other hand, 'aligned' messages had been decided upon, then the data in a message would be meaningless without the message standard to indicate which information is in which location. Thus with the proposed system, effective communication is not dependent on the development of, and adherence to, strict standards for every message.

CHAPTER 4

76 Every message contains a standard header, which identifies the message both for normal processing and for audit-trail and error-correction purposes, and an end-of-message sign. Between these is a string of fields or groups of related fields making up the text of the message. In a standard message it will be laid down which fields and groups should be present; in a given message, these are classed as :

Mandatory - those which must always be present (e.g. description of goods in a Customs entry)

Conditional - those required in certain conditions (e.g. hazard warning if goods are dangerous)

Optional - those included if the sender wishes (e.g. the forwarder confirming a booking may add his own reference if he wishes)

77 In a non-standard message, of course, all fields will, by definition, be optional.

The sequence of fields and groups within a message should roughly correspond to those on a standard equivalent document, if one exists. This will simplify transcription where necessary. The exact sequence is not important even within a standard message : this is an intrinsic characteristic of the approach adopted. A useful by-product of this is that new fields can be added close to the fields in a message that they are logically associated with - often an impossible task in aligned documentation.

FIELDS*

Structure of fields

78 Fields are the basic building blocks of messages. There is a set of fields from which messages are made up by selection.

*Earlier in this project, fields were referred to as 'elements'; the change in terminology reflects agreement in the ECE Working Group for the Simplification of International Trade Procedures

They themselves are made up of three parts -

- a field code to identify the field
- special characters (= : +) to mark off the fields for data processing
- the information in the field

Field codes

79 The field code is one of the most important devices in the standards proposed here. That it should be used as suggested is essential to the whole structure. The precise form is of far less importance; though something like the version drafted here is probably necessary.

80 The field code identifies the data which follows it. Thus, in a field such as

NTWT=200:KG+

'NTWT' identifies the following information as 'net weight'.

81 The field code is always present in a message moving between organisations; either (the normal case) immediately preceding the data, or in the case of long lists, given once at the beginning of the list. Its presence guarantees that the data can be recognised, even if the message is in an unfamiliar format (e.g. from a different country, concerns a different mode of transport, or even Mark II of a standard message where the recipient is using Mark I). Thus it ensures that each message is comprehensible in itself.

82 Because the field code is such a key feature not only for human recognition but also for computer processing, it is important to protect it from error, while using mnemonic codes to aid users. We have done this by having a code longer than the minimum for the capacity required.

83 This both improves the facility of selecting a good mnemonic and makes possible allocation of codes which cannot be converted by any of the common types of transcription error into another valid code. Thus there is equivalent protection to the use of a check-digit, without any of the mathematical apparatus. In this way the 'cleverness' is taken away from the user and left at the door of the body who issues each field code as a once-and-for-all task.

Special characters

84 The three characters = : + are used as markers to tell a computer where to look for field codes and data :

- = after the field code and before the data
- : for any subdivision of the data (e.g. between the quantity and the unit of measure in a weight, as 200:KG
- + at the end of each field

These markers must not be used for any other purpose.

The information in the field

85 To achieve compatibility with conventional documentation and allow computerisation of basic communication tasks, the only control on the information entered in each field is that the length of data must not exceed that available in a box on a form, and the characters used must be available on all machines. We have set the length by what is available on the ECE layout or JLCD Master, whichever is the shorter; and the character set by what is almost universally available on telex (the most limiting case).

86 Further control of the way in which the information is expressed for other purposes is discussed in the sections starting at paragraph 89.

CHAPTER 4

GROUPS

Use of groups

87 There are cases where it is necessary or desirable to associate fields into groups within the message. We have isolated two such cases :

- in a message covering a multi-line consignment, it is necessary to ensure that the right description, net weight, etc., is associated with the right item; all the details referring to one item are to be grouped together
- in a message such as a list of container locations, constant repetition of field codes would represent an excessive overhead; rules have been set to allow the field code to be stated once only at the head of a long list

Line number

88 In both cases, line numbers are allocated to each line of goods or line in a list - both to ensure lack of ambiguity and to allow error correction. (In the event of an error occurring with unnumbered lines in a list, the whole list would need to be retransmitted). The line number functions similarly to a field code in many respects.

REPRESENTATION OF DATA WITHIN FIELDS

General

89 The techniques which have been outlined so far take care of the first stage of mechanisation. Messages can be sent over telegraphic and telephonic circuits, or be passed by exchange of computer tapes or cards. They can be processed by computers for such purposes as production of documentation. Such applications require that machines can identify, say, a country of destination as <u>being</u> a country of destination

(to locate it on a file or on a form), without it being necessary for the machine to be able to interpret the written name itself.

90 If the machine is required to do more, then the data entry in the field must be controlled : for example, if one wants to carry out an accounting function, then the machine must not only be able to identify a field as containing a value, but must be able to interpret that value, including the recognition of the decimal point.

91 Or again, if it is desired to sort a list of consignments by port of destination, then the port name needs to be written in the same way each time : a computer would treat L'POOL, L/POOL and LIVERPOOL as three names and hence three different ports.

92 This section reviews the effect of this need for consistency on various types of data - in particular examining the difference between clear language entries and coded entries. Positive recommendations are made for handling information such as values, weights and measures; guidelines are suggested for the handling of descriptive information.

Quantitative data

93 Quantitative data presents the fewest difficulties. There are already recognised conventions, though these conventions may sometimes conflict. For instance, the use of the stop (.) and comma (,) in different parts of the world for the decimal point (an essential feature) is not too serious, since a machine can be programmed to accept either; but the stop and comma used as thousands-dividers (an optional feature to aid legibility) can be confused with the decimal point.

94 We have resolved this by stipulating that the stop and comma may each be used for the decimal point but not to mark thousands; the thousands should go unmarked. This approach will be used for all quantities - values, weight and cubes. The quantity will be accompanied by a code to indicate the currency or unit of measure as appropriate.

Coded data

95 Some data is already coded, or only ever appears in code form. Where there is only one form, such as the reference number allocated by a shipper to a consignment, no problems occur, provided only that strict accuracy in transcription is observed : there is one field, one definition, and one code.

96 More problems occur when one takes codes such as the commodity code; here there is no unique definition, and no unique form of the code. Several codes may occur on the same consignment. Such codes are not coded equivalents of a clear-language commodity description : the former identify a generic group of related commodities regarded as equivalent for tariff purposes, while the latter identifies the specific commodity being shipped. This being the case, one has to regard each possible code as being a separate field, with its own definition, identifier and written form.

Clear language data

97 The real problems start when one has clear language data - names and addresses, place-names, type of packing, etc. No agreed form exists, and the normal, un-controlled form is unfit for interpretation by computers.

98 One approach to this problem is to design a code to replace the clear-language version. There is another motive in many people's minds for the allocation of codes : to condense the data.

99 In practice there are reasons why it is difficult to replace the clear by a code. These include such considerations as the need to take account of human users further down a chain of communication; human users need clear language in order to work effectively and reliably - the over-coded environment imposes excessive strain on people. If there are a mixture of manual and dp systems in the chain (which may well be the normal case in the future), then it is wasteful in time and money, and a source of additional error, to encode, decode, and recode at several points in the chain - indeed, the whole aim of this project is to avoid that. Also, it may be more expensive in dp terms to work only in code : for instance the holding and updating of files of all names and addresses in order to interpret a company code might often be far more expensive than passing both incoming addresses and company codes through the system.

100 Only where there are relatively few possible entries in a clear-language field - e.g. the package description - would the difficulties both for men and machines be small enough to make replacing the clear by code workable.

101 The solution of passing both clear and code for the same data solves many problems, but raises others. A major problem is that maintaining compatibility with aligned documents becomes very difficult - the forms are already too crowded, even without the duplication of fields. Moreover, the subsidiary aim of coding - brevity - is lost. Thus the code plus even abbreviated plain language is often longer than the normal plain language alone : 'LMLF:L/POOL'* is longer than 'LIVERPOOL'.

*LMLF is the code for Liverpool in one port-coding system

102 The approach is probably most valid for lengthy data such as addresses and description of goods - where anyway the clear and code relationships tend to fall into the category mentioned above, in which the definition of what is meant by the coded field and the clear field is not the same.

103 For short clear-language fields a better solution is available : to standardise the way the clear is written. The absolute requirement for dp is not that the field be coded, but that it be in a consistent form; and a desirable characteristic is that it is not very long (the importance of having very short keys for computer sorting purposes is no longer so relevant). These requirements can be met by establishing a standard form for the clear. Thus the name for 'Liverpool' could simply be established as 'LIVERPOOL', 'Gothenberg' as 'GOETEBORG' (i.e. in the language of the country in which the port is located).

104 Alternatives could be accepted for bilingual names : e.g. 'ANTWERPEN' and 'ANVERS'. This approach should be easier to agree and implement than a universal code, would be more concise than the inclusion of both code and clear, would avoid encoding and decoding, and would satisfy both men and machines.

105 There is finally a class of clear data, such as comments, which do not need to be machine processable. These are catered for adequately by identifying the fields and allowing free format within them.

Summary

106 This aspect has been discussed at greater length than other parts of the standards, in view of the less positive recommendations that we can make.

CHAPTER 4

107 The guidelines to the representation of data within fields may be summarised as

- quantitative data : a standard method of representing quantities is to be adopted (e.g. 34.5:KG)
- coded data : the standard version of the code should be used; where one or more codes may be used together, with or without clear-language versions, then each code should be allocated a separate field (e.g. BTNC=08.01+ SITC=054.1+
  GDSD=NEW POTATOES+)
- long clear-language data fields : enter in clear form, if necessary, in parallel with separate fields for equivalent codes (examples as above)
- short clear-language data fields : agree standard clear-language form (e.g. PTLD=LIVERPOOL+)
- free format fields : use a 'text' field for any comments etc., (e.g. TEXT=THERE IS SOME DOUBT ABOUT THE CLASSIFICATION OF THIS CARGO+)

These guidelines have been observed in the glossary of fields in Part III.

DIFFICULTIES AND DOUBTS

Approach

108 We were specifically required to draw attention to difficulties encountered in the project and indicate aspects which remain unresolved. This is covered by this section; we believe it can best be carried out by summarising the degree of confidence we feel in the recommendations on each major point as well as listing these after some specific problems.

CHAPTER 4

Strategy

109 Our investigations have convinced us that no other strategy is workable.

Messages

110 The body of the message stems directly from the strategy and appears to be the only option really open. The format of the header, and the definition of mandatory, conditional and optional fields might need improving.

Fields

111 Again, the basic form stems from the strategy. Details such as the characters selected as markers may be open to question - particularly with regard to international availability on telex.

Field codes

112 Their presence, and the existence of some 'checkability' seem to us to be essential; the length and choice of mnemonic is far less important.

Groups

113 The version put forward in this report was a late development, which seems better than our earlier thoughts, but has not had the degree of scrutiny that the other main proposals have.

Representation of data

114 The conclusions are intended as guidelines only; though the standards as a whole would be workable without resolution of this aspect.

Details of goods

115 This part of the data occasioned more difficulties than anything else. The recommendations will work for any

consignment that we have investigated, but may be clumsy in some cases (though it is certainly good for 60% and probably 90% of consignments). We feel sure that they could be improved upon with additional study.

Unique occurrence of a field

116 The rule that a given field may only occur once in a message (other than in groups) solves many problems but raises others. We believe now that this rule may have to be reconsidered.

CHAPTER 5

SUGGESTIONS

- Introduction
- Next Steps
  - Level of Approach
  - Controlling Body
  - Trial Runs
  - Detail Development
- Unique Consignment Reference

CHAPTER 5

INTRODUCTION

117 We were asked by SITPRO to include in this report any ideas and suggestions which emerged from the panels or during the work of the project team. These have not been examined in depth by us, and are presented here as a stimulus to further discussion.

118 The topics discussed in this section cover firstly the next step that we envisage in the development of interface standards, and secondly issues not directly related to the project but which have been highlighted during it.

NEXT STEPS

Level of approach

119 There was a wide consensus at the panel meetings that while the long-term aim in this area must be for international standards, to go directly for international standards might be unrealistic; the timescale for obtaining agreement at an international level may well be so long that conflicting independent developments in the meantime could sabotage any attempt to produce co-ordinated standards.

120 Moreover, one has to realise that even in international trade, the bulk of the information traffic is between the many functionaries within the countries of origin or of destination.

121 The view was that one should aim to develop systems suited to international use, but concentrate in the first instance on obtaining national agreement, while maintaining throughout a vigorous international dialogue.

Controlling body

122 If development along the line suggested in this report is to take place, then the first task to be tackled would be

to establish the appropriate body to carry it through. Alongside this there would have to be generated the enthusiasm and the will amongst the functionaries to support and participate in the exercise from the start point onwards. There seems little doubt that the interest is there and that the need for action is widely felt; but these feelings have to be channelled into active participation in a campaign that will last for years to come.

123 The advantages of having an effective controlling body are illustrated by IATA, whose influence in the air transport world has been an important factor in the development of data exchange standards : but it is not clear who could be a comparable body for all modes of transport.

124 The most frequently expressed views were that :

- the task should be taken up by an existing widely recognised body
- that this should be a national body (in the first instance) with international affiliations (for later extension)
- that the body should be able to call on adequate resources, at minimum for the promulgation and maintenance of the standards
- that the body should be able to react within a reasonable time-scale

Trial run

125 Several panel members felt strongly that the next step should be to carry out a trial run. Representatives of

each type of functionary should try to process real consignments from the beginning of the chain right through, using the draft standards to convey information. It was felt that this would test the practicality of the proposals, concentrating on the use of the strategy and main principles. This should precede further work refining the detail within the framework.

Detail design

126 Thereafter the details will need examining more closely and finalising. Included in this stage would be a more exhaustive scrutiny to ensure that the standards can cover not only the obvious but also the more unlikely transactions.

127 The definition of fields and allocation of codes may be covered at this stage, but finalisation should be the responsibility of the controlling body, regardless of who carries out the development work.

128 How much work is put into the design stage must be a question of priorities. If speed is the overriding consideration, the proposals could be put into operation almost immediately, though this would be rash. If it is considered very important not only to check that the strategy is watertight, but also to optimise every detail of the design, then many man-years work could be put into the development.

129 Our view tends toward regarding the urgency as being a fairly major factor, in which case a few man-years work, applied within a tight timescale, would be an appropriate measure.

CHAPTER 5

UNIQUE CONSIGNMENT REFERENCE

150 The case for the adoption of a unique consignment reference , currently being investigated for SITPRO, has been reinforced in our investigations. In particular :

- it could very much reduce transmission in those cases where all the details of a consignment have to be sent in order to define it uniquely; this could be of particular significance in those cases where a message is really saying nothing except "Yes" or "O.K." for example in accepting Shipping Instructions or a Booking, where repetition of the consignment details are a long-winded method of identification
- it becomes of vital importance in retrieving data if data-banks are used (confirmed by LACES experience)
- at present the structure of data giving physical details of goods is very messy, in part because it has to be 'hung' onto the marks and numbers identification; the use of a unique consignment reference would make a considerable contribution to simplifying this.

PART II

EXAMPLES

CHAPTER 6

Illustrations of how Messages may be used on various kinds of equipment. For purposes of comparison the first example shows the message on a standard JLCD Master.

- JLCD Master
- Telex
- Fast Teleprinter
- Tape and Disc
- Automatic Typewriters
- Visual Display Units
- Document Printing

CHAPTER 6

JLCD Master

Facing is the data for some of the examples, presented here on a JLCD Master for the sake of comparison.

Appendix 6

Master Document

(Modified August 72)

Exporter: MIDLAND MOTORS BIRMINGHAM	CAN: 12345
	Exporter's Ref.: HK/24/37
	F/Agent's Ref.: MM 347
	Air WB (or B/L) No.
	Tariff Chapter No.
Consignee (if 'Order' state Notify Party): PRESTIGE CARS, PRETORIA	
Forwarding Agent/Merchant: AIRSEA FORWARDER, BIRMINGHAM	Export Licence No.
	Ship's Nationality
	County of Origin of Goods: U.K.
	Country to which Goods Consigned: S. AFRICA
Dock of Clearance	Dock/Wharf/Station
Terms of Delivery and Payment:	
Pre carriage by: RAIL	Place of receipt by Pre-carrier
Insured Value (in words) Currency Figs.	
Vessel/Aircraft: ANTHEA	Sea/Air Port of Loading: LIVERPOOL
Sea/Air Port of Discharge: DURBAN	Place of delivery by On-carrier: PRETORIA
Freight payable at: LIVERPOOL	Number of original Bs/L: 6

Marks and Numbers	Number and kind of packages: description of goods	Tariff Trade Code No.	Gross Weight (kg)	Cube (m^3)
MIDLAND MOTORS PRETORIA VIA DURBAN 3732	4 CRATES M/V SPARES BODY PARTS		820 25	16 2.5
			845	18.5
MIDLAND MOTORS PRETORIA VIA DURBAN 2740-41	2 CARTONS M/V SPARES SPARK PLUGS	Quantity	Nett Weight (insert unit of weight)	FOB Value £

Invoice Price

FREE DISPOSAL

(Certificates, Declarations, Seals etc.,)

Number of Packages (in words): SIX

Signature

Date:

20 mm Margin for Machine Grip and Tying

CHAPTER 6

TELEX TRANSMISSION

THE MACHINE

132 Telex does not edit, translate or extend data keyed in, so the transmitted message is identical to the message entered. Note that Carriage Return and Line Feed are entered as characters and transmitted as characters, in addition to causing the appropriate control functions.

DATA PREPARATION

133 The message may be entered directly or, preferably, by means of a prepunched paper tape.

CONNECTION

134 It is possible to be connected to most countries, using direct-dialling or via an operator.

TRANSMISSION

135 Uses International Alphabet 2. Transmission rate is about 5 characters per second. No parity checking is performed.

OUTPUT

136 Can be to paper, to punched paper tape or directly to a computer.

CHAPTER 6

TELEX EXAMPLE

```
UNTO=AIRSEA FORWARDER:BIRMINGHAM+
SERL=730721/21+
FROM=EURASIAN LINE+
TYPE=NONNEGBL+

++

SHPR=MIDLAND MOTORS:BIRMINGHAM+ SHRF=HK/21/37+
FWRF=MM 347+
CSEE=PRESTIGE CARS:PRETORIA+
LCTP=RAIL+
PTLD=LIVERPOOL+ SPNM=ANTHEA+
PTDS=DURBAN+    FIND=PRETORIA+
NBLS=6+         MNCR=EURASIAN LINE+
FPAT=LIVERPOOL+

GDO1=
MKNO=MIDLAND MOTORS:PRETORIA:VIA DURBAN:3732+
NPAK=4+              PACK=CRATES+
GDSD=M/V SPARES:BODY PARTS+
GRWT=820:KG+    CUBE=16:M3++

GDO2=
MKNO=MIDLAND MOTORS:PRETORIA:VIA DURBAN:2740 TO 41+
NPAK=2+  PACK=CARTONS+
GDSD=M/V SPARES:SPARK PLUGS+
GRWT=25:KG+ CUBE=2.5:M3++

TGRW=845.KG+ TCUB=18.5:M3+

EOMS++
```

CHAPTER 6

FAST TELEPRINTER TRANSMISSION

THE MACHINE AND DATA PREPARATION

137 Fast teleprinters may have formatting capability, but this is not sufficiently standardised to be usable. Thus, machine characteristics and data preparation can be regarded as the same as for Telex.

CONNECTION

138 Connection is via Modems over the telephone system (or a private network). Connection may be teleprinter to teleprinter or teleprinter to computer (or vice versa).

TRANSMISSION

139 International Alphabet 5 is the recommended standard. Transmission rate is typically 10-20 characters per second. Parity checking is performed.

OUTPUT

140 Can be to paper, to punched paper tape or directly to a computer.

CHAPTER 6

```
FAST TELEPRINTER EXAMPLE


UNTO=J.SMITH:BROWN LANE:LEADFORD+
SERL=730323/1234+
FROM=ORIENTAL SUPPLIES:DUBAI+
TYPE=AIRWYBIL+


AWBN=9619714419+
PTLD=DXB+
DTDM=721018+
AWCH=PP+ ROTE=LHR:BA+


CSEE=J.SMITH:BROWN LANE:LEADFORD+
FWDR=AIRBRIDGE:DUBAI+ FWRF=A2/4/789+
SHPR=ORIENTAL SUPPLIES:P.O.BOX 987:DUBAI+
DVLC=0:+ ACIN=INVOICE+


NAPK=4+ GRWT=36:KG+ RTCL=0+ CHWT=45:KG+ RATE=7.95:ST+
3DSD=SAID TO CONTAIN SAMPLES+
PPWD=357.75:ST+ DUAC=3:ST+ TPFY=360.75:ST+


ENMS++
```

CHAPTER 6

PAPER TAPE, MAGNETIC TAPE AND MAGNETIC DISC OFF LINE TRANSMISSION

THE MACHINE

141 These machines, like Telex, transmit whatever data is entered by the operator.

DATA PREPARATION

142 Messages will normally be pre-prepared, often on a different machine to that used for transmission. This specialised data entry machine will not normally list the data as it is entered, though some of the magnetic tape and disc machines may display it on a small screen. Most of the machines can provide checks on field lengths, alpha or numeric data and occasionally check digits. Some of the units may also use a screen to prompt the operator with the names of fields to be entered.

CONNECTIONS

143 This can be either on the public telephone network or less commonly, private (i.e. dedicated) telephone lines.

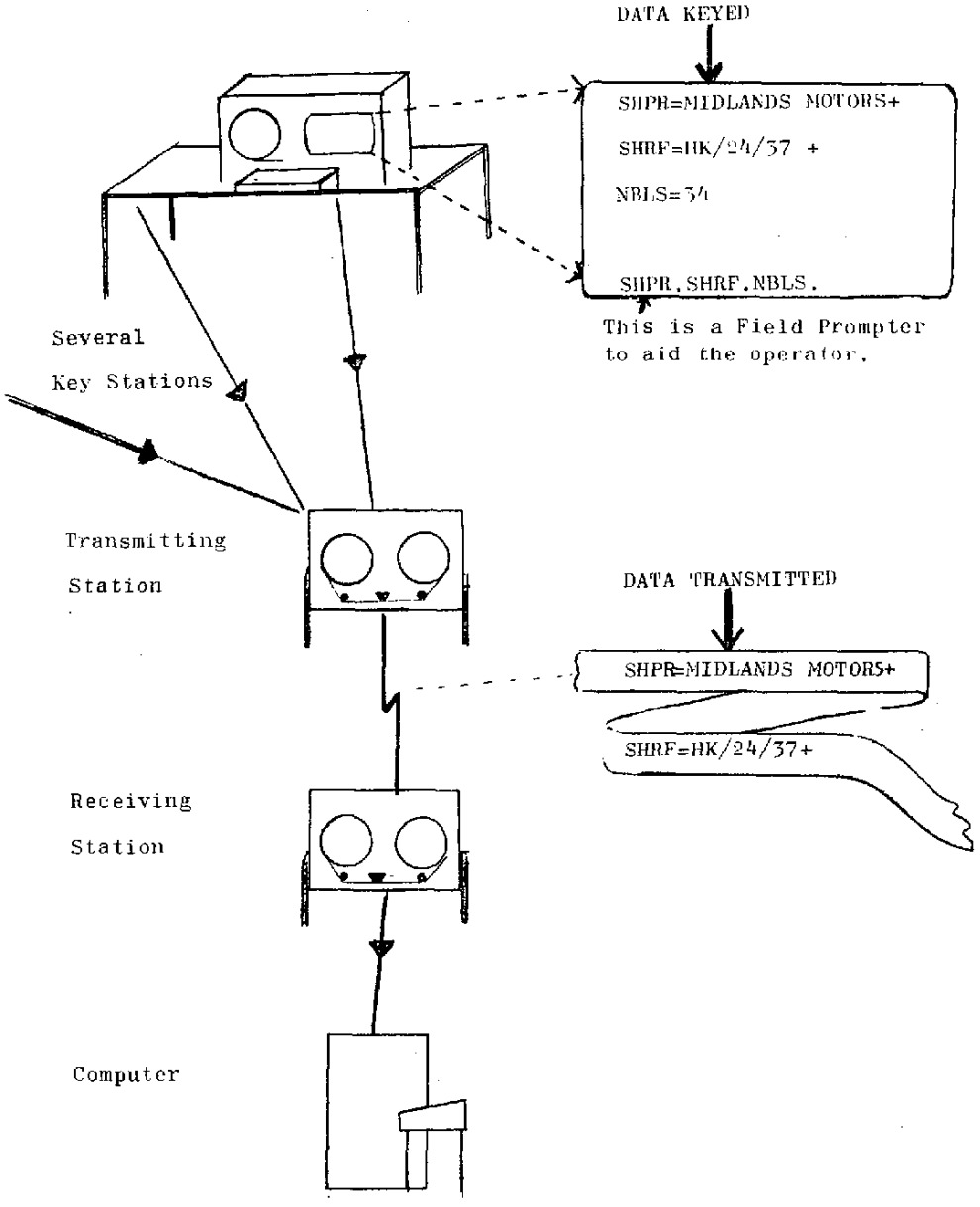
TRANSMISSION

144 Normally uses International Alphabet No.5, and parity checking is performed. Transmission rate is up to 120 characters per second on the public network, 240 characters per second on private lines.

OUTPUT

145 Normally to a similar machine or directly to a computer.

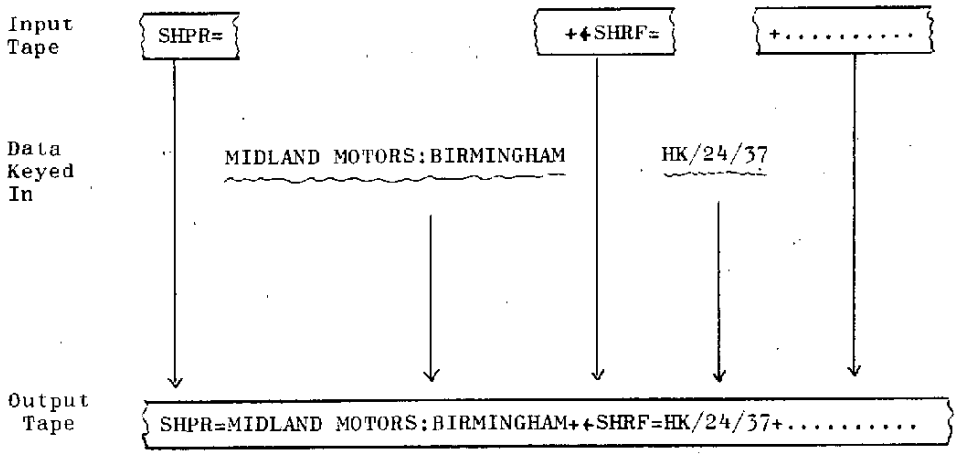
MAGNETIC TAPE EXAMPLE : KEYED ON TO MAG. TAPE; TRANSMITTED MAG.TAPE TO MAG.TAPE.

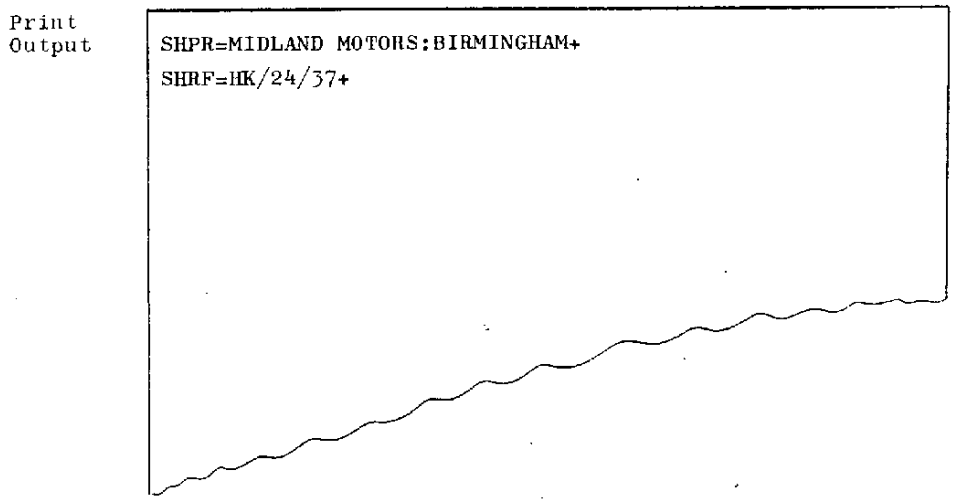


CHAPTER 6

AUTOMATIC TYPEWRITERS

146 Pre-punched tapes contain the field codes in sequence for standard messages. These are used as prompts for the operator, who replies with the data for the field. The output tape is a composite of the field codes from the pre-punched tape and the keyed data. Transmission can be on-line to a computer or paper tape to paper tape off-line.


Input Tape
SHPR=
++SHRF=
+.....
Data Keyed In
MIDLAND MOTORS:BIRMINGHAM
HK/24/37
Output Tape
SHPR=MIDLAND MOTORS:BIRMINGHAM++SHRF=HK/24/37+.....


Print Output
SHPR=MIDLAND MOTORS:BIRMINGHAM+
SHRF=HK/24/37+

CHAPTER 6

DOCUMENT PRINTING

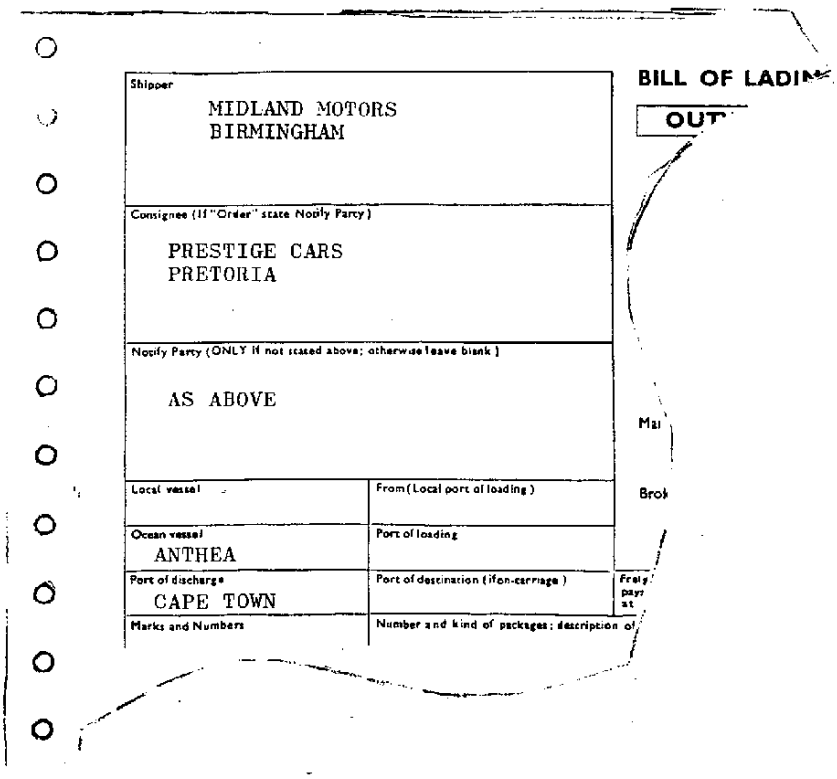
147 Production of documents can be by serial printer or by a line printer attached to a computer. If pre-printed stationery is used, then the field codes in the transmitted message will be stripped off by the receiving computer. Line printers produce documents in batches on continuous stationery. Serial printers may be used for the printing of individual documents.

CHAPTER 6

LINE PRINTER: EXAMPLE OF USE

```
SHPR=MIDLAND MOTORS:BIRMINGHAM+
CSEE=PRESTIGE CARS:PRETORIA+
NTFY=AS ABOVE+
SPNM=ANTHEA+
PTDS=CAPE TOWN+
```

Standard message read in by computer; field codes used to decide where on the form to print data; data printed in boxes 'cleaned' of field codes, = : +



BILL OF LADI

OUT

Shipper MIDLAND MOTORS BIRMINGHAM	
Consignee (If "Order" state Notify Party) PRESTIGE CARS PRETORIA	
Notify Party (ONLY if not stated above; otherwise leave blank) AS ABOVE	
Local vessel	From (Local port of loading)
Ocean vessel ANTHEA	Port of loading
Port of discharge CAPE TOWN	Port of destination (if on-carriage)
Marks and Numbers	Number and kind of packages; description of

CHAPTER 6

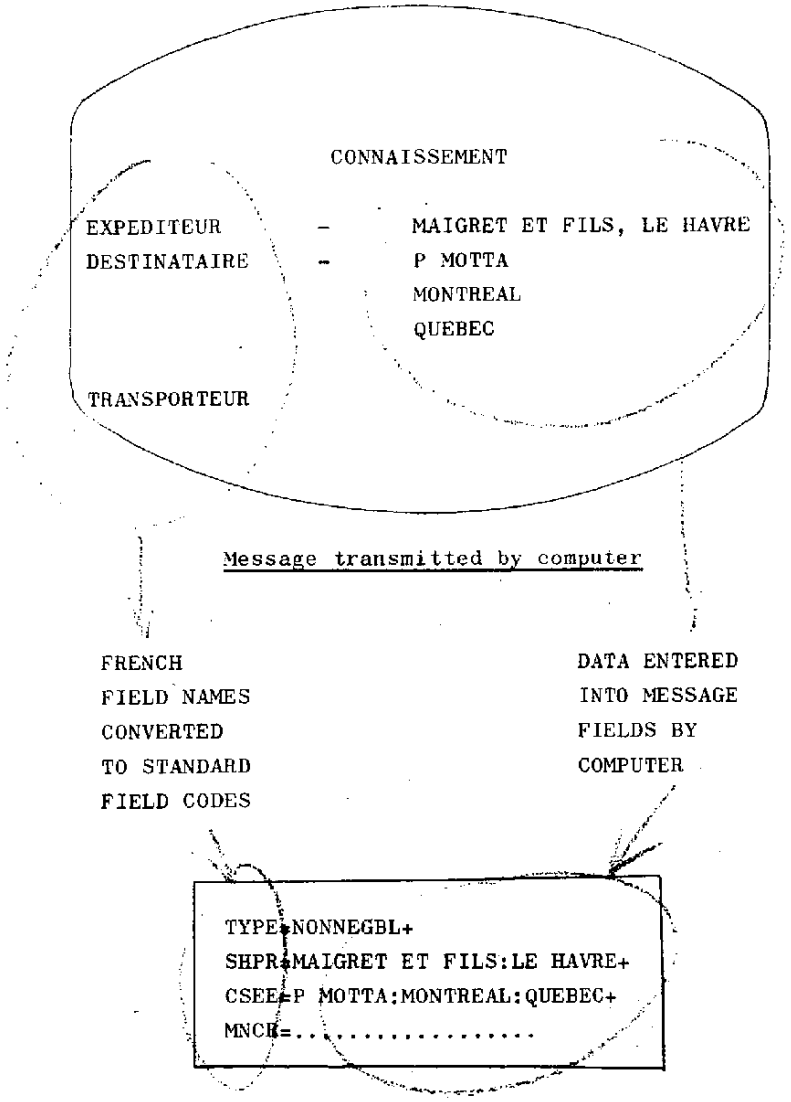
VISUAL DISPLAY UNITS

148 The message standards which have been established do not apply to transmission between a VDU and its controlling computer. Instead the computer is used to convert input messages, by expanding internally used data codes, and inserting appropriate field codes into data. The computer may then transfer a standard message via telephone line, magnetic tape or any other desired medium.

CHAPTER 6

VISUAL DISPLAY UNIT : EXAMPLE OF USE

Message produced on user's VDU screen



PART III

DRAFT TECHNICAL SPECIFICATIONS

INTRODUCTION TO PART III

149 The system outlined above is laid out in more detail. This is not in any way a complete specification, nor a final resolution of many of the technical problems. The aim is to show how Messages could be constructed, how Fields could be defined and to provide a prototype covering some examples of each.

150 There are many problems left unresolved by these examples; they have not been overlooked. But there has not been time to cover them; they will be there to be resolved during the detailed design stage.

CHAPTER 7

RULES FOR MESSAGES

CHAPTER 7

RULES FOR MESSAGES

RULE 1 DEFINITION

151 A Message is a single uninterrupted block of information on one subject sent by one functionary to another.

Comment

Thus a message will most commonly be the equivalent of one document in a paperwork system. It may also correspond to :

- a part of an existing document, where the document is used as a convenient carrier for more than one message
- a group of documents, where more than one document needs to be taken to provide a message - e.g. commercial invoice plus shipping note may add up to a single 'shipping specification' message

There may also arise a whole new class of messages born as a result of the ability to communicate mechanically. It may not be :

- a transmission consisting of a series of similar items, such as a series of bills of lading; each of these bills will be represented by a single message, and the transmission will consist of many messages
- information not transmitted at one time. Thus, if the commercial information on a bill of lading is sent at one time, and the transport information at another time, then that is not one split message but two messages.

CHAPTER 7

RULE 2 MEDIUM-INDEPENDENCE

152 The basic structure of a message will be independent of the medium used for transmission and of the input and output devices used.

Comment

This will ease clerical recognition of messages and the transfer of a message from one physical medium to another. Different media will require different character codes (e.g. "A" will be represented by different bit patterns on paper tape, magnetic tape, punched card, etc.). Data may be formatted differently on input and output devices to suite the particular medium; however, the message transmitted will be exactly the same in each case.

RULE 3 STANDARD MESSAGES

153 The main information flows in international trade will be covered by messages with a standard "contents list".

Comment

This will be a help to the preparation of messages by specifying the information that needs to be sent. It will be a help to the reception of messages by enabling a check to be made for completeness. These standard messages are formal and are to be contrasted with the less formal, non-standard messages which may also be used within the overall framework.

RULE 4 USE OF FIELDS

154 A message will consist of one or more fields.

CHAPTER 7

Comment

All data in a message, including heading information and comments will be formatted in fields. For Field definitions see Chapter 12.

RULE 5 PARTS OF MESSAGE

Messages will consist of :-

Header Information
Mandatory Fields
Conditional Fields
Optional Fields
End-of-Message Code

CHAPTER 7

RULE 6 HEADER

156 The Header Information will consist of :-

	COMMENT
Carriage Return and Line Feed (crlf)*	This is to ensure alignment with serial printing devices or Telex.
a) UNTO=..... +	The Field Code to show who the Message is to, followed by his identification.
b) SERL=..... +	The Field Code for Message Serial No., followed by the number. It is suggested that a serial number be used to identify each Message. For details of the composition of these Fields see the Glossary below.
c) FROM=..... +	The Field Code to show who the Message is from, followed by his identification.
c) TYPE=AAAAAAAA +	This is a code signifying type of Message : the 8 alphabetic characters will contain a mnemonic for the particular Message : e.g. SHIPINST.
d) crlf ++ crlf*	To indicate the end of the Header.

* Elsewhere crlf may be used or not as required within individual Fields, or as desired, following the rules on control characters.

CHAPTER 7

RULE 7 MANDATORY FIELDS

157 These are fields which, when specified in a standard Message, must always be present. If the information is not known then the code should be transmitted, and the data area should contain "NK" or "N/A", to indicate Not Known and Not Applicable respectively.

Comment

The purpose of Mandatory Fields is to ensure that the minimum information needed by the recipient for the intent of the Message to be fulfilled does, in fact, get sent. Mandatory Fields are a check list designed to ensure that all the information required is provided first time, and to facilitate machine processing by making the contents of messages easier to recognise. Different Messages will have different Mandatory Fields.

RULE 8 CONDITIONAL FIELDS

158 A Conditional Field is one which may or may not be present dependent on either (a) information in the Message or (b) other information known to the sender.

Comment

Conditional Fields are intended as a check list for items which though frequently not required may be vital when they are needed : e.g. (a) if Consignee is "To Order" then a Notify Party must follow; (b) if the goods are dangerous a suitable Hazard Warning must be sent.

RULE 9 OPTIONAL FIELDS

159 Optional Fields cover any other information which the sender wishes to include in the Message.

Comment

There will be a Field, called "TEXT", to cater for information of a general character or not covered by any other Fields : see Glossary.

RULE 10 END CODE

160 This will consist of :

crlf
EOMS++

Any number of Carriage Return and Line Feeds may follow for spacing purposes.

RULE 11 NON STANDARD MESSAGES

161 These will consist of :

Header	As for standard Message.
PURP=..... +	This is a free text field to indicate the purpose of the Message
Optional Fields	
End Code	

RULE 12 LAYOUT

162 The layout of the Fields within a message will be irrelevant to its meaning.

Comment

This is to say that Fields never have to be in a particular sequence in order to convey their intended meaning.

CHAPTER 7

RULE 13 SEQUENCE OF FIELDS

163 Where a Message is equivalent to a Standard Document the suggested sequence of Fields will adhere as closely as possible to that Document.

Comment

This is to make a Message resemble the documents to which people are accustomed as much as possible, and to simplify transcription either way.

Correction of Errors during transmission of a Message will conform to the rules laid down in Chapter 10.

CHAPTER 8

RULES FOR FIELDS AND OF FIELD CODES

- Make-up of a Field
- Field Identifiers/
  Field Code Rules

CHAPTER 8

RULES FOR FIELDS

RULE 1 FIELDS

164 A Field is an item of information which can be identified and which is meaningful by itself.

Comment

A Field is roughly equivalent to a box on a form. It can be identified in any Message, and the information it contains will be sufficient for its meaning to be understood without reference to any other Field. Fields are the building blocks with which Messages are constructed.

RULE 2 PARTS OF FIELDS

165 A Field consists of :

Identifier
Data
Separator/s
Terminator

RULE 3 IDENTIFIER

166 The Identifier is a 4-character alphabetic mnemonic followed by an = sign.

For example : SHPR=

The Identifier is constant : it will always be the same regardless of the Message in which the Field occurs.

RULE 4 DATA

167 The data will be defined as outlined in the Glossary. At the very minimum this will specify length and character set.

CHAPTER 8

RULE 5 LENGTH

165 The length allowed for any Fields will be based on internationally accepted standards (e.g. ISO Date) or widely used documentation : (e.g. the JLCD Master and the ECE Layout Key).

169 RULE 6 CHARACTER SET

Data may make use of the characters 0-9, A-Z, /, comma, full stop and space.

Comment

These have been selected as being the only printed characters universally standard on Telex equipment, which has a more restricted character set than any other equipment usable for Message transmission. Within a Field Space will be treated as an integral part of the data.

RULE 7 SEPARATORS

170 Within a Field a colon (:) may be used as a separator where a logical sub-division is needed.

Comment

This Facility might be used to divide a Field for Name and Address, or a Field containing a Weight and a Unit of Measure.

RULE 8 TERMINATOR

171 A Field is terminated by a + sign, and this must always be present.

CHAPTER 8

RULE 9 CONTROL CHARACTERS

172 Control Characters, particularly Carriage Return and Line Feed, may be added or deleted at will by sender or receiver, and will have no logical significance.

FIELD CODE RULES

Some general rules were laid down for defining Field Codes.

RULE 1 LENGTH

173 Codes should be four characters in length.

RULE 2 MNEMONIC

174 Codes should be mnemonic if possible.

RULE 3 SUBSTITUTION

175 There should be no two codes with only one letter difference : e.g. FROM FRAM.

RULE 4 TRANSPOSITION

176 There should be no two codes where transposition of an adjacent pair of letters would turn one into the other : e.g. FROM FORM.

RULE 5 REPEATED LETTERS

177 Double consecutive letters should be avoided and triples banned.

RULE 6 FREQUENT WORDS

178 Where possible without violating the above rules the same pair of letters should be used to describe a recurring theme : e.g. WT for Weight.

CHAPTER 5

Comment

The commonest errors in recording coded information are the addition or omission of a single character, the changing of a single character, or the transposition of a pair of characters. Rule 1 should prevent code errors due to addition or omission; Rules 3 and 4 should prevent wrong Codes being used due to transposition or single character errors; for in all these cases the mistakes would produce combinations of characters which would not be in the list of correct codes, and could therefore be detected without difficulty.

CHAPTER 9

RULES FOR GROUPS

Two types of groups are covered

- Grouped related fields
- Lists of repetitive data

Master Document

Exporter	Air WB (or B/L) No.
J.L.C.D. Exports Ltd., 1, Victoria Street, LONDON S.W.1.	Exporter's Ref. EX.7454/6 — Export Division 22 F/Agent's Ref. AB.23459 — C.O.6 No./N.A. AA 323269
Consignee (if 'Order' state Notify Party)	**Name & Address of Exporter's Bank in U.K.**
ORDER - Notify Herrmann & Mayer Inc. P.O. Box 854 Indianapolis U.S.A.	General Export Bank of U.K. Ltd., Lime Street, LONDON E.C.3.
Forwarding Agent/Merchant	**Export Licence No.** — **Ship's Nationality**
Atlas Forwarding Company Ltd., Tower Quay, LONDON E.C.3.	British
	Country of Origin of Goods — **Country to which Goods Consigned**
	U.S.A.
Date of Clearance	**Dock / Wharf / Station**
1. 9. 65	3 Shed Albert Dk.
Terms of Delivery and Payment	C.I.F.
Local Vessel	**From (Local port of loading)**
CD6: Amount Due	£ 17,250
Insured Value: (in words)	Seventeen thousand, five hundred and fifty
Currency: £ Sterling — **Figs:**	£17,550
Ocean vessel / Aircraft, etc.	**Sea / Air Port of Loading**
M/V FERNIE	London
Sea / Air Port of Discharge	**Final Destination**
New York	Indianapolis
Freight payable at	Prepaid
Number of original B/L	3 (Three)

Marks & Numbers	Number and kind of packages; description of goods	Export List Code No.	Gross Weight T C Q L	Cube Ft. In.
a) H & M 2414 NEW YORK 95 - 99	5 crates Dairy machinery - a) Milking machines	E.11.111	1- 8-3-12	28- 8
	b)	E.22.222	15-2- 9	30-10
b) H & M S.5376 NEW YORK 3621/3622/ 3627	3 cases Electric machinery - Switch gear 600 volts c)	E.33.333	4-3-17	49-11
		Quantity	**Net Weight T C Q L**	**Value (£)**
c) H & M S.50763 NEW YORK 3127 - 3246	120 Fibre Board Cartons Domestic Radio Receivers (Transistor) a)	-	1- 6-1-19	3,275
	b)	-	13-3- 7	12,590
	c)	120 sets 960 valves	4-1- 4	1,263

Particulars of any U.K. processing	**Invoice Price** £ 17,250	**CD6: Total Value** - -

CD6: Date Payment Due or Consignment Permission Reference One - half by 19. 12. 65, the balance by 19. 2. 66.

This is the Master Document from "Simpler Export Documents", 1965, shown here to illustrate the treatment of the Fields relating to Goods: See facing page

Number of Packages (in words) One hundred and twenty eight

Signature: J. Doe.

Date: 25. 8. 65.

20 mm. Margin for Machine Grip and Filing.

CHAPTER 9

179 The facilities suggested are similar but not exactly the same. One is designed for long repetitions of a few Fields (e.g. 20 Container Numbers and their respective Weights). This is the LIST. The other is intended for the specific situation in which the half-dozen or more Fields needed to define an item of Goods have to be linked together, and, at the same time, differentiated from another item of Goods in the same consignment. This case will be considered first.

DETAILS OF GOODS

180 The Fields relating to the Goods in a consignment are slightly different from the other information in a Message because, although each Field represents a tangible item of information, meaningful in itself, each Field also needs to be taken in conjunction with all the other Fields relating to the item of goods being despatched for its meaning to be complete. In addition a consignment may consist of more than one item of goods - as the JLCD example - and so there arises the need to relate a Field (say Net Weight) to the correct item. The simple expedient of putting everything relating to one item of goods on one line or series of boxes across the page cannot be adopted due to the number of Fields being too great to fit. This situation is overcome on documents by allocating "Item Identifiers/Number" and putting these alongside the Fields (see JLCD example). It is therefore intended to adopt a similar system of "Item Identification" here.

RULES FOR GOODS

RULE 1 ITEM INDICATOR

181 The entry starts with an item indicator taking the form GD01=

RULE 2 FIELDS

182 The Field Codes and data that define an item of goods follow.

CHAPTER 9

RULE 3

183 After the end of the last data in the last Field for that item there should be two + signs as a marker.

Example :

```
GD01=MKNO=H AND M+ PACK=5 CRATES+
GDSD=MILKING MACHINES+ NTWT=100:KG+.....CUBE=15.5:M3++
GD02=.............
.................++
```

184 There are some situations which this system will not be able to cover : "nested" situations are an example, where a product is packed in numbered cartons which in turn are loaded on to numbered pallets. This situation will have to be met by using the TEXT Field and providing a description in clear, viz :-

```
TEXT = THE TINS OF BEANS DESCRIBED ABOVE ARE PACKED IN
NUMBERED CARTONS ON NUMBERED PALLETS AS FOLLOWS
PALLET 12345 HOLDS 10 CARTONS 8901, 8902, 8904....8927
......
PALLET 12357 HOLDS.....+" until complete
```

It will also be possible to use the LIST facility for dealing with Goods - see below.

RULES FOR LISTS

RULE 1 PURPOSE

185 The list is a facility to simplify the production of messages where long lists of repetitive data occur.

CHAPTER 9

RULE 2 DEFINITION

186 A list comprises a number of lines of data, each line having the same type and sequence of data.

RULE 3 OCCURRENCE

187 Only one list is permitted in any message, and will be defined within the message.

RULE 4 OPENING

188 A list will be preceded by a list identifying statement 'LIST' which will also specify the content of the list.

RULE 5 IDENTIFIERS

189 The form of a list identifier is :-

LIST=FLD1 + FLD2 + FLD3 ..... FLDN++

where FLD1 etc. represents standard four character field codes.

RULE 6 DATA

190 The data content of a line comprises the data of the fields specified in the LIST statement, without their respective field codes being repeated. Multiple data items will be separated by field terminator '+' and last data item will be followed by a line terminator '++'.

RULE 7 LINE NUMBERS

191 Each line in a list is uniquely identified by a sequentially ascending line number in the form L999.

CHAPTER 9

RULE 8 TERMINATOR

192 The last line of a list is followed by an end-of-list indicator 'EOLT++'.

EXAMPLE

A list of container numbers and weights would appear :-

```
LIST=CNRN+CNWT++
L001=XYZU 401234 + 11200:KG++
L002=XYZU 410432 + 12000:KG++
L003=XYZU 200041 + 10050:KG++
.
.
.
.
.
.
.
EOLT++
```

CHAPTER 10

ERROR CORRECTION IN TRANSMITTING MESSAGES

CHAPTER 10

ERROR CORRECTION

193 Errors can be divided into two types, those found and put right during transmission of a Message, and those relating to a Message whose transmission has already been completed. N.B. Errors found prior to the despatch of a Message are outside the scope of this system : their correction falls within the province of the user's own internal procedures, and only the corrected version will be transmitted.

DURING TRANSMISSION

194 Errors in the Header Information require retransmission of the whole Header : errors after the Header may be amended Field by Field, line by line or item by item as appropriate.

(a) The Header should be deleted as a whole using a delete Field :

DLET=MSGE++

Then the message should be recommenced.

(b) A delete Field should be used to indicate those Fields known to be wrong : it may appear at any point within the Message :

DLET=ABCD : WXYZ++

Where ABCD and WXYZ represent the Fields in error : these may be correct codes followed by wrong data, or vice versa. If an error is detected in the middle of a Field, then the Field should be terminated immediately and the Delete should follow.

After the DLET the Fields should be retransmitted correctly :

ABCD=12345++
WXYZ=J. SMITH LTD++

(c) In a LIST the correction should be made by deleting the Line Entry and then retransmitting the correct version :

```
DLET=L003+
L003=XYZU 20041+60050:KG++
```

(d) In a GOODS entry the correction should be made by deleting the single Item, and then retransmitting the correct version :

```
DLET=GD03+
GD03=MKNO=H AND M+ PACK=CRATES+
GDSD=MILKING MACHINES+.....CUBE=16.5:M3++
```

SUBSEQUENT TO TRANSMISSION

195 Error correction will be covered by two appropriate Standard Messages, one to cancel a Message, one to Amend a Message.

(a) The Cancel Message will consist of a normal Header and, as data, the SERL and FROM as identification of the Message to be cancelled.

(b) The Amend Message will have a normal Header and will identify the Message to be amended in the same way as a Cancel Message. Corrections will then follow in exactly the same manner as described above.

196 Further development will be required to establish a code of practice capable of handling multiple errors, errors in the amendments etc.

CHAPTER 11

MEDIA RULES

- Media
- Character Set

CHAPTER 11

RULES FOR MEDIA

197 Messages developed using the Interface standards are independent of media with regard to data content. This section lays out minimum rules to ensure compatibility of Interface transmissions with the media standards, and to enable automatic identification of Interface messages as they appear in a medium.

198 Some recommendations are made with regard to equipment standards. It is worth noting that incompatibilities in character codes, tape densities, etc., are easily resolved, compared with incompatibilities in data content. However, the standardisation of machine characteristics would lead to some simplification in communications, and seems a useful goal to aim at.

199 Where there are generally accepted conventions we have pointed to them; in the case of newer media, we have tentatively pointed towards what we regard as being appropriate, on technical grounds.

TELEGRAPHIC NETWORKS (INCLUDING TELEX)

200 RULE 1 The bit representation of characters will correspond with International Alphabet No.2.

201 RULE 2 A transmission will consist of :-

- Information necessary to establish connection
- An indicator that INTERFACE data follows (STRX++)
- INTERFACE messages
- An end of transmission indicator (ENDX++)

TELEPHONE NETWORKS

202 RULE 1 The bit representation of characters will correspond with International Alphabet No.5.

CHAPTER 11

203 RULE 2 A transmission will consist of :-

1 Information necessary to establish connection
2 An indicator that INTERFACE data follows (STRX++)
3 INTERFACE messages
4 An end of transmission indicator (ENDX++)

CARDS

204 RULE 1 For 80 column cards, EBCDIC punch code will be standard. As fields may extend over several cards, sequencing and continuation codes are required, as follows :-

Col 1-71 - Data
Col 72 - Continuation Flag
Col 73-76 - Card Deck Identifier
Col 77-80 - Sequence Number

For 96 - column cards : these cards are new and we do not know of any sufficiently well established code to nominate.

Col 1-87 - Data
Col 88 - Continuation Flag
Col 89-92 - Card Deck Identifier
Col 93-96 - Sequence Number

205 RULE 2 A card deck will consist of :-

. A start of INTERFACE data card (STRX++)
. Cards containing INTERFACE data
. An end of data card (ENDX++)

PAPER TAPE

RULE 1 TAPE TYPE

206 The recommended standard is 8-track tape even parity.

RULE 2 DIRECTION

207 Transmission should be in a forward direction.

RULE 3

208 A tape will consist of :-

- An INTERFACE start indicator (STRX++)
- INTERFACE messages
- An end of data indicator (ENDX++)

MAGNETIC TAPE

RULE 1 TAPE TYPE

209 The suggested standard is 9-track tape, 1600 bpi.

Comment

This type appears to be coming into wider use, and has certain technical advantages when exchanged between different machines.

RULE 2 NUMERIC DATA

210 Data should be in character-by-character format on tape. Binary or packed numeric data should not be used.

RULE 3 INDICATORS

211 A tape will consist of :-

- An INTERFACE start indicator (STRX++)
- INTERFACE messages
- An end of data indicator (ENDX++)

Labelling etc., of Magnetic Tapes should take place before and/or after the Interface Start and End Indicators; labelling is specific to the user's internal procedures.

CHAPTER 11

CHARACTER SET

212 Because the system has to work on the simplest and most generally used mechanised data transmission equipment (Telex), the Character Set to be used has to be based on that used by this equipment, which in turn is based on International Alphabet No.2. This implies several disadvantages. The Character set is not only fairly restricted, but it is not universally implemented on all Telex machines, so that a code which prints as character "=" on one machine may print a ")" on another.

213 The characters which are standard are A-Z, 0-9, Full Stop, Solidus, Blank, Space and the Control Characters - Carriage Return, Line Feed, Letter Shift and Figure Shift. Data will need to make use of all the letters and figures, the full stop and the solidus and the space. Data will also require the non-standard comma. It will be necessary to use CR LF for the physical control of paper, and also to make output easy to read. However, because it is dangerous to use machine control characters for logical significance in data, CR LF cannot be used to indicate logical breaks in data : for example, a sub-field divider must be used to indicate the end of line in an address. By the same token CR LF alone will not signify a space between words, and a space must be used in addition. Between items of information CR LF can be used as often as required for reasons of appearance.

214 There are exceptions to this rule in that it is felt a transmission, and a message and the start of the data in a message should each start at the left-hand side of the page.

215 This all implies that there are no universally standard characters for the logical control of data.

CHAPTER 11

216 The following have been chosen on the grounds that they are generally available, and that they look sensible for their particular functions : "=" to come between a Field Code and the data; ":" to be used as a logical divider within a Field; "+" to indicate the termination of a Field.

217 In cases where other characters are printed then the equivalent character should be used; the internal code will remain the same. The difference would be confined to the individual user.

218 The characters would be represented on telegraphic equipment as shown in the Chart for IA2 and on telephonic as on the Chart for IA5.

219 If any functionary were to receive a Message on a Telex with non-standard control characters and wish to transmit it onwards, manually, using telephonic equipment, then he would need to create his own procedures to effect a translation.

CHAPTER 11

INTERNATIONAL ALPHABET NO.2

CHARACTERS Shift : Ltrs	Figs.	BIT REPRESENTATION				
A		•	•			
B		•			•	•
C	:		•	•	•	
D		•			•	
E	3	•				
F		•		•	•	
G			•		•	•
H				•		•
I	8		•	•		
J		•	•		•	
K		•	•	•	•	
L			•			•
M	.			•	•	•
N	,			•	•	
O	9				•	•
P	0		•	•		•
Q	1	•	•	•		•
R	4		•		•	
S		•		•		
T	5					•
U	7	•	•	•		
V	=		•	•	•	•
W	2	•	•			•
X	/	•		•	•	•
Y	6	•		•		•
Z	+	•				•
	CR				•	
	LF		•			
	LTRS	•	•	•	•	•
	FIGS	•	•		•	•
	SPACE			•		
	BLANK					

CHARACTERS	BIT REPRESENTATION							
	Parity Bit							
A		•						•
B		•					•	
C	•	•					•	•
D		•				•		
E	•	•				•		•
F	•	•				•	•	
G		•				•	•	•
H		•			•			
I	•	•			•			•
J	•	•			•		•	
K		•			•		•	•
L	•	•			•	•		
M		•			•	•		•
N		•			•	•	•	
O	•	•			•	•	•	•
P		•		•				
Q	•	•		•				•
R	•	•		•			•	
S		•		•			•	•
T	•	•		•		•		
U		•		•		•		•
V		•		•		•	•	
W	•	•		•		•	•	•
X	•	•		•	•			
Y		•		•	•			•
Z		•		•	•		•	
0			•	•				
1	•		•	•				•
2	•		•	•			•	
3			•	•			•	•
4	•		•	•		•		
5	•		•	•		•		•
6	•		•	•		•	•	
7	•		•	•		•	•	•
8	•		•	•	•			
9			•	•	•			•
.			•		•	•	•	
:			•	•	•		•	
,			•		•	•	•	
+			•		•		•	•
=	•		•	•	•	•		•
/	•		•		•	•	•	•
LF					•		•	
SPACE	•		•					
BLANK								
CR	•				•	•		•

CHAPTER 12

GLOSSARY OF FIELDS

- Families, Method of Treating Fields of similar make-up
- Glossary
- Alphabetic Index of Field Names and Codes
- Alphabetic Index of Field Codes and Names

CHAPTER 12

FAMILIES

NAMES AND ADDRESSES

220 All names and addresses should be presented in the same way, though they vary in length, some being of 160 characters and others of 96 only. These sizes are based on the boxes available on the Master documents, and are made of 5 and 3 lines of 32 characters respectively. If, therefore, an address is subsequently to be put into a box on a document, then an indication has got to be made of how this could be done. This indication should be given by using Field Separators within the data to space it as desired, with or without CR LF for ease of reading.

For example :
SHPR=JOHN SMITH AND CO.,:
1 JOHN ST.,:
MANCHESTER. M3 3XJ. +

or

SHPR=JOHN SMITH AND CO., :1 JOHN ST.,: MANCHESTER. M3 3XJ. +

221 It should be noted that a line of Telex print cannot be longer than 69 characters at which point a Carriage Return and Line Feed will be essential; care should be taken to avoid this happening in the middle of an intended line.

222 If it is intended to transmit Telephone Number, Postcode, Telex Number etc., these should be treated as being in clear, for they are not such as could be used to identify an organisation absolutely and so could not be used as codes for the name and address.

CHAPTER 12

VALUES

All values will be represented in a standard manner.

223 This field will be divided into two parts by a separator (the colon). The first part will contain the value itself, while the second part will contain a code to indicate the currency in which the value is being quoted: a code would need to be developed for currency; the suggestion that country codes should be used was rejected, due to the problems when currencies change. Entries in the first part will be regarded as integers unless a decimal point (comma or full stop permitted) is found; in this case the figure to the left of the point will be considered as being in the unit of currency and that to the right as being in decimal fractions of it. While it would be normal for the fraction to be shown so as to represent the usual minor division appropriate to that currency, they could represent larger or smaller divisions as required; i.e. tenths or thousandths of pounds could be shown instead of new pence if desired. This system could only work for non-decimal currencies either by employing the lowest unit of that currency or by decimalising it for the purpose of transmission or by using the TEXT Field.

224 This system has been chosen chiefly to ensure accuracy. A value is meaningless unless the currency is known as well. This way the currency must be included for the Field to be valid. Creating a joint Field overcomes the problem of having to relate a Currency Field to a Value Field and possibly having separate Identifiers for Currency every time it appears.

225 It is accepted that where there are many values on one consignment there could be some transmission redundancy, particularly if a single code for currency throughout the consignment had been used.

CHAPTER 12

QUANTITIES

226 Quantities of Measure will be represented in exactly the same manner as Values : that is every field will consist of two parts, the first to contain the quantity and the second to hold a code indicating the appropriate unit of measure. Decimal points will also be treated similarly.

DATE

227 All Dates will be shown in the particular ISO standard of YYMMDD. This is an agreed international standard and is unambiguous, and having a standard would be a significant aid to mechanisation.

PLACES

228 These include countries and specific locations within countries (e.g. ports, airports, towns, railway stations).

229 For countries an ISO Draft exists, containing a 3-digit, a 3-letter and a 2-letter code. The alphabetic codes are mnemonic and may be used safely on their own as a 'clear' entry, for brevity(e.g. GB or GBR, US or USA).

230 Specific locations are coded in many different ways, e.g. by post offices, by IATA and so on. Since these are totally unrelated and there are an enormous number of locations, use of these codes on their own is unrealistic.

231 To provide definitive versions of location names for computer processing, we suggest the use of a standard short name, e.g. 'LONDON' for London. This would avoid the duplication of both clear and code.

232 Place-names should be in the language of their own country, e.g. KOELN (not Cologne). Only multi-lingual countries should have alternative names, e.g. ANVERS, ANTWERPEN, (not Antwerp).

233 The same rules should be followed where place-names occur as parts of other fields (e.g. addresses).

CHAPTER 12

GLOSSARY

234 Here are some examples of how various items (Fields) of data could be described in order to give :-

- a clear single meaning or definition
- a prescribed method of formatting
- a unique Field Identifier

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT-INCLUDING MAXIMUM SIZE	EXAMPLE
ACCOUNTING INFORMATION	"Accounting Information" on Air Waybill	ACIN	70A	ACIN=INVOICE+
AIR CHARGES CODE	IATA code to denote method of payment	AWCH	2A	AWCH=PP+
AIR WAYBILL NO.	Serial Numbers of the Air Waybill	AWBN	11 char N 999 99999 Carrier Serial No.	AWBN=852 12345+
AMOUNT DUE TO AGENT	Agent's Commission	DUAG	Subfield 1 6N (Amount) Subfield 2 2A (Currency)	DUAG=5.40:ST+
BILL OF LADING NUMBER	The serial number allocated to the Bill of Lading	BLDN	11 chars A/N	BLDN=402A+
BTN (COMMODITY CODE)	The BTN Commodity Code for the line	BTNC	NN.NNA	BTNC=47.02A+
BUYER	Party buying goods, if different from consignee	BUYR	5 lines 32 char/line A/N	BUYR=JONES INDUSTRIES: 5 FIFTH AVENUE: NEW YORK NY USA.+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
CERTIFICATE OR ORIGIN REFERENCE NUMBER	The reference number allocated to a Certificate of Origin by the party authorising the Certificate	CORF	8 A/N	CORF=12345+
CHARGEABLE WEIGHT	Weight to be paid for, for transport	CHWT	Subfield 1 6N (Amount) Subfield 2 2A (Unit of Measure)	CHWT=17.45:KG+
CLAUSES/ENDORSEMENTS	This Field is to contain any clause affecting the consignment and the parties commercial liabilities etc.	CLUS	1,000 A/N chars	CLUS=SCRATCHED & DENTED+ CLUS=THE FOB VALUE OF THE WITHIN MENTIONED GOODS IS CERTIFIED BY SHIPPERS NOT TO EXCEED 219 POUNDS STERLING PER B/L TON+
CONSIGNEE (IMPORTER)	Party to whom the goods are addressed or, in the case of order papers, the party to whom ownership of goods is transferred	CSEE	5 lines 32 char/line	CSEE=TO ORDER+
CONTAINER NUMBER	The serial number of the container	CNRN	16 char A/N	CTRN=XYZU 401234+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
CONTAINER WEIGHT	The loaded weight of the container	CNWT	Subfield 1 6N (Amount) Subfield 2 2A (Unit of Measure)	CNTW=11200:KG+
COUNTRY OF DESTINATION	Country to which goods are sent, i.e. at end of transport operation	CYDN	clear : 16A code : 2A) fixed 3A) ISO Drafts 3N)	CYDN=USA+
COUNTRY OF ORIGIN	Country of origin or of production	CYRG	16 chars A - clear 2A) 3A)fixed - ISO Draft 3N) code	CYRG=GBR+
CUBE	Cubic measure of line item	CUBE	Subfield 1 6N (Amount) Subfield 2 2A/N (Unit of Measure)	CUBE=1.5:M3+
CUSTOMS ASSIGNED NUMBER (CAN)	Number assigned by Customs to party responsible for making declaration on out-going goods	CANR	5 chars N fixed	CANR=75342+
DANGER	This is a Field in which to record Hazard Warnings using the clear language of the 15 standard IMCO International Maritime Dangerous Goods Codes or other appropriate standards	DNGR	200 A/N	DNGR=EXPLOSIVE: RADIOACTIVE III+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
DATE OF CLEARANCE	The date when the ship is cleared out of Customs control	DTCL	NN NN NN (Year) (Month) (Day)	DTCL=730125+
DATE OF DOCUMENT ISSUE	Date when document is issued, as in ISO standard	DTDM	NN NN NN (Year) (Month) (Day)	DTDM=730119+
DECLARED VALUE FOR CARRIAGE	Shipper's declaration of value for carriage	DVLC	Subfield 1 6N (Amount) Subfield 2 2A (Currency)	DVLC=16.45:ST+ DVLC=0:+
DELETE	This is to indicate a Field to be cancelled when dealing with an error	DLET	Basically AAAA: however the error may be in the Identifier and not the Data, and therefore this incorrect Identifier must be represented as it has been recorded	DLET=CYDS+
DELIVERY ADDRESS	Party to whom the goods be delivered if different from other parties indicated	DLVR	3 lines 32 char/line	DLVR=HERMANN AND MAYER,: 1745 14TH ST: NEWTONSVILLE: INDIANA+
DESCRIPTION OF GOODS	The generic description of the goods, adequate for transport and customs purposes	GDSD	28 A/N x 3 lines	GDSD=DAIRY MACHINERY MILKING MACHINES+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
DOCK (WHARF STATION)	The precise place where the consignment is loaded onto the main means of transport, identified closely enough for delivery to right point	QUAY	16 chars A/N	QUAY=GEORGE V+
EXPORTERS BANK	Names and Address of Exporters Bank in country of origin	EXBK	5 lines 32 chars/line A/N	BANK=MONEYBAGS LTD:THREADNEEDLE ST.:LONDON EC2+
EXPORT LICENCE NUMBER	Number of the licence to export the consignment in the case of controlled goods	EXLN	16 ch A/N	EXLN=52479+
FINAL DESTINATION	Town where goods finish	FNDN	clear : 16 A	FNDN=NEWTONS-VILLE+
FLIGHT NUMBER	For Air Freight the Flight Number that identifies the particular flight on which the goods are to travel	FLNR	The IATA Code will be followed which is 2A followed by 3 or 4N	FLNR=BA608+ FLNR=BE1234+
FORWARDING AGENT (FORWARDER)	Agent acting for shipper organising transport. Related possibly to account number, CAN No.	FWDR	3 lines 32 char/line A/N	FWDR=ATLAS FORWARDING COMPANY LTD; TOWER QUAY: LONDON EC3+
F/AGENTS REFERENCE	The reference used by the forwarding agent to identify the transaction	FWRF	8 chars	FWRF=JLCD1234+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
FREE FORM TEXT	A Field to enable any information to be included in a Message that may be required	TEXT	Max. of 2,000 A/N chars	TEXT=THESE GOODS ARE VERY PERISHABLE.+
FREIGHT PAYABLE AT	Indication of where freight is payable, or that it has been prepaid	FPAT	16 A/N	FPAT=PREPAID+
FREIGHT AMOUNT	The amount of payment due for freight	FTAM	14 A/N Subfield 1 11N (Amount) Subfield 2 2A (Currency)	FTAM=123:DM+ FTAM=123.45:ST+
GROSS WEIGHT	Gross weight of grouped, like goods	GRWT	Subfield 1 6N (Amount) Subfield 2 2A (Unit of Measure)	GRWT=57:KG+
IMPORTERS LICENCE NUMBER	Number of licence to import the consignment in the case of controlled goods	IMLN	16 A/N	IMLN=123456+
IMPORTERS REFERENCE	The reference used by the importer to identify the transaction	MPRF	16 char A/N	IMRF=ABC1234Q+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
INSURED VALUE (NUMERIC)	Value at which goods are insured expressed in figures	NSVL	Subfield 1 12N (Amount) Subfield 2 2A (Currency)	NSVL=725.50:DM+ NSVL=17250:ST+
INSURED VALUE (WORDS)	Value at which goods are insured, expressed in words	NSWD	56 A/N	NSWD=SEVENTEEN THOUSAND TWO HUNDRED AND FIFTY+
INVOICE PRICE	The price at which the goods are invoiced, (qualified as appropriate by terms of delivery)	PRNV	Subfield 1 (Amount) 12N Subfield 2 (Currency) 2A	PRNV=17250:ST+
LOCAL CARRIER OR HAULIER	Name and Address of the Local Carrier of the first instance	HAUL	3 lines of 32A/N chars each	HAUL=J.JONES TRANSPORT: 18 BROWN STREET: BIRMINGHAM 17+
LOCAL TRANSPORT	Identification of (a) ship carrying out local transport or (b) other means of local transport	LCTR	16 AN	LCTR=RAIL+
MAIN CARRIER	The name and address of the main carrier involved	MNCR	3 x 32 char A/N lines	MNCR=MANCHESTER STEAMERS: COMMERCIAL WAY: HULL:YORKSHIRE+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
MARKS AND NUMBERS	The identification put on the outside of particular consignment	MKNO	6 lines x 16 A/N chars	MKNO=H and M 2414 New York 95 to 99+
NET WEIGHT	Net Weight of grouped like goods	NTWT	Subfield 1 6N (Amount) Subfield 2 2A (Unit of Measure)	NTWT=32:KG+
NIMEXE (COMMODITY CODE)	NIMEXE commodity code for line	NMXE	NN. NN. NN	NMXE=47.02.14+
NOTIFY PARTY	Party to be notified of arrival of goods	NTFY	3 lines 32 char/line A/N	NTFY=HERMANN AND MAYER INC.,: P.O. Box 854: INDIANAPOLIS: USA+
NUMBER OF PACKAGES (Numeric)	Number of packages of a type	NPAK	5 N	NPAK=12+
NUMBER OF PACKAGES (Words)	Number of packs, expressed in words	NPWD	28 A/N	NPWD=TWENTY EIGHT+
NUMBER OF ORIGINAL BILLS OF LADING (NUMERIC)	Number of signed, equally valid, original Bills of Lading, expressed in digits	NBLS	2 N	NBLS=2+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
NUMBER OF ORIGINAL BILLS OF LADING (WORDS)	Number of signed, equally valid, original Bills of Lading, expressed in words	NBWD	16 A	NBWD=TWO+
ORIGINATOR OF MESSAGE	Any suitable means of identifying the Originator of the Message : Telex No., Phone No., Name and Address etc.	ORIG	96 A/N Chars 3 x 32 lines	ORIG=SITPRO:26 CAXTON ST.:SW1.+
PACKAGE CODE	(ICS) Code for package type	PKCD	2 A	PKCD=CS+
PACKAGE DESCRIPTION	Identification of type of pack	PACK	20 A/N x 3 lines	PACK=25KG DRUMS+
PLACE OF LOADING (DOMESTIC) (LOCAL PORT OF LOADING)	Place of loading onto first means of transport	PLDM	16 A/N	PLDM=COVENTRY+
PORT OF DISCHARGE (PLACE OF DISCHARGE) (MAIN)	Port where consignment is discharged from main means of transport	PTDS	16 A/N	PTDS=NEW YORK+
PORT DUES DEPOSIT ACCOUNT NUMBER	The number of the account into which a user of the port deposits money ahead of payment	PDAC	10 A/N chars	PDAC=1234ABC5+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
PORT OF LOADING (AIR/ SEAPORT OF LOADING) (PLACE OF LOADING : MAIN)	Port where consignment is loaded onto main means of transport	PTLD	16 A/N	PTLD=LONDON+
PREPAID WEIGHT CHARGE	Amount prepaid for transport	PPWC	Subfield 1 6N (Amount) Subfield 2 2A (Currency)	PPWC=201.50:ST+
PRICE	Price of Line (unit price x quantity in Line)	PRCE	Subfield 1 6N (Amount) Subfield 2 2A (Currency)	PRCE=5950:SF+
PURPOSE OF (NON-STANDARD) MESSAGE	This is a free form text entry to describe the general purpose of a particular non-standard message	PURP	200 A/N chars	PURP=TO ANSWER YOUR QUERY OF 731201+
RATE/CHARGE	Rate at which transport is charged (at unit of weight) quoted	RATE	Subfield 1 6N (Amount) Subfield 2 2A (Currency)	RATE=7.35:ST+
RATE/CLASS	Rate to be applied to consignment	RTCL	1A:IATA CODE	RTCL=Q+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
RECEIVING DATES	The dates between which a consignment should be handed over for loading on board ship	DTRC	12 A/N in the form "from" date "to" date : with a sub-divider	DTRC=730206: 730208+
RECIPIENT OF MESSAGE	Any suitable means of identifying the recipient of the Message : Telex No., Phone No., Name and Address	UNTO	96 A/N chars 3 lines	UNTO=061.832 9731+ UNTO=NCC M5 3HU+
ROUTE	Air route to be followed	RUTE	Max. "To" 3A IATA of Airport Code 5 "By" 2A IATA Airline Code	RUTE=LHR:BA:MAN: BE+
SENDER OF THE MESSAGE	Any suitable means to identify the party transmitting the Message : Telex No., Phone No., Name and Address, etc.	FROM	96 A/N chars 3 lines	FROM=ATLAS FORWARDING: TOWER QUAY: LONDON EC3.+
SERIAL NUMBER OF MESSAGE	Every Message will have have a Serial Number allocated as it is prepared to identify it uniquely	SERL	15 N Chars Date Time Station Serial No. 730513 1427 99 999 or as desired	SERL=730513142 713011+ SERL=12345+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
SHIPPER (EXPORTER CONSIGNOR)	Party responsible for exporting the goods	SHPR	5 lines 32 chars/line A/N	SHPR=J.L.C.D. EXPORTS LTD. 1 VICTORIA ST: LONDON SW1.+
SHIPPER REFERENCE (EXPORTER REFERENCE)	The reference used by the shipper to identify the transaction	SHRF	8 chars A/N (16) chars possible on ECE Key)	SHRF=AB/123/9+
SHIPS NAME (MAIN) (VESSEL)	Name of ship carrying out main transport function	SPNM	16 A/N	SPNM=MELIA3+
SHIP REGISTERED IN	Nationality of ship carrying out main transport function	SPRG	16 A/N	SPRG=USSR+
STANDARD INTERNATIONAL TRADE CLASSIFICATION	The United Nations Commodity Classification for Trade Statistics	SITC	NNN.NN	SITC=789.23+
STOWAGE LOCATION/SHIP LAYOUT REFERENCE	The number used to indicate where a consignment has been stowed	SLOC	16 A/N chars	SLOC=8J16A+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
TERMS OF DELIVERY	Statement as to who should pay which charges	TDLY	clear : 16 A code : 3 A commonly (e.g. FOB)	TDLY=CIF+
TERMS OF PAYMENT	Way in which payment is to be made	TPAY	16 A	TPAY=HALF NOW BAL 6MT+
TOTAL NET WEIGHT	Total Net Weight of Goods in a message	TNTW	Subfield 1 6N (Amount) Subfield 2 2A (Unit of Measure)	TNTW=654:KG+
TOTAL GROSS WEIGHT	Total Gross Weight of Goods in a message	TGRW	Subfield 1 6N (Amount) Subfield 2 2A (Unit of Measure)	TGRW=702:KG+
TOTAL CUBE	Total Cubic measure of goods in a message	TCUB	Subfield 1 6N (Amount) Subfield 2 2A/N (Unit of Measure)	TCUB=504.5:M3+
TOTAL PREPAID AMOUNT	Total prepaid amount	TPPY	Subfield 1 6N (Amount) Subfield 2 2A (Currency)	TPPY=360.75:ST+

NAME (ALTERNATIVE)	DEFINITION AND COMMENTS	CODE	FORMAT INCLUDING MAXIMUM SIZE	EXAMPLE
UNIQUE CONSIGNMENT REFERENCE NUMBER	Consignment reference used by all parties, as far as possible replacing individual party's references (currently being developed)	UCRF	16 chars A/N	UCRF=123456ABC+
UNIT PRICE	Unit price of goods in a line	UNPR	Subfield 1 6N (Amount) Subfield 2 2A (Currency)	UNPR=724,50:DK+
VOYAGE NUMBER	The serial number allocated to a voyage by the Shipping Company	VYGN	6 A/N chars	VYGN=L123+

CHAPTER 12

255 ALPHABETIC INDEX OF FIELDS WITH FIELD CODES

*CONTROL SYMBOLS	
"Accounting Information" on Air Waybill	ACIN
Air Charges Code	AWCH
Air Waybill Number	AWBN
Amount Due to Agent	DUAG
Bill of Lading	BLDN
BTN Commodity Code	BTNC
Buyer	BUYR
Certificate of Origin Reference Number	CORF
Chargeable Weight	CHWT
Clauses/Endorsements	CLUS
Consignee	CSEE
Container Number	CNRN
Container Weight	CNWP
Country of Destination	CYDN
Country of Origin	CYRG
Cube	CUBE
Customs Assigned Number (CAN)	CANR
Dangerous Goods Warning	DNGR
Date of Clearance	DTCL
Date of Document Issue	DTDM
Declared Value for Carriage	DVLC
Delete	DLET*
Delivery Address	DLVR
Description of Goods	GDSD
Dock (Wharf Station)	QUAY
End of Message	EOMS*
Exporters Bank	EXBK
Export Licence Number	EXLN
Final Destination	FNDN
Flight Number	FLNR
Forwarding Agent (Forwarder)	FWDR
F/Agents Reference	FWRF
Free Form Text	TEXT
Freight Payable at	FPAT
Freight Amount	FTAM

Gross Weight	GRWT
Importers Licence Number	IMLN
Importers Reference	MPRF
Insured Value (Numeric)	NSVL
Insured Value (Words)	NSWD
Interface End of Transmission Indicator	ENDX*
Interface Start Indicator	STRX*
Invoice Price	PRNV
List of Data in a Message	LIST*
Local Carrier/Haulier	HAUL
Local Transport	LCTR
Main Carrier	MNCR
Message - to be used with DLET	MSGE*
Message Type	TYPE*
Marks and Numbers	MKNO
Net Weight	NTWT
NIMEXE (Commodity Code)	NMXE
Notify Party	NTFY
Number of Packages	NPAK
Number of Packages (Words)	NPWD
Number of Original Bills of Lading (Numeric)	NBLS
Number of Original Bills of Lading (Words)	NBWD
Originator of Message	ORIG
Package Code	PKCD
Package Description	PACK
Place of Loading (Domestic) (Local Port of Loading)	PLDM
Port of Discharge (Place of Discharge) (Main)	PTDS
Port Dues Deposit Account Number	PDAC
Port of Loading (Air/Sea port of Loading) (Place of Loading : Main)	PTLD
Prepaid Weight Charge	PPWC
Price (of a line)	PRCE
Purpose of Message (Non-standard)	PURP
Rate/Charge	RATE
Rate Class	RTCL
Receiving Dates	DTRC
Recipient of Message	UNTO
Route	RUTE

Sender of Message	FROM
Serial Number of Message	SERL
Shipper (Exporter Consignor)	SHPR
Shipper's Reference	SHRF
Ship's Name (Main) (Vessel)	SPNM
Ship Registered in	SPRG
Standard International Trade Classification	SITC
Stowage Location/Ship Layout Reference	SLOC
Terms of Delivery	TDLY
Terms of Payment	TPAY
Total Cube	TCUB
Total Gross Weight	TGRW
Total Net Weight	TNTW
Total Prepaid Amount	TPPY
Unique Consignment Reference	UCRF
Unit Price	UNPR
Voyage Number	VYGN

236 ALPHABETIC INDEX OF FIELD CODES AND CONTROL CODES

*CONTROL SYMBOLS

ACIN	"Accounting Information" on Air Waybill
AWBN	Air Waybill Number
AWCH	Air Charges Code
BLDN	Bill of Lading
BTNC	BTN Commodity Code
BUYR	Buyer
CANR	Custom Assigned Number
CHWT	Chargeable Weight
CLUS	Clauses/Endorsements
CNRN	Container Number
CNWT	Container Weight
CRLF	Abbreviation used for Carriage return, line feed)
CSEE	Consignee
CORF	Certificate of Origin Reference Number
CUBE	Cube
CYDN	Country of Destination
CYRG	Country of Origin

*DLET	Delete
DLVR	Delivery Address
DNGR	Dangerous Goods Warning
DTCL	Date of Clearance
DTDM	Date of Document Issue
DTRC	Receiving Dates
DUAG	Amount Due to Agent
DVLC	Declared Value for Carriage
*ENDX	Interface End of Transmission Indicator
*EOMS	End-of-message
EXBK	Exporter's Bank
EXLN	Export Licence Number
FLNR	Flight Number
FNDN	Final Destination
FPAT	Freight Payable at
FROM	Sender of Message
FTAM	Freight Amount
FWDR	Forwarding Agent
FWRF	Forwarding Agent Reference
GDSD	Description of Goods
GRWT	Gross Weight
HAUL	Local Carrier/Haulier
IMLN	Import Licence No.
LCTR	Local Transport
*LIST	A List of data in a Message
MNCR	Main Carrier
MPRF	Importer's Reference
MSGE	Message - to be used with DLET
MKNO	Marks and Numbers
NBLS	Number of Original Bills of Lading (Numeric)
NBWD	Number of Original Bills of Lading (Words)
NMXE	NIMEXE (Commodity Code)
NPAK	Number of Packages
NPWD	Number of Packages (Words)
NSVL	Insured Value (Numeric)
NSWD	Insured Value (Words)
NTFY	Notify Party
NTWT	Net Weight

ORIG	Originator of Message
PACK	Package Description
PDAC	Port Dues Deposit Account Number
PKCD	Package Code
PLDM	Place of Loading (Domestic) (Local Port of Loading)
PPWC	Prepaid Weight Charge
PRCE	Price
PRNV	Invoice Price
PTDS	Port of Discharge
PTLD	Port of Loading
PURP	Purpose of (Non-standard) Message
QUAY	Dock, Wharf or Station
RATE	Rate/Charge
RTCL	Rate Class
RUTE	Route
SERL	Serial Number of Message
SHPR	Shipper
SHRF	Shipper's Reference
SITC	Standard International Trade Classification
SLOC	Storage Location/Ship Layout Reference
SPNM	Ship's Name (Main) (Vessel)
SPRG	Ship Registered In
*STRX	Interface Start Indicator
TCUB	Total Cube
TDLY	Terms of Delivery
TEXT	Free-form text
TGRW	Total Gross Weight
TNTW	Total Net Weight
TPAY	Terms of Payment
TPPY	Total Prepaid Amount
TYPE	Message Type
UCRF	Unique Consignment Reference
UNPR	Unit Price
UNTO	Recipient of Message
VYGN	Voyage Number

CHAPTER 17

SAMPLE MESSAGE SPECIFICATIONS

CHAPTER 13

237 This chapter contains some sample message specifications, accompanied by illustrations of messages conforming to the specifications.

238 The samples have been chosen to illustrate the main characteristics of the proposed standards.

239 A limited number of message types are covered. This is because the strategy adopted hinges on the establishment of standard 'building block' fields. The standard message is relatively less important. In the time available we have therefore concentrated less on individual messages.

240 The specifications contain

- message name and message code
- the definition of the message
- a list of the fields contained in it, each preceded by M if the field is mandatory in that message;

or C if the field is conditional in that message

CHAPTER 13

MESSAGE SPECIFICATION

241 Message Name : Shipping Instructions
Message Code : SHIPINST

Descriptions of Message	M/C	Fields in Message Field Name
This is the preliminary message sent by the shipper to his forwarding agent, containing sufficient information for a booking to be made.	M	Header
	M	Shipper
	C	Shippers Reference
	M	Forwarder
	C	Unique Consignment Ref.
	M	Final Destination
	M	Country of Destination
	M	Type of Packages
	M	Number of Packages
	M	Gross Weight
	M	Cube
	M	Country of Destination
	M	Final Destination
	M	Goods Description
EXAMPLE OF USE	M	End of Message

```
UNTO=FAST FORWARDERS:MANCHESTER+
SERL=175435+  FROM=CDR CABLES+
TYPE=SHIPINST+
++
SHPR=CDR CABLES:OLD MILL:MANCHESTER+SHRF=P/ZA/14+
FWDR=FAST FORWARDERS:MANCHESTER+
FNDN=CORD+CYDN=IRELAND+
NPAK=2+  PACK=CARTONS+
GRWT=740:KG+CUBE=12:M3+
GDSD=CABLE TERMINATORS+
EOMS++
```

CHAPTER 13

MESSAGE SPECIFICATION

242 Message Name : Acceptance of Booking
Message Identifier : ACPTBOOK

Description of Message	M/C	Field in Message Field Name
This is the reply by a shipping company or agent in response to an enquiry from a forwarder.	M	Header
	M	Main Carrier
	M	Ship Name
	M	Quay
	M	Port of Loading
	M	Port of Discharge
	C	Forwarder
Note : As a cross-check the consignment details might also be repeated in this message.	C	Forwarders Reference
	C	Unique Consignment Ref.
	M	End of Message

EXAMPLE OF USE

```
UNTO=STEADY SHIPPING SERVICE+
SERL=24/AL/S+
FROM=ACORN LINE+
TYPE=ACPTBOOK+
++
MNCR=ACORN LINE+
SPNM=ENGLISH ACORN+
QUAY=KINGS+
PTLD=LIVERPOOL+

PTDS=QUEBEC+
UCRF=43846/21+
FWRF=SSS/AL/21+
EOMS++
```

CHAPTER 13

MESSAGE SPECIFICATION

243 Message Name : Booking List
Message Identifier : BOOKLIST

Description of Message	Fields in Message	
	M/C	Field Names
A list of cargo bookings sent by Shipping Company or Agent to the Wharfinger	M	Header
	M	Ship Name
	M	Port of Loading
	M	Quay
	M	Port of Destination
	C	Unique Consignment Ref
	M	Marks and Numbers
	M	Goods Description
	M	Number of Packages
	M	Packages
	M	Cube
	M	Gross Weight

EXAMPLE OF USE

```
UNTO=TOWER STEVEDORE CO+
SERL=74241+
FROM=RED STACK STEAMERS+
TYPE=BOOKLIST+
++
SPNM=CLASSICAL+
PTLD=LONDON+
QUAY=12 KING GEORGE VI+
PTDS=BILBAO+

LIST=MKNO + GDSD + NPAK + PACK + CUBE + GRWT++
LO01=
CRIMSON CURTAINS:
BILBAO:
1743+
CURTAINS+  40+  CARTONS+  24:M3+  1740:KG++
LO02=
COTTON WASTE CO:
BILBAO:
SPAIN:
43/22+
WASTE COTTON+  24+  BALES+  45:M3+  2208:KG++
```

```
LO24=
SOYOIL:
ZARAGOZA:
VIA BILBAO:
A - 14 - 3+
MOTOR OIL : TINS OF GREASE+  1+  CRATE+  2:M3+  140:KG++
EOLT++
EOMS++
```

CHAPTER 13

MESSAGE SPECIFICATION

244 Message Name : Non-negotiable Bill of Lading
Message Code : NONNEGBL

Description of Message	Fields in Message	
	M/C	Field Name
The Non-Negotiable Bill is demonstrated because its transmission involves no authorization problems. The example given is of transmission between the shipping company and the forwarder, as indicated by the header. Note that the remainder of the message i.e. the data, is common across any other transmissions of this message.	M	Header
	M	Shipper
	C	Shipper Reference
	C	Forwarders Ref.
	M	Consignee
	M	Notify Parties
	C	Local transport
	C	Port of Loading (Domestic)
	M	Ship Name (Main)
	M	Port of Discharge
	M	Final Destination
	M	Bill of Lading Number
	M	Shipping Company
	M	Freight Payable at
	M	No. of Original Bills (Numbers)
	M	Marks and Numbers
	M	No. of Packages
	M	Package Description
	M	Goods Description
	M	Gross Weight
	M	Measurement
	C	Unit Consignment Ref.
	M	End of Message

EXAMPLE OF USE

```
UNTO=AIRSEA FORWARDER:BIRMINGHAM+
SERL=73072/21+
FROM=EURASIAN LINE+
TYPE=NONNEGBL+
++
SHPR=MIDLAND MOTORS+SHRF=HK/24/37+
FWRF=MM 347+
CSEE=PRESTIGE CARS: PRETORIA+NOTF=AS ABOVE+
LCTR=RAIL+
PTLD=LIVERPOOL+SPNM=ANTHEA+
PTDS=DURBAN+  FIND=PRETORIA+
NBLS=6+ MNCR=EURASIAN LINE+
FPAT=LIVERPOOL+NBLS=3+
GD01=
MKNO=MIDLAND MOTORS+PRETORIA:VIA DURBAN:3732+
NPAK=4+          PACK=CRATES+
GDSD=M/V SPARES : BODY PARTS+
GRWT=820:KG+  CUBE=16:M3++
GD02=
MKNO=MIDLAND MOTORS:PRETORIA:VIA DURBAN:2740 to 41+
NPAK=2+          PACK=CARTONS+
GDSD=M/V  SPARES:SPARK PLUGS+
GRWT=25:KG+ CUBE=2.5:M3++
TGRW=845:KG+TCUB=16.5:M3+
EOMS++
```

CHAPTER 13

MESSAGE SPECIFICATION

245 Message Name : Amendment to previous message
Message Identification : AMENDMNT

Description of Message	Fields in Message	
	M/C	Field Names
This message is used by the sender of a message in error to amend or cancel the previous message	M	Header
	M	Type of Amendment
	M	Identifier of Messa to be connected
	C	Fields to be changed
	M	End of Message

EXAMPLE OF USE

```
UNTO=SEA FORWARDING+
SERIAL=730202083101001+
FROM=IDI:SHREWSBURY+
TYPE=AMENDMNT+
++
SERL=730201140101123+
FROM=IDI + SHREWSBURY+
DLET=MKNO+
MKNO=IDI VALVES:
SHREWSBURY:
ENGLAND:
1426/1431+
TEXT=PLEASE NOTE CHANGE OF NUMBERS+
EOMS++
```

APPENDICES

1. Identification of Fields
2. Two-tier Standards
3. The way the Study was carried out
4. Background to the Project
5. The Interface Paper
6. Working Papers for Panels
7. List of Participants

APPENDIX 1

IDENTIFICATION OF FIELDS

One of the problems to be considered in transmitting Messages is whether the data should be recognised by its position on a document or by an identifier of some kind.

There are several arguments in favour of using its position to recognise an item of data

The preparation of input for data transmission would not require the learning of any new system, but would be exactly related to existing documents, and by the same token output would be immediately recognisable by the receiver. Telex would produce an output suitable for photocopying.

Modelling the layout on the JLCD Master would provide an additional incentive to the use of the Aligned Series.

There would be no need to develop identifiers for items of data, or to increase the burden of transmission by sending such codes.

The layout of a document could be copied on a VDU screen, thereby easing a possible future change to the use of VDU's as a means of inputting Messages to a computer for subsequent transmission.

On the other hand attempting to transmit information as a document in this way would present certain problems :-

Although there would be no transmission overhead carried by identifiers there would be an even greater overhead created by the need to space data about the page. Tests made on Telex would indicate that about 25% more characters have to be transmitted to represent a formatted document than to send the same information using a 4 character identifier plus a separator and an ending indicator for each data Field.

This overhead would be less on a device capable of compressing spaces. A serial printing device, such as a Telex, would also take longer as data was being positioned.

An item of data cannot be uniquely identified wherever it appears; reference must always be made to the particular document involved.

Within a mechanised system the recognition of data by position alone is not easy, particularly with data that may be spread over several lines, as an address. This would make editing the data, reformatting it (as to produce a Manifest), or diseminating a part of it, more difficult than they would be if each item of data was uniquely and directly identifiable.

The correction of errors during transmission would be difficult : either the whole Message would have to be retransmitted or a complicated line and position number would be required, and the latter would, in fact, be an identifier code. The input of data in column form would not be easy, e.g. Name and Address on one side of the document would have to be entered line by line along with different items elsewhere on the other side.

A system based on transmitting a facsimile of the document would tend to fossilise that document. Once systems had become mechanised it would be difficult to add to or amend the document; every change would require an alteration to the whole format of the document.

In any event it might not be possible to copy a document exactly due to the paper sizes involved : Telex, for example, takes paper less than A4 width, which cannot take as many characters on a line as may be required by JLCD Master or ECE Master.

An alternative to a formatted Message is one in which each Field is individually identified, whilst the format of the Message is not relevant to the meaning.

In such a system each Field has an identifier wherever it occurs and so it can always be recognised. Therefore there is no need for input or output to be formatted, rather they can be flexible; an extra Field can be added to a Message at will. On the other hand if the receiver possesses an intelligent receiving device the possibility of formatting output has not been lost.

Indeed control over a Message by an EDP system would be facilitated, for each Field could be examined on its own : this would also facilitate error checking during transmission.

While the system imposes a fixed overhead on transmission due to the presence of the Field identifiers, there would be no transmission of Spaces; this overhead would be reduced to its practical minimum.

A similar system has already been used by IATA to identify items of data within a Message.

There are disadvantages to this approach. The output cannot be read until a new coding system has been learnt and operators have become familiar with the control characters being used.

The output may not be as easy to read as on a formatted document; this would particularly be the case with short data items, which could appear swamped by the codes and control characters surrounding them. In all cases the particular Field being looked for would have to be sought by reference to its identifier; a quick glance at the page would no longer suffice.

The short data item would carry a disproportionate transmission overhead attributable to its identifier.

A system of identified Fields shown sequentially bears no relation to any existing agreed standard document.

What then, are the Key factors which make using Identifiers seem preferable to formatting the Message?

The greater control that using Identifiers permits.

A Field can always be recognised with 100% success.

The greater flexibility that this control brings with it.

Messages are going to change; difficult as it is to agree to any standard, it is often even harder to alter it : but the system must be designed so that it can be changed.

The fact that the data positions on existing documents could not be reproduced exactly on Telex equipment, let alone the document itself : output would only be on blank paper.

The minimising of transmission overhead.

APPENDIX 2

TWO-TIER STANDARDS

There is a feeling amongst a minority of the organisations consulted that there should be a second 'tier' of messages suitable for high-volume transmission between users of high level equipment. As stated in the body of the report, we are not convinced of either the desirability or need for this. The main arguments are summarised in this Appendix.

Arguments for a high-level tier

Any single tier system must be a compromise; the needs of users with equipment at the upper range covered by the compromise might be better catered for by a separate standard.

Such users will be most likely to use computer-to-computer communication : the standards we have developed take human needs as major factors in man-to-man and man-to-computer communication; different standards may be better for the computer-to-computer communication.

There are several messages (notably the Air Waybill) which are passed in very large quantities. The scale means that any economy in transmission can produce worthwhile savings overall. In cases of high volume transmission, line congestion becomes a problem : any economy on message lengths is important here too.

The existence of conventions such as the Transmittable Air Waybill is a reality and ought not to be excluded from the standards (though we understand that the TAWB has not yet been implemented by anybody).

Arguments against a high-level tier

The first main group of arguments against a high-level tier is that, we believe, some of the assumptions made in the arguments for such a tier are invalid when investigated more closely.

There is probably very little, if any, overall reduction in length from using the fixed-format type message (even one, unlike the ECE Key, specially designed for transmission). One saves on the characters in the field codes, but loses out on the extra formatting characters. We tried converting a used Air Waybill in our possession into the IATA transmittable form and into 'Interface' form : in 400-odd characters the difference was about half-a-dozen. Different consignments might produce a difference in favour of either system, depending on the characteristics of the data. But the average lengths are probably comparable. If one deviates from the IATA standards, then 'packed decimal' may be used for numeric fields, and 'zero and space compression' used for repeated zeros and spaces. In this environment the savings from packing would be negligible; only zero compression would produce significant savings, and then only with certain combinations of data; and zero-compression suffers from the disadvantage of being extravagant of CPU time in producing a message.

Our relatively brief examination of the subject makes us believe, though does not prove conclusively, that there is little net gain to be had from 'condensed' messages.

The second assumption that we would question is that the type of message that is put forward here is more suited to low-level equipment than to high-level equipment. Indeed, there has been an increasing trend in recent years to just this type of data organisation for major systems. Perhaps the most notable parallel are the NATO Item Identification Guides (NIIG's) which have been developed for national commodity databanks for the military and public services sectors in NATO countries, and which use essentially the same techniques.

The wide range of uses that one item of data may be put to in a major system, and the need to ensure that items of data are simple and independent to allow subsequent modifications, both impose the same type of constraints on data structure as have been taken into account in these proposals.

The second main group of arguments against a second tier concern the disadvantages.

Above all, there would be a loss of flexibility. In a message containing fields stripped of field codes, changes can be difficult to make, and require complete agreement and complete co-ordination. In general, the arguments contained in Appendix 1 apply here too, since field identification is implicit from position, not explicit by field codes.

Optimisation of machine performance by suitably tailored messages involves a loss of general applicability; for instance the packed decimal facility is specific to certain makes and types of computers only (byte machines). In case of machine failure, fall-back becomes more difficult. If the proposed standards are used, incoming messages can be interpreted and printed by a very wide range of equipment without specific programming. But if field-code stripping, decimal packing and zero compression are used, specific programs are needed to untangle the data so that manual processing could be used.

If a second tier is developed - even if only for a limited number of messages - it would break many of the basic rules embodied in the proposals set out in this report. While obviously these rules are only a means not an end, we believe that to start off with rules containing exceptions is likely to undermine any attempt to introduce uniform standards. Moreover the rules as formulated reflect basic needs in the data interchange, which apply just as much to the potential users of a high-level tier.

Conclusions

Within the limited time-scale that this project has allowed, our examination has convinced us that the disadvantages of the adoption of a second tier within the framework of these standards would be quite considerable, while the benefits seem to us to be doubtful.

Fortunately, since the benefits relate specifically to technical efficiency, they can be tested empirically. Should the benefits prove to be real, then the question would become open again, and the balance of technical merit against matters of principle would have to be decided.

If it is in the end considered desirable to develop a second tier for computer-to-computer communication between users of advanced equipment, then we strongly recommend that that should be done outside the framework of the Interface standards, while retaining compatibility with them. Such a course would minimise the disruptive effect of a high-level tier on the general standards.

APPENDIX 3

THE WAY THE STUDY WAS CARRIED OUT

The Panels formed an important part of the study. The Panels provided information by means of the written answer to the questionnaires (see Appendix 6) that had been put to them, and by the examples of international trade documents which were produced; this collection, which was increased from other sources, finally covered several hundred transactions. The Panels also provided the general background to the problem area, which emerged from the day-long discussions. And at the draft report stage the Panels met again to enable the recommendations of the study to be examined and questionned before preparation of the final report for SITPRO : at these final meetings Panel Members expressed strong agreement with the principal recommendations put forward.

The search for information was continued by visits to a number of functionaries, having particular reference to existing or planned computer applications and to users of mechanised data communications systems. At the same time written information was sought from as wide an area as possible and in particular covering the work of the Economic Commission for Europe's Working Party on International Trade Procedures.

The main work of the study was concentrated round the principal relevant documents, viz : the JLCD Series, the ECE Layout Key, and the Air Waybill; and it attempted to produce proposals compatible with the requirements of the problem and the respective standpoints of all the functionaries involved.

Note. Make up of the Panels

Invitations to the Panels were issued by both SITPRO and NCC. NCC invited all relevant members, and this invitation was substantially oversubscribed. SITPRO invited several other organisations to attend to ensure a balanced representation of functionaries. Each Panel included both SITPRO and NCC invitees, who were, overall, in $\frac{1}{3}$ to $\frac{2}{3}$ proportions. The total number of participants was governed by the number of Panels there was time to hold and by the numbers felt to be sensible for any one meeting.

APPENDIX 4

BACKGROUND TO THE STUDY

It was in March '71 that the SITPRO working group concerned with ADP and Coding started to shape its thinking in a manner that has finally resulted in the INTERFACE project.

It was a fact of life that international trading was taking place against a backcloth of change as regards the physical movement of goods, whereas information systems - particularly paper systems - were not changing fast enough. Could the power of the Computer be used to ease the information problems?

The idea of an "Information Package" was discussed which would formalise the information being handled and provide some simple rules for passing the "Information Packages" between participants; without each of them having to possess identical processing systems.

Two members of the Working Group agreed to produce a paper for consideration : this paper was discussed by the Working Group in June '71 and a large measure of agreement was reached on its content. It was decided to expose the idea (along with others) to a wider audience; this was done at a working weekend held in October '71. The general feeling of the participants at that weekend was that such a project should be given a high priority by SITPRO.

The next meeting of the SITPRO Working Group held later in the same month established a small sub-committee to produce a final paper, based on the original, embodying the consensus reached at the Working Weekend. At this time the ECE were notified of SITPRO's interest in the matter and the importance they attached to it.

A final paper (see below) was presented to the Working Group in March '72 and accepted. It was agreed that NCC should be invited to give a presentation to the SITPRO Board in June '72 on how the project would be carried out. Between June and September '72 arrangements for the Study were finalised, including the offer by IBM (and acceptance by SITPRO) of a senior systems engineer to work with the NCC project team.

The study was started at the beginning of September '72.

APPENDIX 5

Project "INTERFACE" - the development of an INTErnationally Recognised Format for Automatic Commercial Exchange

1. The Concept

1.1 The terms of reference of SITPRO require it to study documentation in international trade "particularly in the light of the widening use of computers and data links, and to make recommendations to assist the more efficient flow of trade". The responsibilities arising from these terms of reference embrace both long term activities of a research or political character, and specific practical activities giving rise to benefits capable of realisation in the shorter term.

1.2 The long term activities will include such tasks as a fundamental review of the roles and relationships of the various functionaries in international trade in the light of present day needs and present day facilities. Such a review would precede any proposals for defining anew the respective roles and relationships, and any proposals for implementing them on an international scale.

1.3 This Paper considers another project which is essentially long term in character but proposes immediate practical steps towards its realisation. The project comprises the development of standards to facilitate the communication of transaction data between participants in international trade. The wide acceptance of such standards would enable all systems designers, concerned in any way with any part of the process of international trade, to design information systems for their own organisations which could pass data economically to and from the systems of other organisations.

1.4 The passing of data between systems presents particular difficulties, generally of a political rather than a technical nature. The formulation of standards for this purpose implies that all parties must come to some agreement as to the limitations they are prepared to accept on the way they can design their own systems. Code structures alone are not enough: the objective must be the publication and general recognition of a comprehensive technical specification embracing:

(a) A glossary of "elements" of information formally communicated between participants in international trade in the process of conducting their business, e.g. shipper's name and address, port of loading, marks and numbers, etc.

(b) A prescribed standard for the format of each element of information, i.e. number of characters, fixed or variable length, alpha/numeric, etc.

(c) Corresponding standards for the content of each element within the constraints prescribed in (b), e.g. free form, standard terminology, standard abbreviation, standard coding, etc. This section will include a definition of the actual abbreviations or codes to be employed where relevant, established systems being adopted wherever possible.

(d) A catalogue of "message types" employed in communications between participants, with definitions of valid combinations of elements to form such messages. Most "messages" will correspond to documents in conventional paper systems, e.g. invoice, bill of lading, etc.

(e) Conventions for the recognition of elements within messages, e.g. relative position within standard format, coded identifier to accompany each element, etc.

(f) Technical standards for recording data in individual media, e.g. magnetic tape, punched cards, telex, etc.

Only within a framework of this nature can there be any certainty that information recorded in one system will be correctly interpreted by another.

2. The benefits of communication standards and the obstacles to their creation

2.1 The recognition and widespread adoption of standards formulated in this way can be shown to offer substantial benefits. Thus:

(a) It costs organisations a great deal to transfer information between one another. It is not the actual transfer which is so costly, but the translation of inward material into an assimilable form, and the preparation of outward material for despatch. This is generally true, but particularly so where ADP applications are involved. Any reduction in the cost of handling information being received or being prepared for despatch is beneficial. The benefits may be realised either as a direct economy or by extending the amount of information which can be exchanged economically (and this may on occasion be a sensible alternative).

(b) Applications of ADP techniques which are not economically justified in an undisciplined environment may become viable when a functionary can be confident that a single set of communication standards is applicable to all his dealings with third parties.

(c) The need for more systems discipline is becoming widely accepted in the data processing world. If the imposition of such disciplines can be contained within a framework of

standards, then it will be considerably less painful to many of those affected. In the absence of standards, disciplines tend to be imposed unfairly between parties, the scene being dominated either by those who are commercially strongest or by those who employed ADP techniques first. The development of standards gives more people the opportunity to influence the disciplinary framework.

2.2 The design of a set of inter-organisational standards presents particular difficulties which are not present when designing a set for exclusive use within a particular organisation. The machinery for objectively defining needs is lacking; it is more difficult to resolve conflicting needs since these may affect the competitive position of affected parties; and standards are more difficult to introduce since in general, discipline cannot be applied to impose their adoption and alternative sources of motivation must be found. Other activities associated with our proposals also present new difficulties; activities such as publicity, education and the creation of a maintenance procedure which ensures that the standards are responsive to the changing needs of users.

2.3 There is, of course, a great deal of experience of the introduction of standards, particularly in such organisations as B.S.I. and I.A.T.A., but it is probably true that in the area of information interchange between independent parties, the extent of practical experience is very limited indeed. In general, this is because the concept is so vast that it tends to overwhelm our present ability to organise. At the same time, we contend that the need is so great that it is necessary to make a start in a small way.

2.4 With this in mind, we propose that SITPRO should initiate a pilot project which can be seen to be compatible with the long term project and which addresses itself on a limited scale to the solution of the organisational and political problems described and which, therefore, offers to provide enthusiasts with practical experience and doubters with a practical example.

3. The Proposed Pilot Project

3.1 Selecting a suitable pilot project is in itself a difficult task. The criteria we have adopted are:

(a) The project must be capable of producing a recognisable "end product" within a specified period of time: we consider it dangerous at this stage to embark upon a "study" leading to yet another report describing the problem in qualitative terms. We regard six elapsed months as being the appropriate timescale since we wish the "product" to be available in the international forum early enough to exercise a profound influence over other work in this field. In the

absence of such influence we see a risk that piecemeal work on individual facets of the task may frustrate rather than contribute to the achievement of the overall objective.

(b) The project should be capable of leading to benefits in its own right as opposed to being inter-dependent with other activities outside the control of SITPRO.

(c) Even if the immediate terms of reference of the project are necessarily domestic, the product must be capable in due course of international extension. Similarly, if the project must be circumscribed in other ways to contain it to a manageable size, it must be capable of subsequent extension.

(d) It should expose a representative selection of the problems to be overcome in developing standards of this nature and provide experience relevant to their solution.

3.2 Having considered a number of alternatives, we have concluded that the project which comes nearest to meeting these criteria is the development of a prototype standard embodying most of the characteristics defined in paragraph 1.4 of this Paper but restricted in its scope to selected documents from the JLCD aligned series, together with, if possible, the IATA air waybill.

3.3 Particular advantages of proceeding on this basis are:

(a) The task is immediately circumscribed by clearly defined and unambiguous limits.

(b) The aligned series in itself provides a good foundation on which to build in that it is well-known, fairly widely used, officially recognised and the product of extensive systems analysis.

(c) The documents in the series contain a sufficient variety of message types and functional inter-relations to bring to light a representative selection of the problems to be encountered on a larger scale when developing more comprehensive standards.

3.4 We have drafted terms of reference for the proposed pilot project and these are attached at Appendix 'A'. We are forced to the conclusion that the work cannot be undertaken by Group 'C' or by any other body in committee but will call for a full-time commitment of approximately 36 man weeks of effort. If this is to be accomplished within the proposed six month time span it will call for a team of two suitably qualified systems personnel. Should it be decided to retain consultants for this purpose at normal commercial rates, this corresponds to a cost of some £12,000.

3.5 We feel justified in urging SITPRO to promote work on this pilot project, ideally with the financial support of potential beneficiaries. We attach at Appendix 'B' extracts from the original SITPRO Report which we consider support our contention that such a project is consistent with the aims of the SITPRO Board.

4. Conclusion

4.1 We seek a reaffirmation by Group 'C' of its support for the concept of an interface language for use in the systems and procedures of international trade. More specifically, we invite Group 'C' to call upon the SITPRO Board to initiate a pilot project as defined. The most tangible product of this pilot project will be the prototype standard which, though probably unsuitable for practical use without further development work, may contain elements which are immediately useful and which overall should evoke a more positive and constructive response from prospective users than could be achieved by abstract argument.

4.2 In addition, SITPRO should draw conclusions from the experience gained:

(a) To assess the size of the task of establishing and maintaining an internationally recognised interface language.

(b) To define manageable self-contained sub-tasks suitable for assignment to or adoption by other organisations at home or overseas.

(c) To determine the steps necessary to attract support from industry, commerce and Governments, as appropriate.

(d) To assess the results of the pilot project in relation to long term needs and to review the conceptual definition in the light of the conclusions drawn.

M.J. Burton
J.M. Connor
D. McCall
W.H. Stokes

23rd February, 1972.

APPENDIX A

DRAFT TERMS OF REFERENCE FOR A PILOT PROJECT AS PROPOSED IN PAPER SUBMITTED BY MESSRS. BURTON, CONNOR, McCALL AND STOKES FOR CONSIDERATION BY SITPRO WORKING GROUP 'C'.

1. The purpose of the assignment is to produce a prototype standard illustrating the form and content of a technical specification as described in paragraph 1.4 of the above Paper. In addition, those undertaking the assignment are required to report on the difficulties encountered in completing their task to the extent that these are considered relevant to the subsequent development of a comprehensive standard and are invited to propose solutions to these problems where possible. The assignment must be completed within an elapsed time of six months.

2. The method of proceeding should be as follows:

2.1 Review the documents in the JLCD aligned series and propose for the approval of SITPRO a selection of these documents to be considered in developing the prototype standard. The selection must be limited by the predefined scale of the assignment but within these limits should include the widest practicable range of transaction types and document originators/recipients.

2.2 Consider whether the IATA air waybill can feasibly be added to the selection.

2.3 Propose for agreement with SITPRO a selection of nominated trade bodies and/or individual agencies to be considered as the theoretical users whose requirements are to be met by the prototype standard. The range must be limited by the predefined scale of the assignment but should be chosen so as to impose a practical tenor on the investigation and to expose a representative range of problem areas. The selection may be reviewed in consultation with SITPRO as the assignment proceeds.

2.4 Treating documents selected in paragraphs 2.1 and 2.2 as the catalogue of message types and the variable information recorded on them as the basis for a glossary of data elements, proceed to construct examples of each of the sections (a) to (f) of the technical specification defined in paragraph 1.4 of the above Paper. Wherever possible these examples should be complete but, if incomplete, they should demonstrate clearly the method of presentation which would have been adopted had further time been allowed.

2.5 Illustrate with sample data the application of the standard to a variety of communications between the parties selected in 2.3.

3. The assignment should be conducted in a manner which bears in mind the need to produce proposals on all points within a limited timescale rather than a technically sophisticated solution to individual points. Those undertaking the task are encouraged to draw attention to deficiencies in their proposals brought about by this limitation. Further, they are invited to summarise for the benefit of SITPRO any useful information collected in the course of their work and, in particular, to draw attention to any data elements which have emerged from the study as being suitable for examination by the Coding Sub Group.

EXTRACTS FROM "THE SITPRO REPORT 1970"

3.30 The problem of how far the use of aligned documents should be extended is central to our inquiry.

3.34 We attach the greatest importance to the developing relationship between documents and ADP. Standard documents for both input and print out are essential for the successful application of ADP techniques to trade procedures and, as the ECE layout is widely used, some organisations have programmed their computers to conform to it. We doubt whether in the long term this will be the cheapest or most convenient method of recording and using trade information, or indeed the best use of ADP facilities.

3.35 In the present period of transition from information carried on paper to information handled by electronic means, most organisations and countries are only beginning to grapple with this application of ADP. Multi-user computers are not likely to be in common use in international trade facilitation until the mid 1970s, and the use of documents aligned on the ECE layout key can usefully continue. Indeed wider and more effective use of ECE aligned documents throughout the world is to be welcomed and encouraged, not only because it is desirable in its own right in the interim, but also because uniform documentation would provide a common base for progress towards more advanced systems.

13.54 The development of the ECE and JLCD layouts emphasised the importance of standard layouts for all documents, and we believe they will continue to play an important part in the flow of information in international transport. However we also believe that they may have to be modified if air, land and sea carriers are to develop compatible documents and procedures to facilitate increased use of ADP.

13.56 Computers are not bound, as is the aligned series, to the use of one layout, and given the wide variety of formats of companies' internal documents, invoices, and the international transport documents, it would be well worthwhile if items of information could be readily identified.

13.57 One possible solution would be the allocation of identification codes for each 'box' so that information could be presented either in standard format or by 'straightlisting' where desirable. These common identification codes would also assist computer input and 'human' cross referencing. These codes might also be eventually extended to other transport documents including airline, rail and road consignment notes. If, in addition, agreement were reached on the maximum number of letters or figures to be printed in each box, the foundations would have been laid for a standard 'language' or 'message format' suitable for the exchange of information between independently developed computer systems in the form of magnetic or paper tape, or via data links.

13.58 A further problem may arise from the separate requirements of the aligned series and computer output, e.g. print out, and the different problem of using these to prepare tape or punched cards as computer input, particularly where analysis or other work is done by a separate ADP system. It is interesting to note that in order to meet this point the LACES scheme is using a 'Customs Entry Coding Form' specifically designed to facilitate input. The ECE layout key was not designed specifically for computer input or print out and the sequence in which the information appears may not provide the best long term solution to the requirements of ADP or developments in combined transport.

13.60 The willingness of H.M. Customs to align their official forms greatly assisted the adoption of the ECE/JLCD layout key. We have mentioned the initiative taken by Customs in support of the LACES scheme. We believe that, if similar initiatives are taken by H.M. Customs and, say, port authorities, e.g. by accepting information on paper or magnetic tape in standard form, this would stimulate the progress of ADP as it has furthered the JLCD layout key, although considerable work and the general consensus of commercial interests would be necessary.

APPENDIX 6

Project INTERFACE

WORKING PAPERS
FOR
PANEL MEMBERS

1 Method of Working

2 Timetable and Location Maps

3 Scenario

4 Questionnaire

October 1972

METHOD OF WORKING

1 The Panels will meet in the London and Manchester offices of NCC. The place and times of the meetings are listed at the end of this section, with maps showing the exact location of our offices.

2 These Working Papers have been sent to you before the first panel meeting. YOU ARE ASKED TO STUDY THEM BEFORE THAT FIRST MEETING.

3 The main contents of these papers are a SCENARIO and QUESTIONNAIRE. The aim of these is to provide a starting point for discussion and to stimulate and guide the panels - in particular, the scenario is not intended to represent a definitive analysis of the situation.

4 At the first panel a short presentation will precede discussion of the scenario and questionnaire; the aim at this stage is to prepare the way for the detailed analysis of the subjects covered; it has been the experience of NCC in previous projects that such an 'orientation' session makes an immense contribution to the success of the Panels as a whole.

5 During the 10-14 days before the second meeting, participants should consider the aspects covered by the questionnaire in the light of their own organisations position; we ask that a written reply should be brought to the second meeting.

6 The second meeting will be devoted to discussion; conclusions reached then will be taken as input to the project development work.

7 Before the final Panel session, the draft report will be circulated for participants to assess the projected solutions against their own needs.

8 The last session will be devoted to discussion of the draft and formulation of any recommendations the Panels feel they should make.

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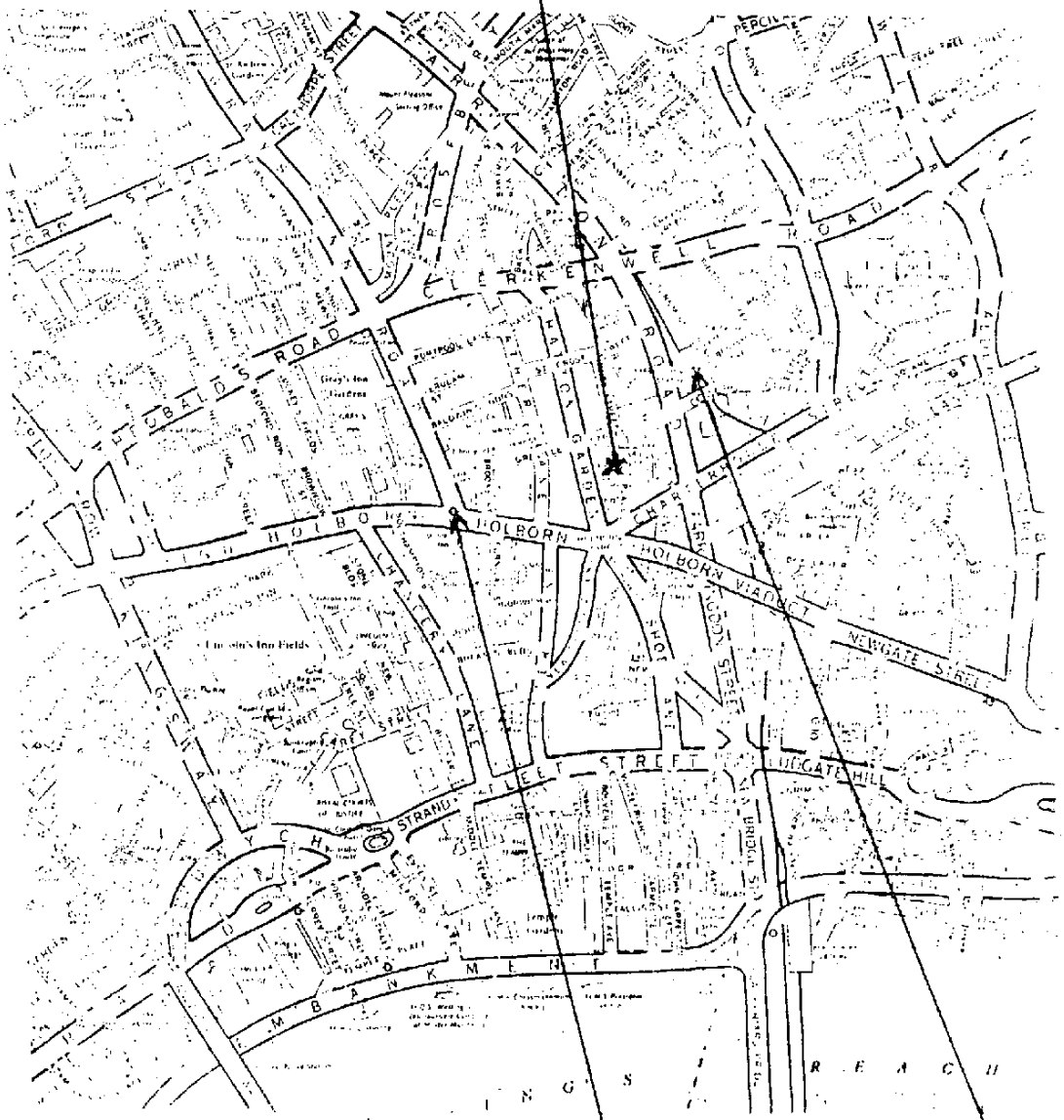

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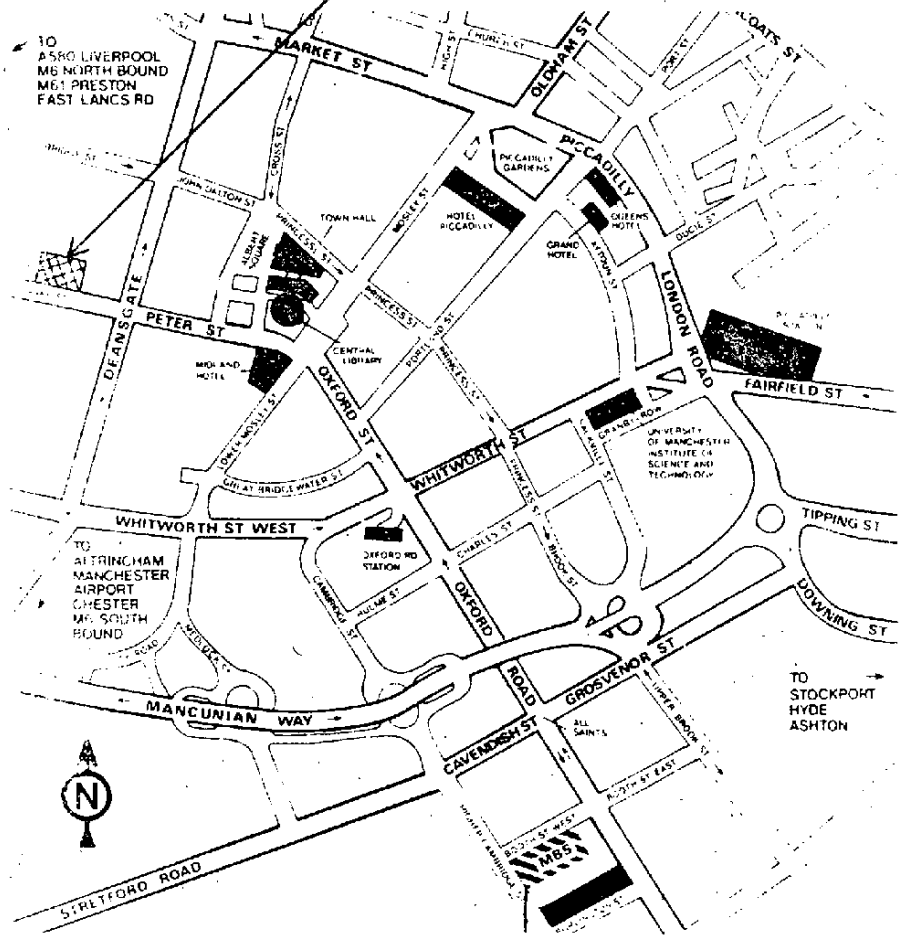

SCENARIO

NOW - The Political Environment

1 Over recent years world interest in the concept of 'facilitation' has developed - the concept of making international trade easier by rationalising and simplifying trade procedures and developing standards. The drive has come not only from the desire to cut the costly overhead that many of the outmoded procedures represent, but also from the dramatic increase in problems caused by modern high-speed transport.

2 In Britain these pressures have been especially strong, in part due to our island situation: virtually all transport in and out of Britain is of necessity intermodal. Thus we have an extra dimension of complexity to exacerbate these problems.

3 In 1968 the United Kingdom Committee for the Simplification of International Trade Procedures was established; after producing a report in 1970 on the current situation and the way ahead, the Committee was set up as the permanent SITPRO Board charged with the facilitation of international trade procedures. Over the last two years the main emphasis has been on developing international links and in co-ordinating development activities carried out by various participants in overseas trade.

4 The major international forum is the Working Party on International Trade Procedures under the auspices of the UN Economic Commission for Europe.

5 The membership of this body includes not only European nations but other major trading nations, including the US. The method of work is to delegate to member countries and organisations specific tasks fitting into the overall facilitation programme and/or take up contributions initiated by members where they fit into the pattern.

6 Thus 'INTERFACE' project has been originated by SITPRO as a key point in the task of extending the usefulness of ADP and coding. The same logic has led the ECE Committee to give such activity a prominent place on their ADP and coding programme; and following their normal policy of utilising members contributions, they are awaiting the outcome of the project with great interest.

7 There is thus not only a widespread awareness of the problems among international trade functionaries and a drive to do something about them, but also the necessary political international framework exists to receive the results of this study. Moreover, it has been the experience of NCC in other areas that far from the unapproachable, unpersuadeable image that many national and international institutions may have, they are mostly very eager to obtain feedback from the functionaries. So participants in this project have a real opportunity to influence events in this important area.

NOW - The Technical Environment

8 It is often said that goods can move faster now than the documentation that covers them. This is really a shorthand phrase for saying that the cycle-time for the documentation processing and movement is longer than that for the goods. For instance, at the French-Spanish border, where railway gauges change, it is common for goods to be transhipped faster than the documentation can be processed. Yet the standardisation of railway gauges has long been accepted as essential for efficient communications, whereas in this case it is clearly frontier paperwork which is the real bottleneck.

9 The essence of the problem is that paperwork forms the basis of almost all communication in this field. Systems to produce paper rapidly and efficiently have long existed (duplicating, photocopying, the JLCD Aligned Series, etc.) but the processing of the information on that paper cannot readily be mechanised. Some processing of paper is now, and will remain for the future, a task requiring human judgment. These are such things as commercial decisions and dealing with problems and discrepancies. Other tasks are purely routine, such as marrying up delivery notes, calculating charges, and of course the transmittal of information. By mechanising and accelerating these tasks - and perhaps providing aids for the tasks involving judgment - the right balance between transport and information cycle times can be restored and costs cut.

10 The most obvious means of mechanisation - and the ones that this project looks to - are ADP and telecommunication. All such systems require to a varying degree formalisation of the data. When such methods are applied within an organisation, it is relatively easy to formalise data by edict. But in the field of international trade we are talking about communication between organisations and between countries; here there is no body to issue edicts, there are very few accepted standards, and there are very few ADP systems.

11 Three existing systems using ADP or telecommunications deserve mention. Firstly, the airline's SITA network of low-speed (Telex) and high-speed data transmission links. In general, this is used only as an accelerated postal service; an extensive system of coding is employed, but as an aid to brevity rather than for making the information machine-processable. Secondly, LACES is a co-operative ADP scheme between the airlines, customs and the freight forwarders at Heathrow. For this there have been ad hoc formats developed

for messages and elements of information within the messages. Thirdly, there are the systems used by container operators to link their operations at home and overseas. These often cover many aspects of the whole chain, but are not by design compatible with each other.

12 Thus there are isolated 'pools' of different types: carriers of one type co-operating; different functionaries co-operating at one location, and integration of the systems of a single through operator on a route; while all are beneficial, they nevertheless remain incompatible as they stand.

13 The varied media that are in use also have a certain degree of incompatibility, in that they use different character codes and formats. With a few exceptions, though, this is no great problem, since conversion equipment is available to transfer data between media. The incompatibility between the ways of representing information at the element and message levels is far more serious: one cannot automate the translation, since frequently reference must be made to the meaning behind the information.

14 At the level of messages there is one significant characteristic of paperwork that may well be quite irrelevant to ADP messages yet which influences the approach to the problem; the ability to use mechanisation only at the production of paperwork, and not in later processing, has meant that the economical approach to passing round information has been to assemble a lot of information on one document and produce many copies. This 'broadcast' approach is far from economical when using ADP. For instance, some copies of the Bill of Lading are used solely to indicate progress: in which case the recipient wants little more than the consignment reference - instead of which he receives a package of some 50 items of information. Using ADP techniques, it might be better to compile a list from the consignment references of all Bills of Lading and pass this list to the recipient - thus producing a new message, while adhering to the roles and basic information flow that existed before. The biggest problem in following this cost effective approach is the need to maintain compatability with the manual systems.

15 It will be seen from the foregoing paragraphs that the technical problems are essentially those stemming from the environment within which ADP will function. The

technical problems which are related to hardware and software capabilities play a much less prominent role. In fact it is remarkably easy to formulate an effective solution so far as machine requirements are concerned. Far more difficult is satisfying the technical constraints supplied by the changing environment whose needs an ADP system must cater for.

FUTURE - The Technical Environment

16 In five to ten years time one can expect to see a greater mixture of media and systems in use. Paperwork systems will survive - possibly almost unchanged - for those areas where speed is relatively unimportant and where the volumes of work dealt with do not justify mechanisation. Side by side with this will be ADP systems of varying complexity. It seems likely that the stage will be reached where the majority of consignments will be dealt with on ADP systems, while the majority of participants will use paper-based systems - a state of affairs brought about by the tendency of relatively small numbers of large organisations to account for the major proportion of total flow.

17 In such circumstances there will be a considerable amount of information flowing between the ADP and the non-ADP users; it will be true both that a single consignment may be handled by both types of system, and that single participants (shippers, forwarders, carriers, etc.) will deal with other organisations using either paper-based or ADP-based methods.

18 This will mean, inter alia

- that every paper document must be capable of acting as a source for its ADP equivalent, and vice versa
- that therefore messages and documents must contain substantially the same amount of relevant information (the stress is on relevant; many documents contain irrelevant information stemming from the 'single master' approach whereby it is cheaper to photocopy 50 elements of information on one page than to select out manually the one or two relevant items)
- every participant using ADP must be prepared to receive and send out information on ADP media or on paper, according to the needs of his correspondent: it clearly must be this way round since to expect the non-ADP user to accept or produce information on ADP media is unreasonable
- where participants are communicating computer-to-computer over data links, what one of them may consider to be routine messages the other may regard as 'specials'; or a type of message that one party processes by computer, another, though having ADP,

processes manually; or again that where various standards exist, one party may be using 'Mark I' and another 'Mark II', or the difference may be local (e.g. EEC and US versions); all these conditions strongly suggest that the key to what the message is and which version it is must form part of the message itself; the alternative is to rely on organisation and discipline, which in so diverse a field - functionally and geographically - seems difficult to achieve.

19 One overall conclusion to come from these individual points, is that ADP messages will have to be rather pedantic and complete in themselves. This differs from the approach widely associated with both ADP and data transmission, that of greatest brevity and rigidity. This change - called for by the organisational complexity of the situation - is not at all out of tune with technical developments, which have changed the balance of economics so that store size and processing speeds are no longer the tight constraint that they were.

20 The resulting somewhat greater length of messages will reinforce the pressure to transmit information in ADP forms (whether by wire or by physical carriage of ADP tapes and cards), since the increasing labour cost and declining hardware cost will make keying in of data from paper more and more uneconomical. To that extent a self-perpetuating situation will occur: the pressure to exchange data directly will impose qualities onto the messages which will further increase the economic argument for data exchange.

21 All the foregoing ignores one aspect: the impact of common access data banks. This is in part due to doubts about how widely and how soon they will influence procedures: a considerable number of problems, political, technical, economic and legal have yet to be solved. It is in part also due to the fact that the advent of major data banks may have a fundamental effect on the organisation of parties in international trade - in which case the change is unlikely to happen soon enough to invalidate the work of this project. If a fundamental change does not come about, then the elements, and to a lesser extent the messages, will remain similar to those envisaged now.

22 As well as the role of an information carrier, paperwork also carries authorisation: the title to goods, permission to take goods from docks and so on. ADP media cannot do this: in concept they are more like a photocopy of title deeds - information but valueless. To some extent paperwork will

retain this role side by side with ADP media acting as information carriers. The delays and bottlenecks that this may cause will to some extent be instigated by an increasing use of blanket authorisation, analogous to the use of franking machines for mail and scheduling for National Insurance - in each case a way of avoiding coping with many individual stamps. Such an approach will create new messages, rather than have a great effect on current messages.

23 To sum up: increasing use will be made of ADP, side by size with conventional paperwork systems. The two will need to interface with each other at almost any point, which means that messages must show a high degree of generality and of compatibility with traditional documents. Paradoxically, this requirement will strengthen the case for direct exchange of data using ADP media. The most futuristic approach - the use of common access data banks - is unlikely to invalidate the current approach for many years; and the most traditional medium - paper - will continue even with ADP systems to retain the function of authorisation.

Project INTERFACE

24 The aim of Project INTERFACE is to establish a strategy for all elements and messages, and outline standards for the individual elements and messages of the JEDI Series and the IATA Waybill, which will fit into the environment already discussed. These must be substantially independent of the systems in which they will be used, since they will be used in a wide variety of systems, many of which are not even on the drawing board yet, let alone in a state where specific requirements can be known.

25 A considerable part of the project is therefore devoted to the evaluation of requirements and priorities of the participants in international trade: hence, to a large extent the existence of the Panels.

26 The information provided by members, and above all, the interaction between members, will provide us with a far more sensitive measure of what those needs and requirements are than would a very large number of individual visits, as well as providing the members themselves with a much better feel of the situation.

27 The project timescale covers seven months. Of these, the four months September to December cover the collection of information and development of ideas. The months January to March cover the finalisation of those ideas, the drafting and discussion of a report - including testing of the reaction of Panel members - and the issue of the end report.

QUESTIONNAIRE

NOTES FOR GUIDANCE

This document is intended to direct the attention of members to problem areas in international trade procedures and to provide a framework for contributions to their panel. Members are asked to take this opportunity to express their thoughts in some depth rather than on a yes/no basis. All replies will be treated in confidence and will not be used in any published documents. It is hoped that members will be able to submit their written reports at the second meeting.

The questions have been set in the context of the scenario; it is therefore essential to read the scenario before proceeding.

SECTION - GENERAL

1 Can any information processing standards be introduced to facilitate international trade procedures by one country alone, or must they be made by international agreement?

2 Who should administer the maintenance of any agreed standards?

3 Could you compare the extent to which communications problems in international trade are due to the following:

(a) the complexity of the information?

(b) the lack of an agreed way of writing things down?

(c) events and the flow of paper being out of step?

(d) statutory requirements?

4 Which messages or documents are the most difficult to communicate?

5 Do you consider that the lack of a strategy for standards for messages and elements of information has:

(a) made communications more difficult in international trade?

(b) held back the use of ADP?

6 Would you be able to use ADP more effectively with the introduction of standards?

7 Would you be willing to accept the discipline that standards would inevitably impose, which would spread beyond those areas solely concerned with international trade?

8 Are there any major matters of principle that should be taken into consideration?

9 Would you be looking to standards to improve speed or accuracy or ease of communication by ADP means?

SECTION II - SYSTEMS PROBLEMS

1 To what extent would your import, export and transport systems have to be changed to permit the introduction or extension of an automatic data transmission system, complementing the physical movement of paper?

2 Would you consider that the use of automatic data transmission lessened the confidentiality of data?

3 Would you consider the use of automatic data transmission risky due to the possible loss or corruption of information?

4 There is a point at which an innovation, however beneficial, involves too much change to be worthwhile; do you feel that the techniques alluded to in the scenario could fall into this category?

5 In any proposal, what assumption should be made about the lowest common level of equipment capability?

6 If you are part of a supra-national company, how does this affect your major systems decisions?

SECTION III - IDEAS FOR MESSAGE AND ELEMENT STANDARDS

When information is transmitted in a medium other than the printed form it must be defined precisely.

1 What principles do you consider important in:

(a) defining Messages and Elements?

(b) expressing Messages and Elements?

(c) identifying Messages and Elements?

2 How closely should messages equal current documents - or does a current document carry many messages?

3 How should one resolve the problems of national character sets?

4 What weighting should be given to the perhaps conflicting interests of:

brevity

comprehensiveness

checkability

acceptability

in considering the role of codes and descriptions in messages and elements?

5 Within the current legal/commercial framework, what would be the relationship of ADP messages to documents? To authorising signatures?

6 (a) Messages: Is it possible to agree that a message, e.g. between a shipper and forwarding agent, should always contain a minimum number of elements?

(b) Elements: Is it possible to agree that an element in a message should always contain the same items, e.g. that the address should contain the street name/town/county or state/postal code/country?

(c) Items: Is it possible to agree that an item which may be misinterpreted should be written in a standard way, e.g. the English and American ways of writing the date can sometimes confuse days with months?

7 Do any Messages or Documents stand out as needing standardisation more than any other?

8 Are there any elements that need standardisation ahead of any others:

e.g. Consignment Reference?

Commodity Code?

SECTION IV - CURRENT STANDARDS

1 Which existing conventions do you use in international trade?

2 Which have you found most useful?

3 If they have not been useful, why not?

4 If you have not used them, why not?

5 Which existing/proposed Standards are particularly relevant to this study?

(a) in itself?

(b) because of the strategy/conventions it adopted?

6 (a) Do you exchange data (for any purpose) in computer media with any of the following:

(i) within your organisation?

(ii) between organisations?

(iii) internationally?

Which of these, if any, apply to international trade procedures?

(b) Consider (a) if you don't use computer media but do use other modes of information transfer: e.g. telex, datel, facsimile.

APPENDIX 7

Individuals from the following organisations (two-thirds of whom are NCC members) have participated in the work of the study : the NCC would like to express their appreciation to both individuals and organisations involved.

Albright and Wilson
Barclays Bank
British Airways
British Leyland Motor Corporation
British Ports Association
British Railways Board
British Steel Corporation
Crown Agents
Department of Trade and Industry
Dunlop Footwear
English Calico
General Cargo Brokers
Hall Line
H.M. Customs
Imperial Chemical Industries
Institute of London Underwriters
Interbank Research Organisation
International Business Machines
International Computers Limited
Laporte Industries
Lloyds Policy Signing Office
London Carriers
Joseph Lucas Limited
Makro Cash and Carry
Manchester Liners
MAT Transport
Thomas Meadows
Mersey Docks and Harbour Company
Mettoy
Midland Bank

National Ports Council
Peninsular and Oriental Steam Navigation Company
Pilkingtons
Port of London Authority
Post Office
Ronson
Serck Heat Transfer
Shell
Smith and Nephew
Unilever
John Walker and Sons