Asia - Pacific Economic Cooperation

Initial Report

Paperless Trading Demonstration Project - Electronic Transmission of the SANCRT Message

TPT 01/2001 T

APEC Publication Number 203-TR-01.1

Prepared: January 2003

Paperless Trading Demonstration Project - Electronic Transmission of the SANCRT Message

This report was prepared by Dialectrics Pty Ltd in conjunction with Murray Goulburn Co-operative Company Limited ("Murray Goulburn") assisted by the Australian Quarantine and Inspection Services ("AQIS") in accordance with the APEC tender TPT 01/2001T.

It is the first of the series of reports required under that tender.

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ISBN 981-04-8361-9

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Executive Summary

Export processes and documents used by the Australian Dairy Industry were analysed and it was found that the key documents impacting cross border "paperless trading" are:

'Commercial Invoice', Letter of Credit', 'Bill of Lading' and 'Health Certificate'.

The Health Certificate is selected as the key to cross border "paperless trading" as it is supported by businesses and government agencies in major global economies. Further, the health certification process encompasses a wide range of food products and is the prime subject of this project.

As outlined in the "Conclusion", the Commercial Invoice is not a universal document. Changing 'Letters of Credit' and 'Bills of Lading' into electronic form needs the active participation of all involved organisations. Hence the conversion of these latter documents will take considerable effort and time to resolve.

Electronic Data Interchange, EDI, technology was originally designed to achieve transmission of documents via electronic means. However while this technology is sound it has proved to be very difficult to implement and is therefore costly. Businesses have actively pursued and found other more cost-effective methods. Similarly alternatives to the SANCRT message have been sought and found.

The Internet, initially developed for military defence purposes, now accommodates a continually widening range of information transfer through the World Wide Web. Despite many challenges, the Web is used for an increasing number of applications, including those for sensitive financial transactions, such as on-line banking.

Internet HTML developed further to become XML which is widely acknowledged as being relatively easy to use, hence inexpensive to implement.

The Australian Quarantine and Inspection Service, AQIS, has already established an E-Cert sanitary/phytosanitary certificate utilising the Internet/XML technology and is based on the New Zealand government proven application. This method of health certification offers a lower cost, reliable and more readily implemented solution to this aspect of "paperless trading".

Therefore to achieve the fundamental aims of this project, consistent with the financial and legal requirements of "paperless trading"; it is recommended the initial focus be:

Document *The Health Certificate*

Electronic communication *Internet with XML support*

Participating economies From the initially selected APEC economies, relevant trading companies who have demonstrable technical skills and have expressed willingness to actively participate in a "paperless trading" demonstration project were contacted. The result is the economies chosen to participate in the demonstration are:

Australia, Canada, Japan, and the United States of America.

Project Objective

Purpose

The purpose of the project was stated in the Request For Proposal, RFP, to the "Paperless Trading Demonstration Project - Electronic Transmission of the SANCRT Message" Tender: TPT 01/2001T paragraph 1.2 of August 2002 as:

"The purpose of this project is to identify institutional barriers to the removal of paper requirements used by the dairy industry in international cross-border trade within APEC, provide solutions and conduct demonstration activities"

Thus the project is to achieve benefits for the international APEC trading community through greater understanding and practical use of available electronic commerce technology in the supply chain.

Many of the APEC documents espouse a common set of underlying purposes for their projects. These include:

- Cooperation between partners with government agencies to develop and implement more efficient business trading systems
- Using technology to improve access to broad information sources thus enhancing economic performance.
- Introduce processes for providing information to all interested parties, particularly for regulatory procedures and associated institutional infrastructures.
- Establishing international standards and procedures to reduce costs while maintaining or improving health, safety and the environment;
- Utilise a 'supply chain' approach to develop improved efficiencies in cross border trading relationships.
- Extend the 'supply chain' within the economy to improve national regulatory procedures and promote internal competitive markets.

The focus of this project aimed at providing solutions and conducting a demonstration of "paperless cross border trading" is therefore defined by two fundamentals:

- The Australian dairy industry in international cross-border trade.
- Electronic Transmission of the SANCRT Message.

Report

Structure

The report is presented in four levels:

1. Executive Summary
2. Main body and Conclusion
3. Attachments
4. Referenced material.

The report first examines the APEC economies and their suitability for establishing "paperless trading" from the perspective of the dairy industry. The criteria for this selection is based on the various economies' present activities in electronic commerce, expressed interest and relationship to Australian exports of dairy products.

Second, the report analyses the basic export processes and the documentation required to conduct cross border trading, again with emphasis on the dairy industry. This leads to consideration of the purpose of the documents, what information is contained in those documents and how they are currently communicated between the variety of organisations involved.

As information is to be transferred electronically, the characteristics of the base telecommunications infrastructure plus the relevant transmission techniques need to be understood. The report briefly outlines pertinent characteristics of the different methods suitable for this application.

Before any conclusion can be drawn about a preferred technical solution, both the financial and legal aspects of the project need to be considered. The report outlines key financial principles including the practical documents used to ensure these principles are attained, in particular Letters of Credit and Bills of Lading. Similarly, the salient legal aspects to ensure commercial arrangements can be upheld internationally are identified.

From this background, the report outlines the present status of cross border trading documentation. A section follows this, describing the present fundamental constraints, limitations and impediments that may be encountered when endeavouring to convert the current procedures into electronic form.

The concluding summary proposes the immediate and future solutions to be addressed in more detail during the next stage of the project.

It is recognised that many of the topics mentioned are extremely complex and that it is not possible to describe in detail all the issues to any depth. Where practical, additional information to assist deeper understanding of the applicable issues has been provided in the associated attachments.

Perceived Benefits

The benefits will be evidenced through efficiencies gained by increased use of electronic commerce for practical distribution of goods and services throughout the APEC region. This will eventually directly advantage a wide range of industries involved in exporting and importing of goods such as shipping, airlines and freight forwarding. Other organisations that will be affected include transport operators, harbour and airport controllers, customs and other government agencies.

Reform of any economic system is generally aimed at delivering goods and services to the community at lowest possible cost. This usually results in simplified processes and increased efficiency in the economy's operations. Improved corporate management is another target, however removal of regulatory impediments combined with adoption of innovative processes are also needed to achieve these economic advances.

Being directed toward the APEC economies, all businesses that are involved in distribution of products in the region, either as exporters or importers, may significantly benefit from the expansion of electronic commerce services. The direct returns to those businesses are reduced costs, less time to process documents and improved information accuracy gained through reduced number of paper based documents and quicker clearance of goods as well as greater logistic efficiency.

These benefits are to be gained through a structured approach that will specifically:

1. Identify critical paper based documents used in international cross-border trade for the 21 APEC economies, centred on the dairy industry.
2. Determine and analyse barriers to international electronic transmission of core documents with possible government to government certification.
3. Define possible electronic solutions for transmission in lieu of conveying paper based documents.
4. Deliver a specific trial between an exporter and an importer in three APEC economies of an electronic Health Certificate process.

In broader terms, these benefits are expected to provide long term and wider benefits to the APEC community through:

- Lower administration costs for the participating businesses and their customers
- Reduced costs of conducting practical business transactions.
- Enhanced degree of business certainty due to improved business knowledge and adoption of better technologies, processes and management methodologies.

The project is to build on existing international documentation procedures, namely SANCRT and related work undertaken by various Australian government agencies.

In general the benefits expected have been addressed more fully in the APEC document "Paperless trading, Benefits to APEC" published in 2001 by the Australian Ministry of Foreign Trade and Economic Cooperation.

Background

The magnitude of this project may be simply understood when the time frame for electronic communication of trading documents is considered. Electronic Data Interchange, EDI, technology was developed to implement this concept in the 1980s. Since that date business has found that EDI installation is complex and therefore expensive to implement and has been continually grappling with emerging issues.

New technologies have been developed only to founder under the burdens placed upon them by a plethora of 'concerned' or 'interested' organisations. Legal, political and traditional practices have all played their roles in impeding progress. Issues, both real and imaginary, have been raised and discussed at length in world forums by learned people. While progress has undoubtedly been delayed by many of the "but what if …" attitudes, progress has also continued to be made by the unremitting demands of commercial realities aimed at achieving a competitive edge.

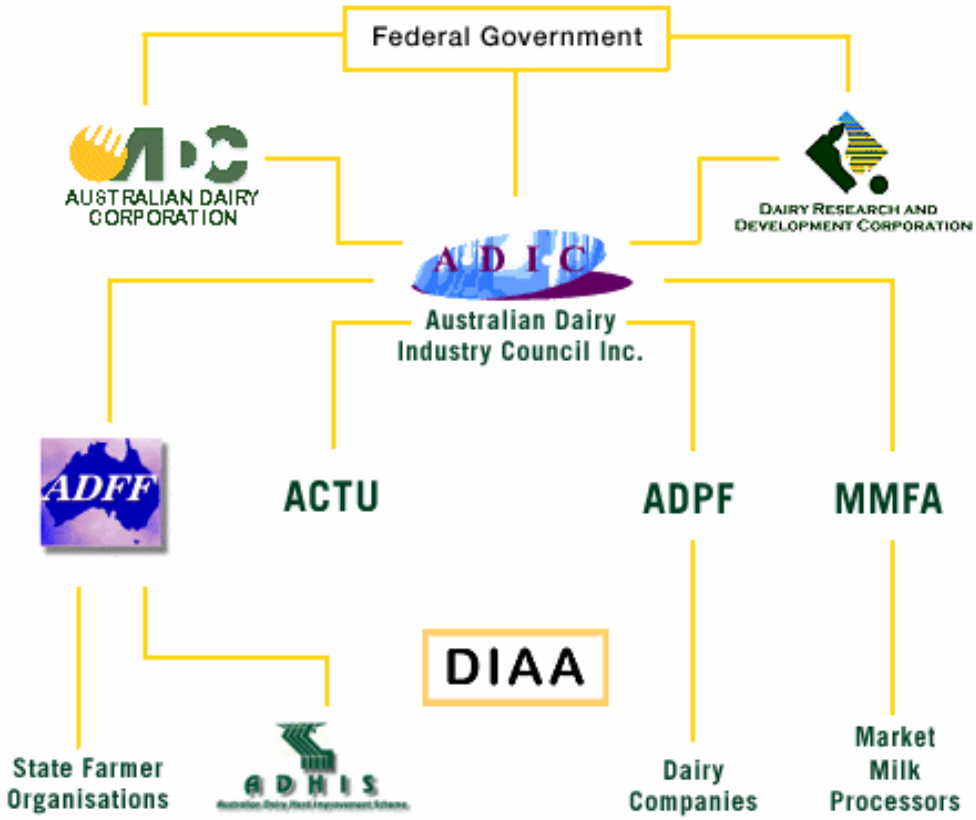
This project has been structured to take advantage of those commercial attributes. Therefore a practical result is sought that may become an example of a process that may be readily adopted by other companies and industries.

These issues may be briefly summarised into the following sequence of categories:

1. Establish the methods proposed for adoption and identify changes needed.
2. Determine any legislative and institutional changes.
3. Identify any technological barriers in a participating economy.
4. Gain acceptance and commitment of all participants.
5. Address any negative influences opposing the suggested methods.
6. Provide full information and suitable education to all participants to effectively implement operational changes.

Australian Dairy Industry

Under the Australian federal government, the Australian Dairy Industry comprises farmers, manufacturing companies and policy organisations that help coordinate and align the industry.



ADIC
The Australian Dairy Industry Council is the industry's peak policy council. It is the voice of the dairy industry on national and international policies and is independent of government. The ADIC represents all sectors of the industry. Its Full Council of 46 members has 23 members representing Australian dairy farmers, 20 members representing dairy manufacturers and traders and 3 members representing other sectors of the Australian dairy industry.

ADC
The Australian Dairy Corporation is a Commonwealth statutory marketing authority with functions and powers provided by the Dairy Produce Act 1986, as amended. The Corporation's overall goal is to improve the profitability of the Australian dairy industry.

DRDC
The Dairy Research and Development Corporation consults widely with industry to develop and implement programs that have the potential to maximise benefits from R&D to the industry and to the nation.

ADPF
The Australian Dairy Products Federation is the national organisation of manufacturers of dairy products. It was formed in 1978 and membership includes both proprietary and cooperative organisations. The primary purpose is to promote the interests of its members to State and Federal governments and the public.

ADFF
The Australian Dairy Farmers' Federation is the dairy commodity council of the National Farmers' Federation and represents the interests of dairy farmers on all national issues. The members are

Queensland Dairyfarmers' Organisation, QDO,
NSW Dairy Farmers'Association, NSW DFA,
United Dairyfarmers of Victoria, UDV,
Dairy Division, Tasmanian Farmers and Graziers' Association, TFGA,
South Australian Dairyfarmers' Association, SADA, and
the Dairy Section, Western Australian Farmers' Federation, WAFF.

ADHIS
The Australian Dairy Herd Improvement Scheme has the responsibility for calculation of the estimates of genetic merit for the national dairy cattle population.

DIAA
The Dairy Industry Association of Australia is the dairy industry's professional organisation. Members share a common interest in ensuring that Australia's dairy industry continues to be one of the most efficient and productive in the world.

ACTU
The Australian Council of Trade Unions, nominates a member to represent dairy industry employees in the industry's decision-making process on the ADIC.

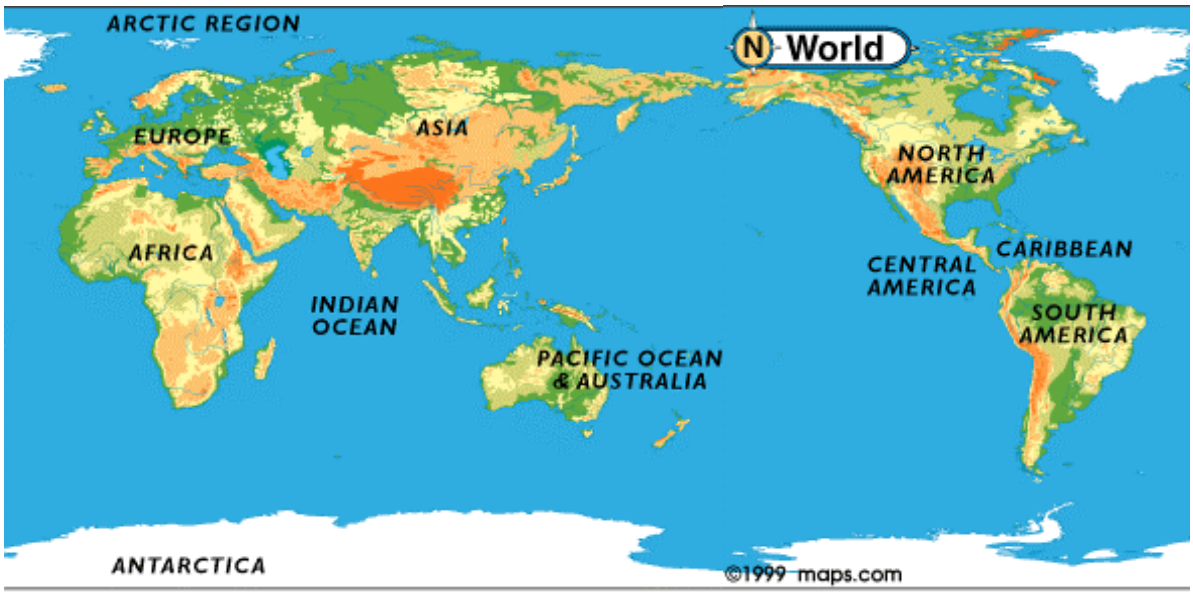
MMFA
The Market Milk Federation of Australia is the national organisation representing market milk processors and has 18 members.

Further details may be obtained from “www.dairy.com.au”

APEC Economies

APEC currently has 21 member economies located around the Pacific rim, namely:

Australia	Brunei Darussalam	Canada
Chile	People's Republic of China	Hong Kong - China
Indonesia	Japan	Republic of Korea
Malaysia	Mexico	New Zealand
Papua New Guinea	Peru	Philippines
Russia	Singapore	Chinese Taipei
Thailand	USA	Vietnam



To achieve the stated project aims it is first necessary to reduce the number of economies initially participating. This is necessary if the project is to be conducted within the shortest timeframe and thereby reduce costs in developing a demonstrable methodology for "paperless trading".

Thus the first choice in the selection process is to identify those economies that have a perceived interest in developing "paperless trading" opportunities and are focussed on the dairy industry.

The present relationship of each of the 21 APEC economies to the dairy industry and Murray Goulburn Cooperative Company Limited ("Murray Goulburn") in particular is briefly summarised in the following table:

Economy	*Basis of selection*[1]
Australia	APEC champion for project
Brunei Darussalam	Not a significant milk importer
Canada	Significant milk importer. ECERT support
Chile	Not a significant milk importer
People's Republic of China	Not a significant milk importer
Hong Kong - China	Significant milk importer
Indonesia	Significant milk importer
Japan	Significant milk importer
Republic of Korea	Significant milk importer
Malaysia	Significant milk importer
Mexico	Not a significant milk importer
New Zealand	Not a significant milk importer. ECERT support
Papua New Guinea	Not a significant milk importer
Peru	Not a significant milk importer
Philippines	Significant milk importer
Russia	Not a significant milk importer
Singapore	Significant milk importer
Chinese Taipei	Not a significant milk importer
Thailand	Not a significant milk importer
USA	Significant milk importer. ECERT support
Vietnam	Not a significant milk importer

Thus the APEC economies to be initially considered for participation in this project with the nominated Australian representative include: Canada, Hong Kong, Japan, Republic of Korea, Malaysia, Philippines, Singapore and the USA.

As a further refinement of the selection, the monetary exchange rate over the last years indicates the more stable economies with respect to the Australian economy. These variations may be expected to continue over the next few years and hence the most stable monetary platforms may be preferred as participating in the project.

[1] From the perspective of Murray Goulburn as an exporter to those economies

Exchange rate variations:

	1996	*1997*	*1998*	*1999*	*2000*
Canada	1.1	1.0	0.9	1.0	0.9
Hong Kong	6.0	5.8	4.9	5.0	4.7
Japan	85.0	90.3	82.9	73.0	64.9
Malaysia	2.0	2.1	2.5	2.4	2.3
Philippines	20.5	22.0	25.9	25.1	26.6
S Korea	628.5	709.9	887.0	762.1	681.3
Singapore	1.1	1.1	1.1	1.1	1.0
USA	0.8	0.7	0.6	0.6	0.6

Other indicators for the selected economies have been derived from Pacific Economic Outlook paper. The figures are based on their national currency:

	Real GDP				**CP1**			
	2000	*2001*	*2002*	*2003*	*2000*	*2001*	*2002*	*2003*
Australia	3.2	2.4	4.2	3.9	4.5	4.4	2.9	3.0
Canada	4.5	1.5	3.3	3.2	2.7	2.6	1.7	1.9
Indonesia	4.8	3.3	3.9	5.1	9.3	11.5	10.0	9.0
Japan	2.3	-0.0	-0.4	2.3	-0.7	-0.7	-0.8	-0.4
Malaysia	8.3	0.4	3.5	5.5	1.6	1.4	1.5	1.7
Philippines	4.1	3.6	4.1	4.4	4.3	6.1	3.6	5.2
Singapore	10.3	-2.0	3.8	4.5	0.1	1.3	1.0	1.5
United States	3.8	0.3	2.4	2.8	3.4	2.8	1.7	3.3

	Export growth				**Import growth**			
	2000	*2001*	*2002*	*2003*	*2000*	*2001*	*2002*	*2003*
Australia	10.9	0.7	3.1	10.6	7.4	-4.4	9.4	9.7
Canada	8.0	-3.8	0.5	4.3	8.2	-5.8	0.1	6.0
Indonesia	26.2	1.9	4.1	6.0	21.2	8.1	8.3	11.0
Japan	11.5	-6.9	5.6	5.4	8.5	-0.6	-1.0	4.1
Malaysia	16.1	-7.6	5.6	10.2	24.2	-8.6	7.0	10.7
Philippines	17.7	-5.2	2.1	2.7	4.0	-0.8	-1.2	1.8
Singapore	16.3	-8.8	5.6	7.0	17.9	-13.0	7.5	6.4
United States	9.7	-5.4	-1.0	8.0	13.2	-2.9	2.3	4.8

Different government departments and Chambers of Commerce operate in the various economies to help organisations with their export business. Their export assistance information is made readily available and provides a comprehensive overview of many world economies. The information includes demographic, political, social and financial overviews along with other pertinent comments about the economy.

Information about APEC economies is available from APEC and government departments such as the 'Australian Department of Foreign Affairs and Trade' plus International, British and other Chambers of Commerce.

Another step in the selection process is to contact organisations that have expressed an interest in developing "paperless trading" methodologies. For the project, this interest should be supported within the organisation so that the development work may be conducted as expeditiously as possible. Potential partners with known capability and expressed interest have been contacted as shown in the table below:

Economy	***Potential trading company***
Australia	Murray Goulburn Co-operative Company Limited
Canada	Kraft Canada Inc.
Indonesia	PT Kraft Ultra Jaya Indonesia
Japan	Mitsubishi Corporation, Foods (Products) Division
Malaysia	Premier Milk (Malaysia)
Philippines	Kraft Foods (Philippines) Inc.
Singapore	Malaysia Dairy Industries
USA	Erie Foods International Inc.

Contact was then made with these companies who have demonstrable technical skills in the e-commerce field and have expressed willingness to actively participate in a "paperless trading" demonstration project. The companies initially preferred to be participants are in the economies of:

Australia, Canada, Japan, and the United States of America.

Basic Export Processes

Introduction

The ability of business people to keep up with dynamic change by adopting new methods will have a direct influence on global economies by impacting their general standard of living. The ability to achieve "paperless trading" is a key to the present company thrust to cut costs and increase customer satisfaction by making things happen faster and more accurately.

Some economies and businesses are already grappling with these challenges and are succeeding, others have not yet attempted and are falling further behind. While the geographical locations of the trading partners may have remained fixed, other aspects of their environment are emerging to pose significant challenges, which need to be addressed. These conditions include the increasing costs associated with production and transportation of goods, often unrealistic work practices that arose when labour was relatively cheap and processes that have now become superseded because of the new technologies and methods now available.

The vast majority of businesses, even in the fully developed economies, have not yet fully explored the possibilities offered by these new technological tools. The time is now appropriate for businesses to take positive advantage of the wave of technological advances in transport and communication that has occurred. These advances continue to enhance trade between more advanced economies. For a business to remain locked into existing practices is to slowly destroy the business and its employees.

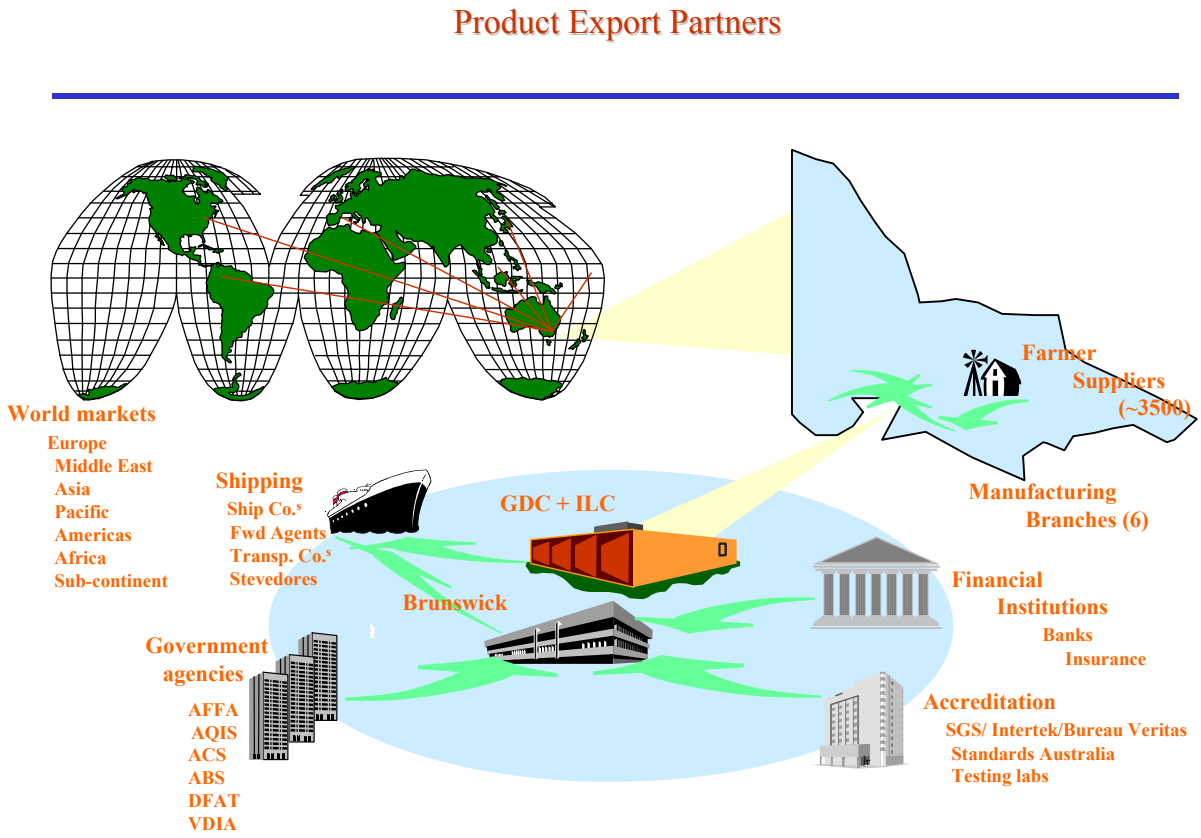
The most important reason for businesses to trade is to make a profit. The second incentive is to expand the commercial entity. The commitment to trade is a long term objective and must be planned. It is not a short term expedient to improve stationary or slow domestic sales.

International trade brings opportunities to all participating economies. Obviously trading partners with lowest costs will have a significant advantage over those businesses that have higher costs.

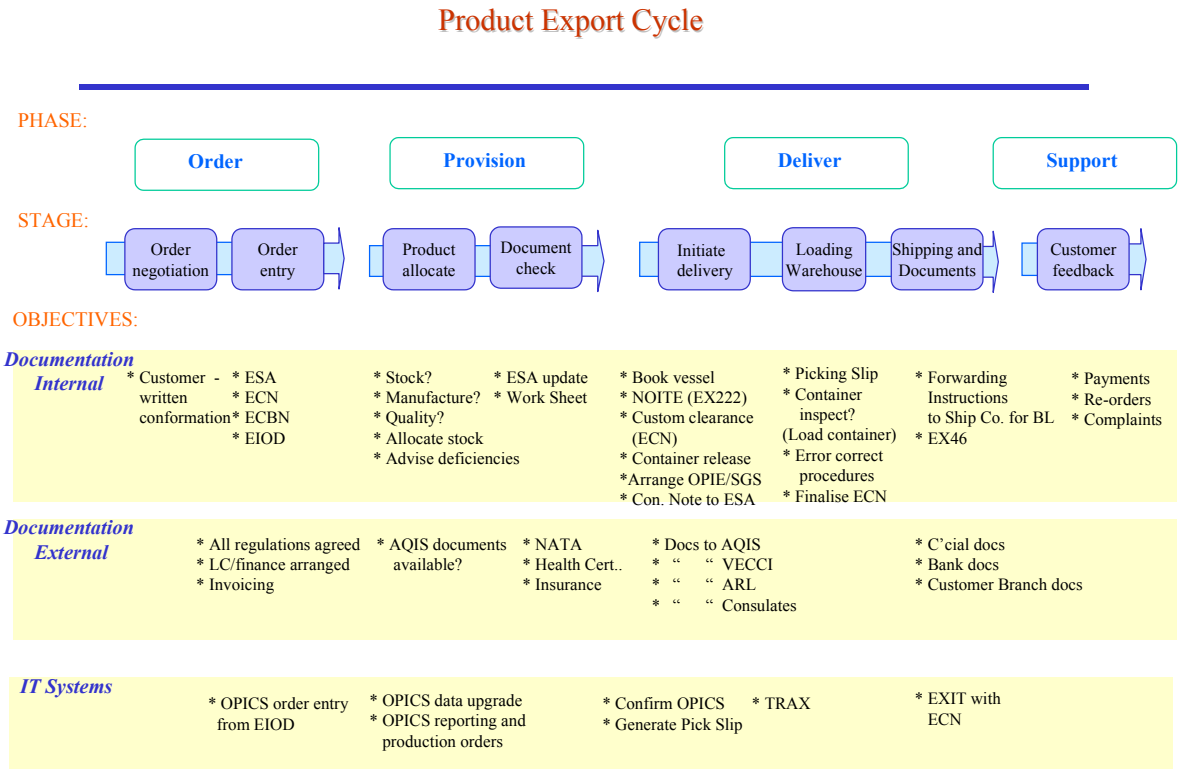
Volumes of goods may be increased with little rise in costs, new markets may be opened and profitability increased. Consider a company making a product with basic components manufactured locally to specification. They find that they can have the components manufactured more cheaply by an overseas company and import them for the final assembly. They then find because the product is now more competitively priced and has better quality that their firm may serve new overseas markets. The new increase in volume has further reduced the unit cost to the company. The company workforce was subsequently expanded to utilise higher skilled people with commensurately higher wages.

With this project, Murray Goulburn represents the Australian dairy industry and an Australian exporter and selected established clients represent their economies in the APEC region. The basic organisational groups involved in this particular trading process may be depicted:

Base Organisational Processes



The above illustration may be further detailed to show the preparation of internal and external export documentation from receipt of order to delivery of goods. These different stages are shown in broad terms to provide an understanding of the impact of technology on the preparation of all export documentation. The impact is on the speed of document preparation and also, possibly more importantly, on the accuracy of the information contained in those documents.



Basic Order Procedures

The following description of the order procedure is supplied in lieu of the conventional flowchart. It is considered that this descriptive information can be shown more clearly and in a less cluttered form than a flowchart. Such a flowchart should show all optional routes that may occur when producing documentation. These options are caused by changes in orders, ships, specification details and client requirements.

1. Exporter receives Importer/Client order. Base prices set on INCO[2] terms FOB, CFR, CIF, FIS.

2. Exporter checks special conditions or requirements including:
   - NATA documentation, DTS testing, SLSI certification, Arab Chamber of Commerce endorsement.
   - Inspection by Intertek, SGS, Bureau Veritas as requested.
   - Labelling requirements, types and locations.
   - Container seals stipulated.
   - Insurance conditions and requirements.

[2] Explanation of terms is provided in the Glossary

3. Exporter composes and sends Pro Forma invoice and acknowledgment.
4. Importer/Client arranges finance in accordance with method of payment. Base terms are clean remittance/prepayment, irrevocable Letter of Credit, documents against payment (D/P), documents against acceptance (D/A), open account.
5. Banks confirm financial settlement agreement.
6. Exporter advised by local bank of financial settlement agreement.
7. Exporter on or before shipment date:
   - Seeks any permits from appropriate regulatory authorities.
   - Applies for Export Permit and ECN through AQIS and ACS.
8. Exporter:
   - Books transport vessel and any containers.
   - Arranges for suitable labelling of goods.
   - Arranges for packaging of goods into containers.
9. Exporter transports containers with suitable documents, including the ERA, to dock after booking delivery time.
10. Goods physically moved from Exporter's dock to Importer/Client destination.
11. Exporter:
    - Sends Forwarding Instruction to shipping line.
    - Receives Bill of Lading from shipping line.
12. Exporter compiles export documents in accordance with Importer/Client requirements: Commercial invoice, Packing list, Bill of Lading, Health Certificate plus other certification and testing documentation as stipulated.
13. Exporter:
    - Sends copies of documents to Importer/Client representative within shipping transit duration – either directly (D/A) or via bank (D/P)
    - Lodges shipping documents including Bank Drafts (B/E) with local bank.
14. Exporter receives payment for goods and may strike Simple Receipt. Time of payment may occur from loading goods (pre-payment agreement) to some period after the goods have been received, (D/A).
15. Banks transfer documents to Importer/Client bank advising financial status.
16. Importer/Client representative:
    - Arranges for suitable permits to be obtained.
    - Receives documents for goods.
    - Arranges for clearance of goods with Customs.
17. Importer/Client representative presents delivery order/ release of goods documentation and unpacks goods. Goods transported to final destinations.

Note that not all documents are needed for every shipment. For Murray Goulburn the average 'document set' for an individual order comprises 8 documents each of which, on average, consists of an original and 3 copies. Each document may have one or several pages. This results in at least 32 pieces of paper for each 'document set'.

Every piece of paper contains data that is often repetitive and entered by human manual keystrokes. Nevertheless the data must be totally accurate.

Having examined the processes and procedures for producing the documents, the documents may be listed on the following pages in alphabetical order.

At this stage the present use of the documents is shown together with the recipient and how the document is conveyed to that recipient.

The actual document set required for a particular shipment depends on the destination, client requirements for that shipment and product composition.

The 'constraints' and 'limitations' of the documents are preliminary only to indicate what aspects are to be explored later, should they prove to be an actual impediment to the project objectives.

Following pages detail the data components of the information that is contained in each of the documents for further consideration.

Export Shipping Documents

The following documents are used for the export of dairy products produced in Australia for APEC markets as of 1 October 2002.

Legend: C = Courier, E = EDI, F = Facsimile, eM = E-mail, Bank/ Customer = Bank or Customer

Document	*Communicated*		*Constraints*	*Signed*
	By	*From/to*		
Bank drafts	C	Bank	Templates completed for customer requirements.	MG
Beneficiaries Certificate	C/F	Bank	OPICS[1] information, Trident[2] print.	MG
Bill of Lading	C	Shipping Co.	Hardcopy supplied from shipping company or protected image (".pdf") files printed from Internet	MG
Certificate Of Analysis a) LIMS b) NATA from DTS c) Standard	C/F	Bank/ Customer	 a) MG issued from OPICS[1] print. b) DTS issued c) MG issued from Trident[1] print.	 MG DTS MG
Certificate Of Origin a) MG b) VECCI	C/F	Bank/ Customer	 a) OPICS[1] information, Trident[2] print. b) VECCI Template completed in MS WORD, signed and E-mailed	MG
Certificate, Veterinary, Health [Sanitary] (Certificate as to Condition)	EXDOC	AQIS	Remote print from AQIS OR couriered from AQIS print	AQIS

Document	*Communicated*		*Constraints*	*Signed*
	By	*From/to*		
Certificate, Inspection [Clean report of findings] CASCO Intertek SGS Bureau Veritas	C	Bank/ Customer	Signed and mail/courier	MG
Certificate, Insurance	C/F	Bank/ Customer	AusDocs, Silicon Craft form, stamp and sign at MG	MG
Certificates, Special BSE Certificate Dioxin Certificate Radiation Certificate Temperature Certificate Halal Certificate Kosher Certificate	C/F	Customer	MS WORD document on AQIS form. AQIS sign with Health Cert.	MG
Certificate, Shipping Port restrictions Safety management	C/F	Bank/ Customer	Hardcopy from shipping company	Ship Co.
Certificates, Verification Manufacturing Certificate Production Certificate	C/F C	Bank/ Customer	OPICS[1] information, Trident[2] print.	

Document	*Communicated*		*Constraints*	*Signed*
	By	*From/to*		
Free sale Value and Origin [African]	C/F C/F			
Commercial Invoice	C/F	Bank/ Customer	OPICS[1] information, Trident[2] print.	MG
Consignment Note		MG Internal	OPICS[1] information and print.	No
Container List (Weight List)	C/F	Shipping Co. - Bank/ Customer	Trident[2] print. Used in conjunction with F.I. or used as a document for Bank/ Customer. Name only	No
Container Temperature Setting Advice	F	Shipping Co.	Photocopied paper completed by hand – no signature (Name only)	No
Cover note for forwarding Seals	C	Shipping Co.	Photocopied paper completed by hand. Name only	No
Credit Note	C/F	Customer	Trident[2] print.	MG
ECN Request to Customer	F	Customer	Photocopied paper completed by hand. Name only	No
Export Shipping Advice Export and Industrial Order Docket		MG Internal	OPICS[1] information, Trident[2] print. Customer order detail Internal work document from EIOD	No
Export Clearance Declaration	C	ACS	ECN provided via EXDOC and AQIS.	MG
Export Receival Advice (ERA)		MG Internal	OPICS[1] information, Trident[2] print. [Warehouse advise container to wharf.]	No

Document	*Communicated*		*Constraints*	*Signed*
	By	*From/to*		
Forwarding Instructions	F	Shipping Co.	OPICS[1] information, Trident[2] print. Name only	No
Insurance Declaration	C/F	Bank/ Customer	Trident[2] print from MS MS WORD template	MG
Invoices a) Caricom b) Consular – Dominican Rep	C/F	Bank/ Customer	a) MS MS WORD document b) Hardcopy from Dominican republic offices	MG
Letter of Credit	C	Bank	Image (".pdf") file generally printed from e-mailed message or from Internet	No
Order Placed on Hold Order Released from Hold	F	Warehouse	E-mail template. Name only	No
Packing List (Weight List)	C/F	Bank/ Customer	OPICS[1] information, Trident[2] print.	MG
Picking Slip			OPICS[1] information, Trident[2] print. Attached to Shipping Advice	No
Record of Documentation with AQIS	C	AQIS	Hand written on AQIS form	No
Request for Conformity (Saudi Arabia)	F		MS WORD document letter format	
Request for Export Labels	F/eM		MS WORD template when needed to print for faxing with attachments to MF Computing. Alternate e-mail message	No

Document	*Communicated*		*Constraints*	*Signed*
	By	*From/to*		
Request for NATA documentation	F/eM		Photocopied proforma, hand written. Name only Request e-mail response	No
Request For Permit	EXDOC	AQIS	No longer used by MG. Was a Trident[2]/EXDOC or ACS EXIT function.	No
Request for SGS Inspection (2 types)	F/eM	SGS	Photocopied proforma, hand written. Name only	No
Request for SLSI Certificate	F	W'house + DTS	Sri Lanka test results. Photocopied proforma, hand written. Name only	No
Request to GDC for Con. Note	F	GDC + W'houses	Photocopied proforma, hand written. Name only	No
Simple Receipt	C	Bank	OPICS[1] information, Trident[2] print	MG
Testing Services Request	F	CASCO, Intertek, SGS, Bureau Veritas	Photocopied proforma, hand written. Name only	No

1. OPICS is an internal mainframe system owned and operated by Murray Goulburn.
2. Trident is a proprietary software program used at this time by Murray Goulburn to assist in the electronic preparation of export documents.

Functionality required:

Document translation
Legalising by Embassies, Consuls, Chamber of Commerce,
Lodgment authority

General constraints:

Manual signatures
Embossing
Endorsements by local agents including Embassies, Consulates,
Dept. of Foreign Affairs and Trade, Chamber of Commerce,
Banks, Insurance companies
Legal, Religious, Government/cultural

Document Composition

The above documents are used to convey essential information between trading partners and their associates. In particular, information for the relevant financial institutions and for the carriage of goods between the trading locations. Other documents are written to provide government regulators information to act for financial, trade and environmental reasons plus assure the buyer of the quality of the goods involved in this transaction.

These documents are composed of certain data fields such as Exporter's and Buyer's names and addresses, description, type and quantity of goods. Many of the data fields are common to many documents while some are only shown on a specific document.

The following analysis shows what data fields are contained in what documents. This analysis provides a possible base for developing a different method of transmitting essential data between trading partners and the different bodies that may be associated with the trading transaction. Those data fields that are critical to the trading transaction may be more readily identified and the purpose of the documents currently used to convey this data better understood.

This approach leads to a consideration of transmitting data streams to each of the organisations involve in the trade transaction. Each organisation would receive data relevant only to its role in the transaction. How the data is presented for human reference is then a matter for that organisation. Where the data is required as a paper based document, the data may be compiled locally in a manner suitable for the purpose.

The result of such an approach would be a highly flexible and accurate system that overcomes many of the present issues that arise from variations in requirements of paper based documents used between trading economies.

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Data Field	AQIS - ACS Interface	Bank Drafts (Bill of Exchange)	Beneficiaries Certificate	Bill of Lading (From F.I., Note 1)	Certificate as to Condition (Aust)	Certificate as to Condition (USA)	Certificate Of Analysis	Certificate Of Origin (MG)	Certificate Of Origin (VECCI)	Certificate, Health (Annex B)	Commercial Invoice	Consignment Note	Container List	Container Release Request	Container Temp. Setting Advice	Export Clearance Declaration	Export Receival Advice (ERA)	Forwarding Instructions	Info.Sheet (Philippines) Note 1	Insurance Certificate (Note 1)	Intertek Testing Services Requestr	Letter of Credit Advice (Note 1)	NATA documentation request	Packing List	Production Certificate	Radiation Certificate	Request for ECNs to Customer	Request for Export Labels	SGS Inspection Request (2 types)	Simple Receipt	SLSI Conformity Certificate request
AHECC	#							#																							
Amount/price	#	#									#																				
Bank		#																													
Billing address											#	#																			
Bills of Lading, Original + no.			#				#				#							#													
Buyer/consignee name	#		#				#				#		#							#	#			#				#			
Buyer/consignee order no.			#				#				#		#											#			#				
Code/useby	#				#																			#							
Container ISO code				#									#	#			#	#						#							
Container loaded at	#		#	#				#			#							#			#			#					#		
Container No	#			#								#	#		#		#	#	#					#							
Container type	#			#									#	#		#	#	#						#							
Container weight	#		#										#				#														
Country of Origin (Supply)			#	#					#	#	#							#						#							#
Country of Destination			#								#																				
Currency	#	#									#									#											
Customs Ref. No. (CRN)											#					#								#							
Date (current)	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
Date goods available																															#
Delivery terms			#								#																				
DTS No																							#								
Endorsed Date								#																							
ETD			#	#	#	#	#	#	#		#					#		#		#	#			#	#		#		#		#
Exp. Cargo Book. Note (ECBN)				#									#					#													
Exp. Clearance Number (ECN)	#			#							#	#					#	#													
Export Permit No.	#			#	#								#					#						#			#				
Exporter name and address	#		#	#	#	#	#		#	#	#	#	#	#	#	#		#	#	#	#			#					#	#	#
Exporter Reference No.			#	#			#	#	#	#	#		#					#		#				#							
Exporter/originator name	#	#	#	#	#	#	#	#	#	#	#	#	#	#		#	#	#	#	#	#	#	#	#		#			#	#	#
FCL/PLT (Number/Quantity)	#			#							#	#	#				#	#			#			#			#		#		
Forwarding (Shipping) Agent			#	#							#	#	#					#						#							
Freight charge				#														#													
Importers Name and Address	#		#	#							#		#					#						#							#
Inspection location	#																														#
Inspection No																					#							#			

Data Field	AQIS - ACS Interface	Bank Drafts (Bill of Exchange)	Beneficiaries Certificate	Bill of Lading (From F.I., Note 1)	Certificate as to Condition (Aust)	Certificate as to Condition (USA)	Certificate Of Analysis	Certificate Of Origin (MG)	Certificate Of Origin (VECCI)	Certificate, Health (Annex B)	Commercial Invoice	Consignment Note	Container List	Container Release Request	Container Temp. Setting Advice	Export Clearance Declaration	Export Receival Advice (ERA)	Forwarding Instructions	Info.Sheet (Philippines) Note 1	Insurance Certificate (Note 1)	Intertek Testing Services Requestr	Letter of Credit Advice (Note 1)	NATA documentation request	Packing List	Production Certificate	Radiation Certificate	Request for ECNs to Customer	Request for Export Labels	SGS Inspection Request (2 types)	Simple Receipt	SLSI Conformity Certificate request
Insurance details											#									#											
Invoice (Commercial) No							#	#			#							#						#		#					#
Letter of Credit No (IAN)		#	#		#		#	#			#		#					#	#	#	#	#		#		#			#	#	#
LIMS No																							#								
Lot Code																							#								#
Manuf. branch	#							#															#								#
Manuf. Date / Product'n Date	#				#																										
Measurement			#	#			#	#				#	#					#						#	#						
MT/KLitres	#		#	#			#				#		#					#													
Notify parties	#		#	#			#		#		#		#					#		#											
Order Date			#				#				#		#																		
Payment terms											#																				
Port of destination	#			#	#	#		#	#	#	#	#	#			#	#	#		#	#			#		#			#		
Port of discharge	#		#	#	#	#	#	#	#		#				#	#	#	#	#	#				#	#	#					
Port of loading	#		#	#	#	#		#	#	#	#					#		#	#	#				#	#	#					
Port of transit	#		#	#	#				#									#													
Product code	#		#				#					#									#		#		#		#		#		#
Product description	#		#	#	#	#	#	#			#	#	#			#	#	#		#	#		#	#	#	#	#		#	#	#
QA Certificate no.																#															
Quantity	#		#	#	#	#	#				#	#						#		#				#	#						#
Seal No	#			#	#					#		#				#	#	#						#							
Ship name and company	#		#	#	#	#	#	#	#	#		#			#	#	#	#	#	#	#			#	#		#				
Shipping date	#		#	#							#							#	#	#											
Shipping reference no.			#	#											#		#	#													
Special labels (Ship. marks)	#			#	#	#	#	#			#		#					#						#	#						
Specification No					#		#																#	#							#
Temperature	#			#							#		#		#			#					#	#							
Transport method	#		#																				#	#							
Units (number)	#								#		#		#											#							
Value											#									#											
Voyage	#		#	#			#	#	#	#	#						#	#		#			#	#	#						
Warehouse												#																			
Weight - Gross	#		#	#	#		#	#			#		#					#		#											
Weight - Nett	#		#	#		#	#		#	#	#	#	#					#	#	#					#						

Notes:

1. Extra data fields required to complete this document.

Key documents

Commercial Invoice

The Commercial Invoice expects payment for the goods that have passed into the importing economy. It therefore presumes all conditions have been met and that the payment will be made. Thus this document is the conclusion, from the exporter's view, that the transaction is legally valid and enforceable when conducted in electronic form.

Because of the proposed electronic nature of the transaction, all fundamental legal elements required for that type of transaction must have been satisfied. These include security of the transaction information, electronic records and signatures imposed by the variety of statutes and regulations existing within the trading economies. Whether these records are to be maintained solely in an electronic form and if the record archives can establish the authenticity, originality and integrity of such records.

This document also signifies that all parties to the transaction have accepted all the related documents. That all these documents meet the legal requirements of the economies at all levels of governance.

Most economies still have statutes and regulations that require transactions to be "in writing" and "signed". These requirements are seen to present legal barriers to electronic transactions. Electronic records are often considered to not constitute "in writing" and an electronic signature is not a "signature" that would normally appear on a paper based document.

Thus the interest and use of encryption technology and digital signatures through Public Key Infrastructure, PKI, is growing. PKI is used for digital signatures to control the encrypting of documents with a unique "key". The message recipient is able to decrypt the document using a related public "key". These aspects are further described in the "Legal" section of the report.

The Commercial Invoice may be electronically transmitted as a request for payment provided it meets all the above criteria.

Bill of Lading

Introduction

The bill of lading document contains the description, quantity and condition of the goods to be transported. It is used by the carrier as a receipt for the goods and acts as a contract while the goods are in the possession of the transporter. Due to the long history of the document it has significant legal implications.

BILL OF LADING FOR COMBINED TRANSPORT SHIPMENT OR PORT TO PORT SHIPMENT BL 3 (Rev5/00)

Shipper
MURRAY GOULBURN CO-OPERATIVE CO.
LIMITED 140 DAWSON STREET,
BRUNSWICK, VICTORIA 3056
PO BOX 4307, MELBOURNE 3001
AUSTRALIA ABN 23 004 277 089

B/L No.: ANL

Reference:

PAGE OF PAGES

Consignee or Order
TO ORDER.

The French Line

COPY NON-NEGOTIABLE

Notify Party/Address. It is agreed that no responsibility shall attach to the Carrier or his Agents for failure to notify (See Clause 11 on reverse)

Place of Receipt (Applicable only when this document is used as a Combined Transport Bill of Lading)

Ocean Vessel

Place of Delivery (Applicable only when this document is used as a Combined Transport Bill of Lading)

Port of Loading
MELBOURNE, AUSTRALIA

Port of Discharge

Marks and Nos; Container Nos;	Number and kind of Packages; description of Goods	Gross Weight (kg)	Measurement (cbm)
FREIGHT PREPAID SHIPPED ON BOARD SHIPPERS LOAD AND COUNT			

ABOVE PARTICULARS AS DECLARED BY SHIPPER, BUT NOT ACKNOWLEDGED BY THE CARRIER (see clause 25)

* Total No. of Containers/Packages received by the Carrier
FIVE CONTAINERS

Movement
CY/CY

Freight and Charges (indicated whether to be prepaid or collected) :

Received by the Carrier from the Shipper in apparent good order and condition (unless otherwise noted herein) the total number or quantity of Containers or other packages or units indicated in the box opposite entitled "*Total No. of Containers/Packages received by the Carrier" for Carriage subject to all the terms and conditions hereof (INCLUDING THE TERMS AND CONDITIONS ON THE REVERSE HEREOF AND THE TERMS AND CONDITIONS OF THE CARRIER'S APPLICABLE TARIFF) from the Place of Receipt or the Port of Loading, whichever is applicable, to the Port of Discharge or the Place of Delivery whichever is applicable. One original Bill of Lading, duly endorsed, must be surrendered by the Merchant to the Carrier in exchange for the Goods. In accepting this Bill of Lading the Merchant expressly accepts and agrees to all its terms and conditions whether printed, stamped or written, or otherwise incorporated, notwithstanding the non-signing of this Bill of Lading by the Merchant.

Freight payable at	Place and Date of issue
MELBOURNE	MELBOURNE
Number of Original Bills of Lading 3 / THREE	IN WITNESS of the contract herein contained the number of originals stated opposite have been issued, one of which being accomplished the other(s) to be void. ANL CONTAINER LINE PTY LIMITED A.C.N. 083 962 136 ABN 41 083 962 136 AS AGENT FOR CMA CGM S.A. THE CARRIER

ICS
CT B/L
April 78

Shippers declared value
Subject to extra freight as per tariff and clause 22 of this B/L

Jurisdiction: see clause 30 on the reverse side of this Bill of Lading

The most common form of document is a multi-part, non-negotiable Bill of Lading. Due to their 'standard' nature, shipping companies generally use preprinted forms that contain the contract terms and conditions in great detail on the reverse side.

The process of producing a Bill of Lading appears contrary to normal contractual processes where a buyer issues a purchase order and the seller can negotiate the terms of sale before a contract is formed. When an exporter contacts the potential transporter the terms or conditions of the service are stipulated.

The original information content for the Bill of Lading is prepared by the exporter in terms of a Forwarding or Shipping Instruction that is conveyed to the transporting company. That company now constructs a document on the basis of that supplied information. A draft of the Bill of Lading is then returned to the exporter for checking. The exporter must now ensure the accuracy of all details contained in the final Bill of Lading document. Some 30% of draft Bills of Lading are returned to the transporting company for correction, only about 2% need further correction.

Once the Bill of Lading composition process is complete, no person has the authority to review, negotiate or modify the document.

Changing the format or form of a transport company's Bill of Lading is a major issue. As most transport companies or shipping organisations operate on a global scale, the possibility of direct contact with head offices to change their entrenched policies and procedures is remote. Practices established over years are slow to change.

Murray Goulburn Activities

In late 1999, Murray Goulburn sought to enhance the existing processes and approached the major shipping companies with a proposal to have the responsibility to be able to remotely print shipping companies' Bills of Lading.

As Australia's largest exporter of dairy products, Murray Goulburn uses the services of many shipping companies. The company wanted to harmonise some of their key export shipping documentation procedures by adopting a common processing methodology in the rapidly changing electronic environment. After examining several methods proposed by various shipping companies, it was found that one particular model best suited the documentation processes both in the shorter and longer term.

The immediate aim was to adopt electronic methods relating to Bill of Lading documentation from submission of Forwarding Instructions to printing and acceptance of the final Bill of Lading. This was to be achieved by utilising e-mail and the Internet for communication between Murray Goulburn and its business partners.

Murray Goulburn proposed that:

a) The present facsimile communication of Forwarding Instructions to the shipping companies to be retained for an initial period.

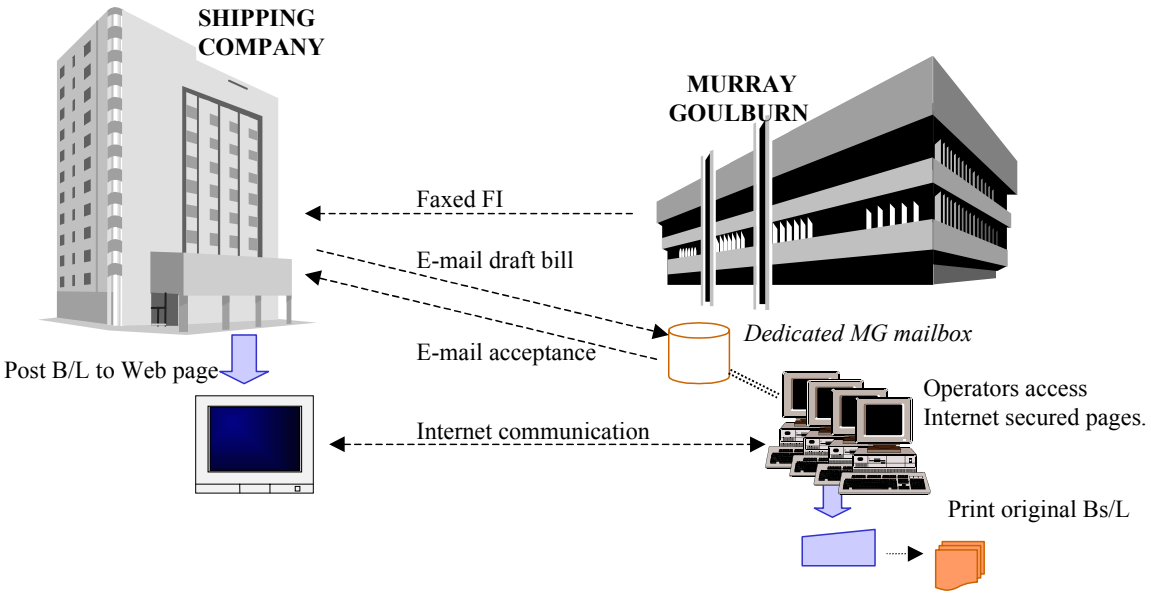
b) Shipping companies prepare a draft Bill of Lading from the Forwarding Instruction and communicate this via e-mail to a dedicated e-mailbox at Murray Goulburn. Several operatives within Murray Goulburn may access this e-mailbox and therefore the load is spread over several people and the documents more rapidly accessed.

c) Murray Goulburn make any amendments, corrections and approvals, then return the document to the shipping company again using e-mail to a nominated e-mail box at the shipping company. The reply is then simply initiated using the "reply to sender" option on the received e-mail. Any amendments required are typed in the e-mail separate to the draft bill, which is not altered in any way. If a new draft Bill of Lading is not required, this is stated in the e-mail, otherwise a new draft will be sent automatically. If no amendments are required this is stated in the e-mail and the Bills of Lading are therefore ready to be issued after vessel departure.

d) The shipping company then posts the finalised Bill of Lading to a suitably secured page under the shipping company Home Page on the Internet. Simultaneously, or before the posting, the shipping company will notify Murray Goulburn of the Internet posting by e-mail to that dedicated mailbox.

e) Murray Goulburn may then print the necessary number of original, non-negotiable and other advices on special shipping stationery or other paper as previously agreed with that specific shipping company. The set of originals would be digitally signed so that they are suitable for acceptance by the banks.

The following simple diagram illustrates model outlined:



For Murray Goulburn, the main benefit is the access to the draft Bills of Lading earlier than previously possible. This facilitates the company operatives in replying to the Bill

of Lading and preparing the associated export documentation using the most consistent and uniform method. Any delay in notifying availability of a Bill of Lading is reduced.

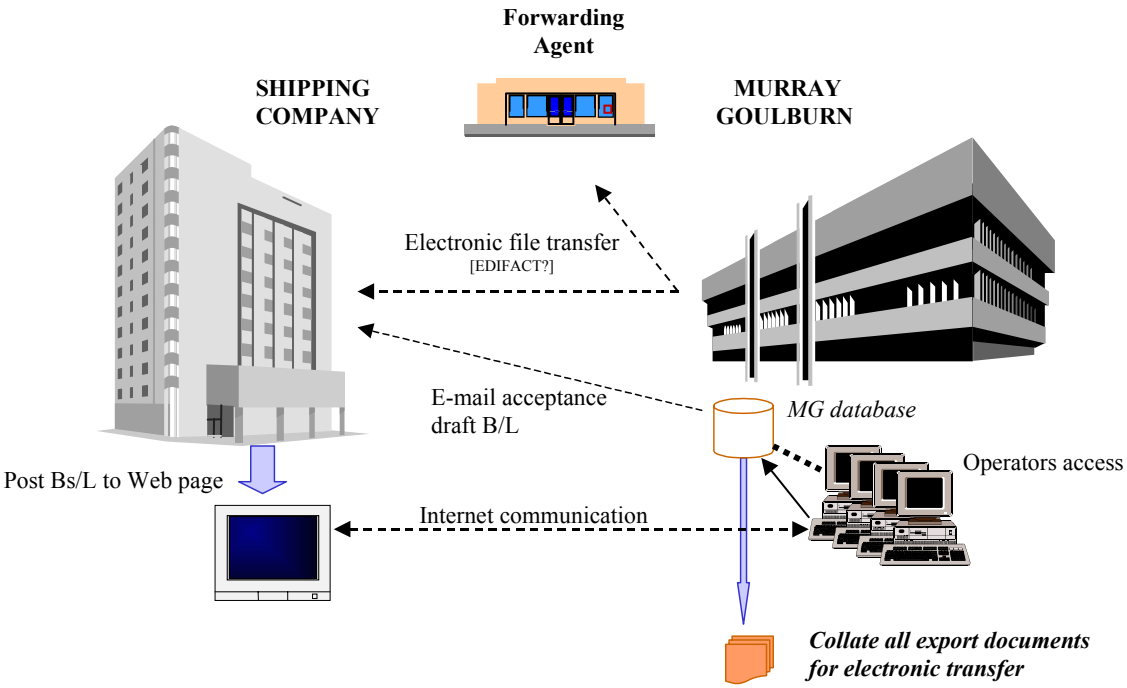
For the shipping companies, the potential benefits are the possible automation of conveying incoming information from their present systems through to customers and hence providing an enhanced service. Cost of notifying customers of the availability of the Bills of Lading is lower due to less manual intervention in the overall process.

As this process has proven successful, the objective now is to further develop and expand this electronic methodology.

Using electronic techniques that have been available for some years, it is proposed that Murray Goulburn electronically transmit the Forwarding Instruction in a suitably agreed format to the shipping organisation.

It is expected that the shipping company would then electronically process the data contained in the Forwarding Instruction into the relative Bill of Lading. This procedure is seen to save significant costs in terms of time and labour, plus reduce errors in document preparation.

Thus the initial diagram is to be slightly changed to become:



It has been proposed that the Bill of Lading received from the shipping company's secured Internet site be electronically transferred to a suitable file location in the Murray Goulburn export database in lieu of being directly printed. This change would permit

the Bill of Lading to be compiled into a complete set of collated export documents in electronic form.

In summary, the aim is to achieve full electronic preparation and communication of documents transferred between Murray Goulburn, the exporting company, and the shipping lines as the transporting company. The information is therefore required to comprise structured data in a computer recognisable form. Further, Murray Goulburn seeks to implement the simplest, consistent and most robust practical system. This system is also expected to be the lowest cost commensurate with maximum benefits to all participating organisations. The practical solution should employ generally available techniques as distinct from proprietary methods.

Bills of Lading may use special paper that includes signatures, company logos and Terms and Conditions. It is therefore proposed that shipping companies consider changing their Bill of Lading formats to permit remote printing under suitably agreed security so that appropriate copies may be electronically communicated to the responsible organisations involved in that specific transaction.

Letters of Credit

Introduction

A Letter of Credit, L/C, is considered one of the most secure means of obtaining prompt payment for sale of goods. However experienced trading companies know that the payment process is the most difficult to manage. Documents, which are required under a L/C, may not meet the strict compliance standards required by the banks for payment. Sometimes banks apply the L/C rules very narrowly to avoid payment. Courts have upheld some of these decisions on the basis that the seller has not strictly complied with the terms of the L/C.

Over many years, trading companies have attempted to overcome the difficulties of the payment process using L/Cs, which has resulted in a range of differing L/C structures, together with special terminology. A more detailed description of these variations is provided in Attachment 1.

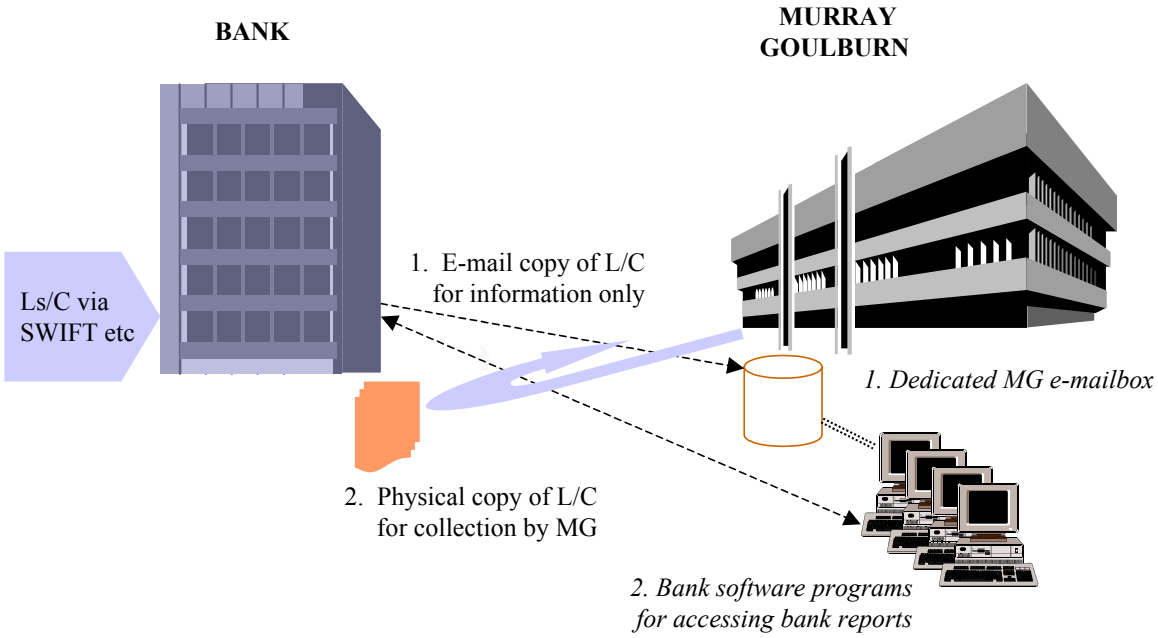
The **Confirmed Irrevocable Letter of Credit, L/C,** is the most commonly used form of L/C. The following example of such a L/C is shown in the full basic SWIFT format as it is transmitted between banks to convey the information. The difference in the presentation of the information here to that which appears in the paper based format may be noted.

```
00MAR23  14:44:08                                    Logical Terminal BG25
MT S700              Issue of a Documentary Credit                Page 00001
                                                                  Func OSATS
MSGACK  DWS765I Auth OK, key B199121907DE71EC, CHASAU2X SDBKPHMM record
Basic Header         F  01 CHASAU2XAMTD 5991 815773
Application Header   O 700 1316 000323 SDBKPHMMPXXX 2511 349617 000323 1616 N
                               *SOLIDBANK CORPORATION
                               *MANILA
User Header          Service Code     103:
                     Bank. Priority   113:
                     Msg User Ref.    108:
                     Info. from CI    115:
Sequence of Total    *27    : 1 / 2
Form of Doc. Credit  *40 A  : IRREVOCABLE
Doc. Credit Number   *20     :
Ref. to Pre-advice    23     :
Date of Issue         31 C   :
Expiry               *31 D   :
Applicant Bank        51     :
Applicant            *50     : CONSOLIDATED DAIRY AND FROZEN FOOD


Beneficiary          *59     : MURRAY GOULBURN CO-OPERATIVE
                               CO. LTD. - 140 DAWSON ST.,
                               BRONSWICK VICTORIA 3056
                               MELBOURNE 3001 AUSTRALIA
Amount               *32 B   :              Currency USD Amount 81.600,
Pos. / Neg. Tol.(%)   39     :    /
Max. Credit Amount    39     :
Add. Amount Covered   39     :
Available with/by    *41 D   : ANY BANK
                               BY ACCEPTANCE
Drafts at ...         42 C   : 90 DAYS AFTER B/L DATE
Drawee                42 D   : ISSUING  BANK
Mixed Paym. Details   42     :
Deferred Paym. DET.   42     :
Partial Shipments     43 P   : ALLOWED
Transshipment         43 T   : ALLOWED
Loading in Charge     44 A   :
                ANY AUSTRALIAN PORT
For Transport to ...  44 B   :
                MICP,MLA, PHILIPPINES
Latest Date of Ship.  44 C   : 000521
Shipment Period       44     :
Descript. of Goods    45 A   :


Documents required    46     :
Additional Cond.      47 A   :
                ALL SHIPPING DOCUMENTS SUCH AS BUT NOT LIMITED TO BILL
                 OF LADING (B/L) AIRWAYBILL (AWB) OR POSTAL RECEIPT
                 MUST LEGIBLY CONTAIN  THE L/C NUMBER PERTAINING
                 TO THE SHIPMENT.
                INSURANCE COVERED BY BUYER.
                B/L/AWB DATED PRIOR TO LC OPENING DATE NOT ACCEPTABLE.
                GOODS ARE SUBJECT TO THE PRESCRIBED SGS PRE-SHIPMENT INSPECTION
                 ONLY FOR SHIPMENTS EFFECTED ON OR BEFORE MARCH 31, 2000, IN
                 WHICH CASE, BENEFICIARY'S CERTIFICATE TO THIS EFFECT IS
                 REQUIRED.
```

Murray Goulburn Activities

In March 2000, Murray Goulburn proposed an innovative means of acquiring the information contained in Letters of Credit using electronic communication techniques. This method, now implemented between Murray Goulburn and participating banks, has proved very successful in practice with significant benefits to all organisations.

As Australia's largest exporter of dairy products, Murray Goulburn uses the services of many banks. Therefore the company constantly seeks to facilitate their key banking procedures. The company has focussed on adopting a common method of processing Letters of Credit for export payments that has proven to be very successful and benefits both the banks and the company. This is based on the following simple diagram:



When the bank receives a Letter of Credit, it conveys the information by e-mail to a special dedicated Murray Goulburn e-mailbox. An appropriately secured copy of the Letter of Credit, such as a TIFF file, is simply attached to the e-mail message. Murray Goulburn have committed to undertake due care to implement and operate this process. This e-mail alerts the company that a physical Letter of Credit is available.

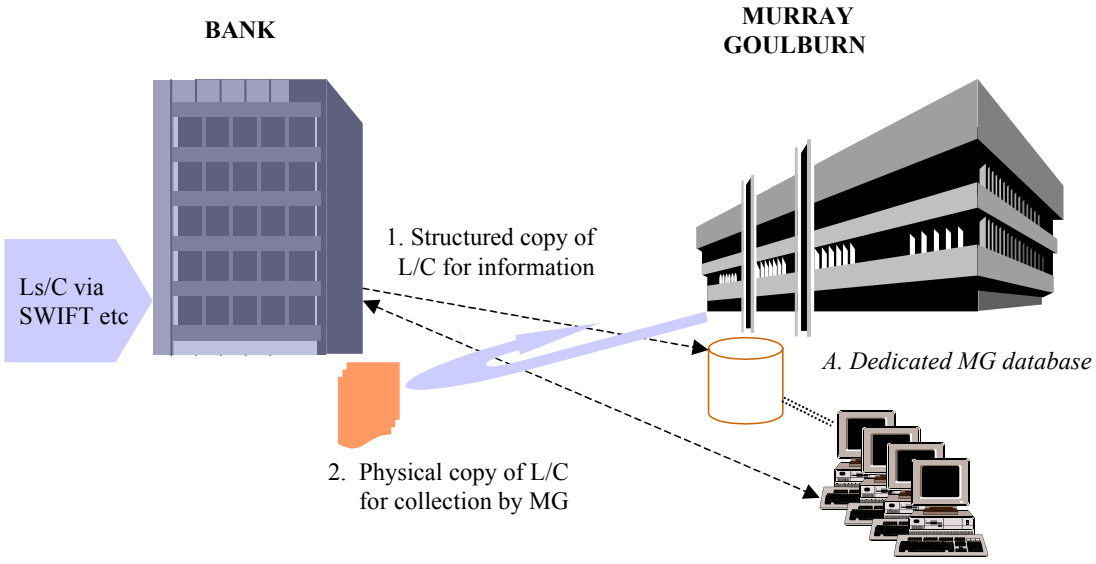
Murray Goulburn benefits by gaining information about the Letter of Credit earlier than previously possible. This information facilitates preparation of export documentation using consistent methods and minimises any delay in gaining the Letter of Credit.

Banks receive the benefit of automating information transfer from their present systems, such as SWIFT, through to customers, hence providing an enhanced service. Costs of notifying customers of the availability of the Letter of Credit are lower due to less manual intervention in the overall process.

The Letter of Credit provides information used in several export documents. Currently this necessitates the Murray Goulburn operatives reading the Letter of Credit, noting the information relative to the export document they are preparing and then keying the data into the appropriate part of that document. This is a very labour intensive operation and obviously prone to error.

With the electronic techniques that have been available for some years, this tedious method may be easily avoided. It is therefore proposed that the banks send a copy of the structured document directly to a suitably configured database at Murray Goulburn. The SWIFT structure is already a computer-accepted format however Murray Goulburn do not want to be connected in any way to the SWIFT network. Therefore it is suggested that a simple mechanism be established, similar to the present system, to forward a structured document to a Murray Goulburn database file.

Thus the diagram is slightly changed to become:



To achieve the information in a structured form from as many banks as possible, Murray Goulburn now seeks to implement the simplest, consistent and most robust practical system. This system to be the lowest cost commensurate with maximum benefits to all participating organisations.

The fundamental aim is to collect the data contained in a Letter of Credit so that the data may be transferred into the appropriate export documents with minimum human involvement and maximum efficiency. The present process has proven successful, hence the direction is to expand on this methodology.

Health Certification

Introduction

As a significant exporter of primary produce, Australia must provide a reliable and acceptable quality assurance for all food products being imported to overseas economies. The definitions of the quality assurance are contained within a "Health Certificate" issued by the Australian Quarantine and Inspection Service, AQIS.

For meat products, this certification may contain the method and means of killing and preparing the product such as required by a Kosher or Halal certification. Certain dairy products may also required similar certification when shipping to specific areas.

AQIS is concerned in expediting export clearance from Australia of all animal, agricultural and fish commodities to the importing economies. To facilitate this certification process, AQIS has taken several key initiatives in electronic commerce as outlined below.

Murray Goulburn Activities

The "Health Certificate" issued by AQIS is an essential component part of export documentation for dairy products. Murray Goulburn work closely with AQIS to expedite this key document.

Murray Goulburn may use either of two methods to achieve suitable certification for their shipments:

- A Murray Goulburn employee enters all details of the shipment into the AQIS EXDOC program, including those special details required for the Health Certificate. AQIS check that these details are correct and, if they agree, authorises the shipment by endorsement of the information in EXDOC. The Health Certificate, complete with scanned signature, may then be remotely printed at Murray Goulburn premises by an AQIS authorised Murray Goulburn staff member.
- Alternatively AQIS notify Murray Goulburn that they have printed the Health Certificate and it is available to be physically collected.

Any errors or omissions may be corrected in EXDOC.

Where the conditions stipulate a veterinarian signature to be fixed to the Health Certificate, the certificate will be completed by AQIS and Murray Goulburn will be notified when it is ready for physical collection.

New Zealand

The Dairy Electronic Certification system was introduced to provide government to government assurance of the compliance of New Zealand's meat and seafood export products and to help reduce instances of fraud in the export meat and seafood sectors.

The New Zealand dairy industry exports about $8 billion worth of product. This quantity is about a quarter of New Zealand's total value of exports.

Dairy electronic certification was conceived as a mechanism to:

- Increase the robustness of the pre-certification verification checks
- Improve the efficiency of the Export Certification process
- Reduce the total cost of certification
- Reduce risk and errors
- Provide a means to improve the quality and range of data from which to make strategic decisions
- Streamline and integrate multiple data sources to provide a seamless and cost effective service to those involved with the dairy industry

"Dairy E-cert" is the electronic export certification program for exported New Zealand dairy produce. It is administered by the Ministry of Agriculture and Forestry, MAF, Food Authority - Dairy and Plant Products and is accessed through the Internet. It assists MAF to manage its official assurances program whilst enabling the dairy industry to effectively and efficiently handle export certification documentation.

When the dairy product exporter applies for an Export certificate, the content of that certificate is checked by an independent third party who is knowledgeable about the exporter's premises and their products. If the content of the draft certificate can be verified, a formal Export Certificate is created. Otherwise the exporter is advised of any changes that need to be made before a Certificate can be approved.

The information contained in the certificate commences from the first stage of the finished meat production process. This provides a full audit trail for the product. However the history includes a lot of information such as consignor premises that may inadvertently not be displayed in the total dated process history. These types of omissions or errors can lead to delays in information transmission and issuing of the necessary certification.

The result is a Dairy E-cert database which stores the request/application, the approval and the content of the export certificate. The Dairy E-cert now becomes an integral and critical part of the New Zealand process for exporting dairy products.

Implementation of the program was planned in two phases. The first phase was to create an export certificate by August 2001 and the second phase was to automate some verification functions by July 2002.

AQIS

AQIS developed its' EXDOC electronic documentation system for edible meat exports in 1992 and has since included other animal, agricultural and fish commodities.

In 1994 AQIS worked with their associated agencies in the United States of America and New Zealand to develop the electronic equivalent of certificates required for those exports. They developed an electronic version of the sanitary and phytosanitary certificates which received approval through the United Nations Electronic Data Interchange for Administration, Commerce and Transport, UN EDIFACT, message design standards. SANCRT, as the message was called was concluded in April 1994.

AQIS actively support the removal of paper based documents from export activities in many fora. Since March 1998 all Australian edible meat shipments to Japan have been cleared by the electronic SANCRT equivalent to the Health Certificate. Similarly importers and import clearance authorities in other overseas economies also have the opportunity to gain significant trading advantages. Other exporting economies may gain substantial benefits by using the techniques developed in this project.

The use of the SANCRT message has lowered transaction costs by simplifying the quarantine process and reducing the time required to prepare export certification. Because the SANCRT message is transmitted directly between government agencies, the possibility of tampering with or falsifying the data is significantly lessened.

In 1998 a ‘single window’ of entry to Government was added to the EXDOC program. The Single Electronic Window, SEW, allows the exporter using EXDOC to apply directly to the Australian Customs Service for an Export Clearance Number, ECN. This process avoids the need for duplication of data entry between the AQIS EXDOC system and the Australian Customs Service EXIT system.

Electronic transmission of certification has the fundamental benefits of:

- Reduced transaction costs by simpler process and decreased time to produce the requisite certification.
- Reduced hacker hazard by transmitting directly between government bodies.
- Quicker clearance resulting in faster funds transfer between traders.

Proposed Actions

AQIS are now actively seeking to implement an Australian version of the E-CERT Health Certificate with the United States of America and Canada. This will be based on the New Zealand model however it will significantly differ, as the history of the product will be kept separate from the Health Certificate itself. This will reduce the transmission times and provide a more effective and efficient service.

Following the Food Safety Quadrilateral held in Hawaii in April 2002, Australia and New Zealand agreed to develop a joint electronic certification messaging system, to be known as E-cert.

A specification document entitled "EceDEx" has been drafted which will be suitable for use by all exporting economies for development of automated export documentation messaging systems.

The critical elements of this "standard" are the ability to view certificates on-line via the Internet in an agreed XML format for transfer of certification data. All countries will be able to interactively view certificates on-line and have the facility to accept, reject, detain or request a replacement electronically.

The agreed E-cert approach provides importing countries with two options for accepting certification electronically.

- Countries with developed infrastructure will be able to integrate certification data, in XML format, into their automated import management systems for processing and bypass the web entirely if desired.
- Countries using the web will be able to download and print the certificate data viewed on the screen.

Initial trialing of E-cert will be available through the provision of user logon IDs and passwords to the E-cert environment of the exporting country. Countries would then indicate when they are ready to commence a pilot, during which time the electronic and paper systems will run in parallel. Importing countries will have the discretion of continuing to receive paper certificates until satisfied that only the electronic certification is required.

The E-cert development will cover all traded food commodities, including meat, seafood, dairy, horticulture and grain products and animal by-products such as trophies, hides and wool plus inedible meat products including pharmaceutical products, pet food, rendered meals and tallows.

The Australian development, which is proposed for completion in mid 2003, will cover all of these commodities except inedible meat products which will be included later.

New Zealand will initially provide functionality for meat, seafood and by-products, with dairy following in the short term and plant products following later.

Australia and New Zealand have agreed to jointly approach trading partners to promote the adoption of E-cert. The initiative will be promoted both bilaterally and via multilateral fora as opportunities arise, such as relevant APEC meetings and sub-committees of Codex.

E-cert provides an unprecedented level of certificate security as the data is retained on a secure website within the exporting country that is protected by suitable security firewalls. Transmission of data is protected by Public Key Infrastructure (PKI) encryption using the HTTPS or SFTP secure transmission protocols. Logons to E-cert will be country, authority and commodity specific with an additional qualifier of port of inspection if required.

Authorities at the port of discharge will have read only access to respective certificate data, while staff at ports of inspection will have the ability to process certificates on the web to advise the results of product disposition.

Information Communication

Fundamentals

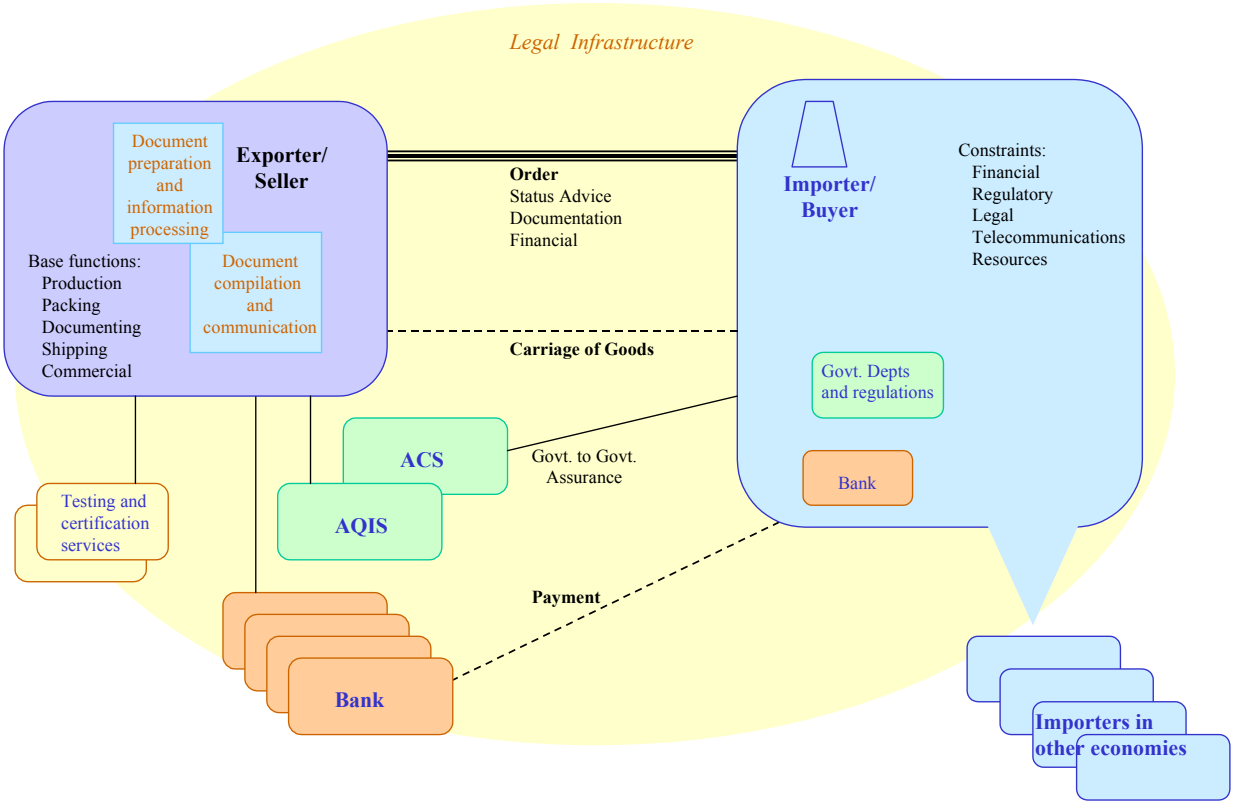
The previous section outlined the fundamental processes, documents and information needed between trading partners to achieve the present cross border transfer of goods.

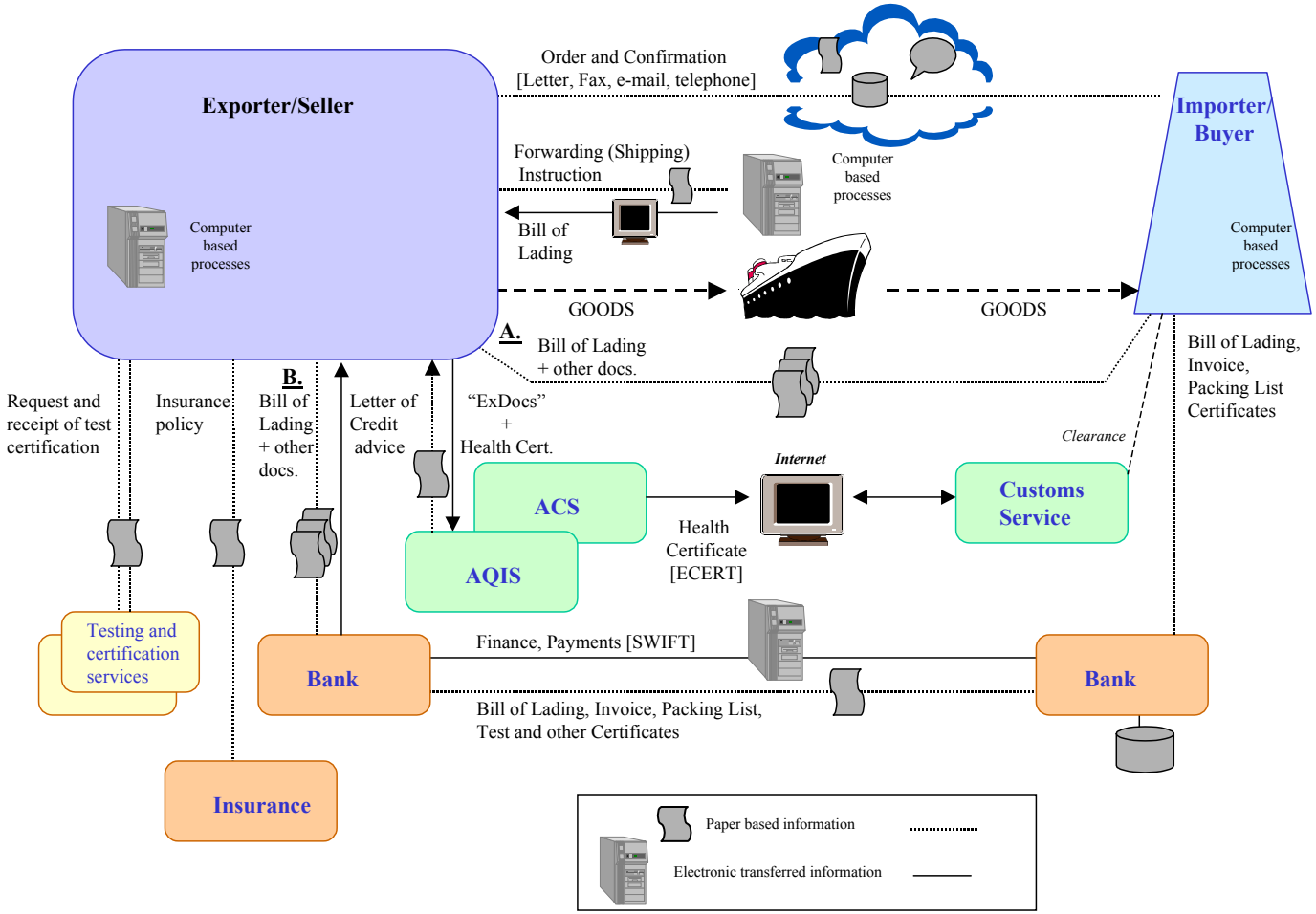
The focus of this section is on establishing what is essential information and how that information is currently communicated and by what routes and technologies. From this understanding, new methods may be proposed, issues identified and these challenges quantified as far as practicable.

The key processes have been simplified to the core fundamentals of:

a. The seller receiving an order from a buyer for defined goods for a known price.
b. Those goods provided to a carrier for transfer to the buyer.
c. The seller receiving payment for those goods under agreed terms.
d. Conforming to the legal and regulatory framework in the trading economies.

This core concept may be simply illustrated and then expanded on the page following:




Exporter/Seller
Computer based processes
Order and Confirmation [Letter, Fax, e-mail, telephone]
Forwarding (Shipping) Instruction
Bill of Lading
Computer based processes
Importer/ Buyer
Computer based processes
GOODS
GOODS
A.
Bill of Lading + other docs.
Bill of Lading, Invoice, Packing List Certificates
Request and receipt of test certification
Insurance policy
B.
Bill of Lading + other docs.
Letter of Credit advice
"ExDocs" + Health Cert.
Clearance
Internet
ACS
AQIS
Health Certificate [ECERT]
Customs Service
Testing and certification services
Bank
Finance, Payments [SWIFT]
Bank
Bill of Lading, Invoice, Packing List, Test and other Certificates
Insurance
Paper based information
Electronic transferred information

The following points may be observed in the diagram:

1. The solid lines represent current electronic document communication. The broken lines indicate paper based information communication.
2. "Orders" are shown as a broken line because, while they may be e-mailed to the Seller, the information has to be re-keyed by the Seller into the computer based systems. Thus the information is deemed not to be electronically communicated.
3. "Forwarding Instructions" are transmitted via facsimile. This requires the information to be re-keyed by the recipient and therefore is not electronically communicated.
4. The "Bill of Lading" (B/L) or title to the goods may be transferred through either of two primary routes:
   A. Where direct accounts are used for payment, the B/L is sent to the Client representative directly.
   B. Where a Letter of Credit is used for payment, the B/L is sent to the local bank for transmittal to the Client's bank.
5. Health Certificates are obtained from AQIS and after appropriate endorsement, are combined with the other documents for despatch to the client or bank. AQIS are seeking to use the ECERT via the Internet as shown in the diagram.

Having identified the core documents to be transmitted, the possible transmission mechanisms that may be used to convey these documents electronically between the trading partners are:

- Technical File Transfer Protocols, FTP.
- Traditional Electronic Data Interchange, EDI.
- The Internet.
- More recent technologies, such as XML.

File Transfer Protocols are constructed between two or more computers to rapidly transmit data between compatible computer data bases. The files are normally constructed in a specific manner using proprietary formats and do not provide the essential flexibility, security or standardisation needed for international trading documentation.

EDI arose to solve the difficulties encountered with the FTP. A *standard* format for the data being exchanged was needed if multiple companies were to participate. Various industry groups commenced on this task in the 1960s and slow progress has been made since. The primary use is for intra-industry transactions to convey purchasing, transportation and finance data.

The initial ANSI X12 standard, widely adopted in the USA, has now been largely superseded outside the USA by the United Nations EDIFACT standard. This standard has generally increased competitiveness and reduced many trade barriers.

The Internet is relatively new transmission technology emerging into more general global use in the early 1980s. It facilitated the inter-communication of computers anywhere in the world by using a common data language. This technology has subsequently received world wide acceptance by providing faster and cheaper computer communications.

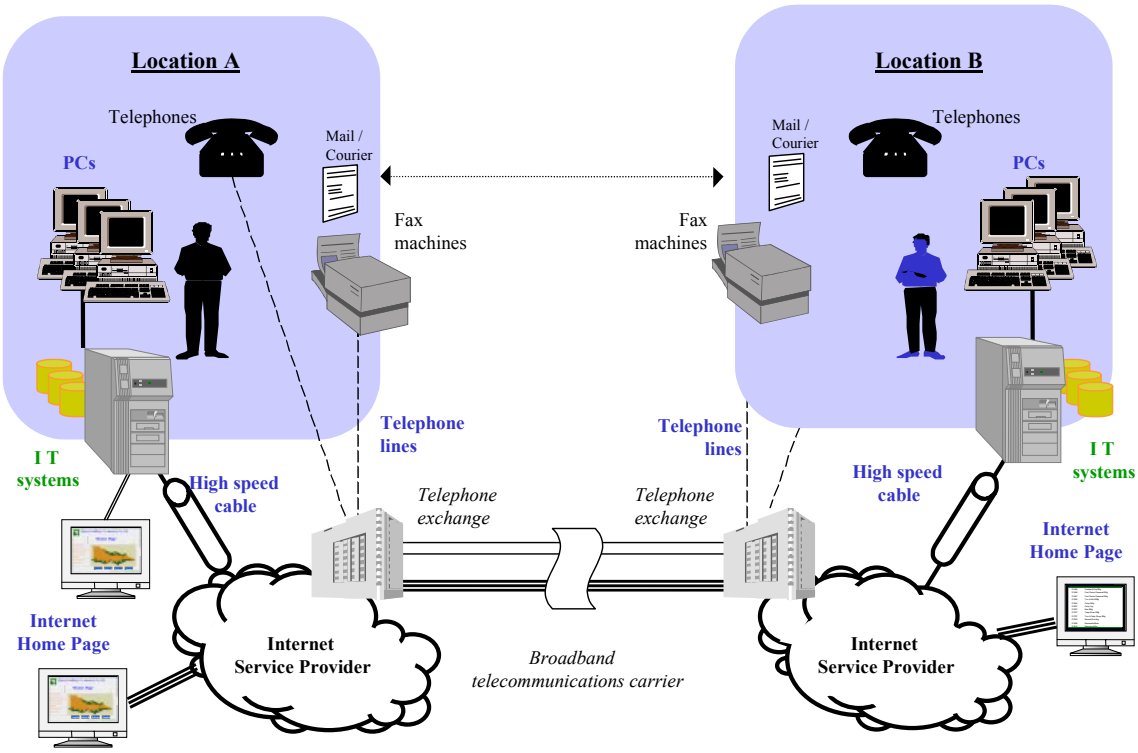
While the Internet is the platform that enables computer communication, the World Wide Web, WWW, is the application that provides document management by linking them through indexes. The, WWW, commenced toward the end of the 1980s, some fifteen years after the basic Internet. The WWW or W^3, uses the HyperText Transfer Protocol, HTTP, which allows documents identified by a keyword to be retrieved.

XML, the eXtensible Markup Language arose from the Internet HTML/HTTP technology. This technology offers significant advantages but the lack of international documentation standards is seen as a limitation to rapid adoption. Various XML formats are being proposed to overcome the real and perceived limitations.

However it must be noted that both the USA Bolero and the Japanese TEDI technologies that initially operated on an EDI platform have now embraced the XML format for their general use.

Further information outlining these technologies is provided in Attachment 3.

Telecommunications



For the purposes of this paper, the term 'information' is broadly used to refer to a group of facts such as set out in a document. The term 'data' is applied to mean an individual fact contained in that document such as a company address or product description.

Data may be entered into the database by a file transfer mechanism from another computer based system or manually keyed in through a keyboard. The capability to edit any of the data is usually sought by operators, however this is a matter of security.

A computer database will contain many data fields all related to one set of documents required for the export of an order to a specific customer. For example, a commercial invoice would have a customer number, customer address, order number, details of products, prices, delivery details, date, etc. Some 30 related fields could be involved for a single document. However, other documents would be similarly prepared with a different selection from the total number of stored fields.

Electronically it is therefore conceivable to collate all the required data fields applicable to one order into a single group and transfer these to the recipient's computer. From this collection of data, the wanted printed paper document could be constructed and presented in the desired format.

Currently each document of the total document set required to meet the customer needs has fields presented in a manner appropriate to that document. Up to 20 defined documents may be required to complete a set.

Data communications relies on current telecommunications practices. In the APEC region these capabilities vary significantly as outlined in the "Present Position" section of this report. The role of telecommunication networks as a supporting platform for data communication is essential for "paperless trading" and may be briefly examined.

The telecommunications infrastructure is acknowledged as the basic platform for the wide range of communication applications and multimedia services. Telephone access and connectivity are the keys to participate in the global information society and it's associated markets. Hence these functions are closely correlated and are considered essential to an economy for future development and wealth creation. The quality of telecommunications infrastructure and connectivity has already become a major competitive factor for attracting foreign direct investment in sectors other than telecommunications.

However, most developing countries and particularly the least developed countries are not sharing in the communications revolution. This is partly due to the lack of affordable access to the latest technology needed for efficient telecommunications systems and infrastructure. Plus the economies do not posses the capacity to build, operate, manage and service the technologies involved. This generates a deeper gap and related inequities between industrialised and developing nations - the information rich and the information poor. Developing countries are threatened by domination, marginalisation and even exclusion.

A vast array of publications is available about development of telecommunications in various global regions and economies. The International Telecommunications Union, ITU, provides a list in the "Publications of the ITU-D Sector (Development)" on their website "www.itu.int". In general it is acknowledged that a very wide gap exists between telecommunication capabilities in developed and least developed economies.

Effective data communication, for business purposes, requires a minimum speed of 128 kbps and should be provided with symmetrical dedicated access. This speed is considered necessary to deliver dedicated broadband access to trading organisations. Larger companies will need more capacity and these demands will expand over time. It could be expected that a company would realistically need a basic starting rate of 256 to 384 kbps and this would increase to 512 kbps as their requirements expand.

The maximum normal telephone line "dial up" speed is about 56 kbps and this may be considerably less where long lines are deployed. A 64 kbps data rate may be attained where the Integrated Services Digital Network, ISDN, is made available by the telecommunications network supplier. This network also has the advantage of simultaneous voice transmission.

The applicable technologies that are involved in achieving these telecommunication transmission characteristics are:

- Copper Cable Based
- Optical Cable Based
- Fixed Wireless and Radio Access
- Cellular Systems
- Satellite Systems

Further selected information is provided in Attachment 4 about these technologies and their capabilities to support data transmission.

Standards are critical for effective access to the Internet and therefore are the backbone of electronic commerce. The basic telecommunications capabilities in the trading economies need to be assessed. Electronic exchange equipment, a reliable network and suitable terminal equipment for both voice and data are essential for robust services.

The quality of the telephone network governs the speed of data transfer. For normal lines engineered for voice traffic, the bandwidth is limited between 1 KHz to 4 KHz. This limits data transfer rates to less than 56 K bits per second or the equivalent of some 7,000 words per second. This implies that a normal text document may be transmitted within a second. However computer overheads plus transmission line controls add to this time, resulting in several seconds to complete the document transmission. Further the addition of any graphic or image information greatly increases the document's data size.

Line loads may limit the transmission speed and any drop-out of the line, noticed in speech as a pulse of noise or silence, will destroy the integrity of the data transfer. Transmission protocols may accommodate many of these technical imperfections by applying 'handshaking' and data repetition techniques. These features improve the transmission quality but slow the overall transmission rate.

These factors significantly affect the telephone network quality available for international access under both normal and abnormal circumstances. Competitive provision of telecommunications services is generally an advantage as it could be expected to produce lower charge rates, improved services and innovation. The technological capability of an economy is often proportional to its GNP.

Present Status

Introduction

The removal of paper based documents for cross border trade transactions has been a challenging task since the inception of EDI in the 1980s. In the APEC region, electronic transactions have been introduced in various forms to different degrees in each economy. Those regions that have been successful in eliminating some of the paper based documents have generally had significant government support from relevant responsible agencies.

The progress APEC economies have made in reducing requirements for paper based documents in cross border trade is described in the APEC document "Paperless Trading, Benefits to APEC". Possible reasons for the differences and variations in success are considered. The document then predicts that before 2010 most developing economies in the APEC region are expected to have implemented paperless trading.

The document also points out that some economies with poor telecommunications infrastructures and thus personnel with minimal knowledge of information technology will require a major investment to upgrade any such shortcomings. This may require significant investment in telecommunications, computer equipment software integration and training personnel.

The present status of Electronic Documentation in the target economies is briefly summarised in the following paragraphs and more detailed information is provided in Attachment 5.

Australia

Government

The Australian Commonwealth Government departments that have the major impact on cross border trading for the dairy industry are:

Department of Agriculture, Fisheries and Forestry, AFFA

Australian Quarantine and Inspection Service, AQIS

Attorney-General's Department, AGS

Australian Customs Service, ACS

National Office for the Information Economy, NOIE

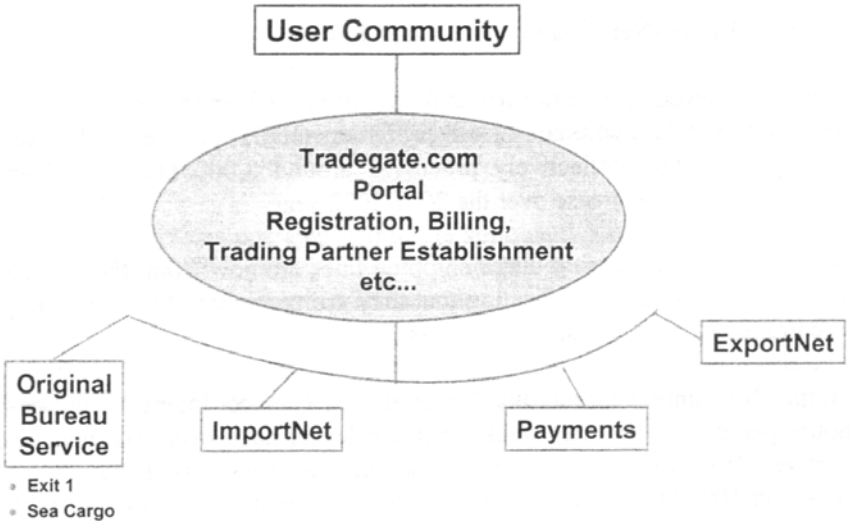
Department of Foreign Affairs and Trade, DFAT

Australian Trade Commission

Australia New Zealand Food Authority, ANZFA

Non Government

Tradegate



Tradegate published corporate objectives in its Memorandum of Association are:

- The corporate Vision of the Company is to "achieve competitive advantage for Australia" by facilitating the community based development and use of electronic commerce techniques throughout Australia's businesses and governments.
- The Mission Statement of the Company is to "improve the productivity of its Members by developing and promoting strategies which enable practical electronic commerce for Australian businesses, Governments and their trading partners.
- The Objective of the company is to create a broadly based community of Members from all sectors of Australian business and government.

Tradegate provides Community Based Electronic Commerce Services for the business community.

Tradegate Australia Ltd operates under registered trademarks and offers services:

- *Exit 1*
- *ExportNet™*
- *ImportNet™*
- *Payments*
- *RailHub*
- *Sea Cargo*
- *Tradeway*

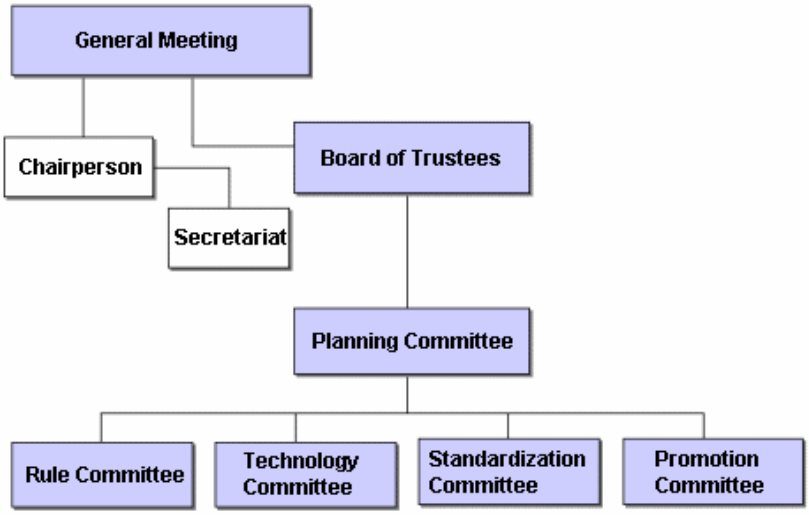
In addition Tradegate provides assistance with their Bureau Service, Consulting - Training / Education and UN/EDIFACT EDI User Guidelines.

These activities and other Tradegate functions are described in Attachment 5.

None of these functions offer cost-effective solutions for Murray Goulburn or address the issues associated with documents such as the Health Certificate.

Japan

TEDI is an abbreviation for Trade Electronic Data Interchange, a system that supports paperless trading. The TEDI system was constructed by a consortium established as a project in the third revised budget for 1998 of the former Ministry of International Trade and Industry, MITI, now, Ministry of Economy, Trade and Industry, METI. The group comprises senior trading companies, shipping agents, banks, insurance companies and many other companies. Fujitsu is the main systems integration contractor.



The main members of TEDI are Mitsubishi Corporation, Mitsui & Co., Ltd., Sumitomo Corporation, Itochu Corporation, Marubeni Corporation, NTT-C; Hitachi, Ltd., IBM Japan, Ltd., and Fujitsu Limited plus more than thirty other companies.

The TEDI Club is an organisation that supports the realisation of EDI for trade finance through revision of existing system rules and promotion of suitable standards in the member companies. The aim is to adapt to the new wave of computerised trade business. To accomplish this aim, companies need to change their traditional systems, revise traditional conventions, establish new systems or rules or all of the above.

Their main goal is to reduce the time and cost of trading for businesses and increase international competitive power. This is to be achieved by encouraging fewer paper documents and more electronic documents. Data to be exchanged electronically over a safe and reliable network rather than via paper documents. This is aimed at gaining greater speed, efficiency and reliability for communicating trade information.

It is noted that a standard TEDI document is created as XML data demonstrating the 'pull' of the XML technology for adoption as the preferred protocol. Further details on the TEDI system are provided in Attachment 5.

None of these functions offer cost-effective solutions for Murray Goulburn or address the issues associated with documents such as the Health Certificate.

Singapore

The Singapore TradeNet system operated by Singapore Network Services, SNS, is based on EDI technology. Up to 23 agencies may become involved when conducting international trade activities.

TradeNet provides access to the various regulatory authorities through a single entry window. This arrangement is described more fully in Attachment 5.

Philippines

Philippines operate Super Green Lane, SGL, based on EDI technology. This system permits special customs clearance to speed processing and clearance of low risk imported goods. This arrangement is described more fully in Attachment 5.

United States of America

Bolero

Bolero International Ltd operates the Bills of Lading Electronic Registry Organisation, BOLERO, that was created in April 1998 in the USA. Bolero is an equal joint venture between the Society for Worldwide Interbank Financial Telecommunication, SWIFT, and the Through Transport Club, the TT Club.

SWIFT is a bank-owned cooperative supplying secure messaging services and interface software to 6,700 financial institutions in 189 countries. This global banking syndicate processes financial transactions worth over US$5 trillion per day.

The TT Club is a group representing distribution and logistics companies. The TT Club provides liability and equipment insurance to ship operators, stevedores, terminal and depot operators, port authorities, freight forwarders and other transport operators in more than 80 countries. The Club insures over 2/3 of the world's container fleet, 1,725 ports and terminals world-wide as well as 5890 inter-modal operators around the globe. Since 1992, the TT Club has regional operations in three centres - London, New Jersey and Hong Kong.

The objective is to design a simple and robust method for trading partners to exchange data and documents over the Internet without the need for a bilateral Electronic Data Interchange, EDI, agreement.

The key criteria required to make such interoperability a success are:

- interpretation of electronic data must be unambiguous
- data must be readable by people and computers
- implementation must be simple and inexpensive

This initial interoperability strategy is based on the notion that the existing electronic data interchange standards fail to meet the above mentioned criteria.

It is noted that the latest Value Added Service of Bolero, SURF, has been added to extend the capability of "bolero.net" trade transactions by enhancing the delivery rather than the payment processes. It is based on a Bolero developed XML standard.

Further details about Bolero and its developments are described in Attachment 5.

None of these functions offer cost-effective solutions for Murray Goulburn or address the issues associated with documents such as the Health Certificate.

Legislative and Legal

Introduction

This subject is considered one of the main limitations to the practical implementation of e-commerce. While legislation and the resulting legal framework is considered essential to minimise the uncertainty of cross border trade, it also may act as a significant impediment when the trade transaction methodology is changed and the original legal 'rules' are not directly applicable to the new methods. The legal infrastructure is acknowledged as necessary to underpin all international trade to ensure agreements made between trading partners are kept or appropriate penalties incurred.

Legal and liability issues vary significantly between economies. In some areas the applicable laws are influenced by the political administration while under other regimes the legal structure is fiercely independent. The strengths and weaknesses of the economy's domestic legal framework therefore have a marked impact on the capability and effectiveness of any e-commerce transactional structure.

The legal system is employed by trading organisations to ensure basic compliance with a trading agreement, with due regard to the economies guiding principles. Validity and enforcement of contracts is only upheld through the legal and legislative processes in the economies involved in the trading relationship thereby providing suitable legal recourse mechanisms in the case of disputes. Other attributes such as provision for protection of intellectual property including copyright and trademark are often indicators of the extent and thoroughness of the economy's legislation.

The legal aspect of electronic trading or e-commerce is so wide ranging, esoteric and changing so rapidly, that even a list of references is considered difficult. Further, the interpretation given to any piece of legislation is subject to immense variation and change over time. It is noted that the legal company of Baker & McKenzie have conducted many studies for APEC and other related economies. Details of legal issues for each of the APEC economies may be further examined at "www.bakerinfo.com"

Technological Impact

In the overall commercial environment there is a limitless number of different types of transactions. These often require assistance from associated bodies to complete a transaction. These bodies include banks, transport companies, insurance agents and government agencies.

As electronic technology becomes an increasing part of business operations, there is a need to understand, however broadly, the impact of this change.

Electronic transactions involve communication of information via an electronic medium, such as a closed Value Added Network, VAN, the open Internet or other means described in the preceding section. The information in the form of data may then

be stored within a computer readable medium. This information may never exist in a paper based form. This is the fundamental difficulty that electronic transactions pose if they are to be presented as evidence to a court of law.

The question becomes whether electronic transactions are legally valid and enforceable under the laws of the subject economy.

This requires electronic records and electronic signatures to meet the criteria of paper based writing and signature requirements as required by the wide variety of statutes and regulations existing throughout the various economies. Further, the electronic records must satisfy the basic legal record keeping requirements of authenticity, integrity and originality. This means the document must be considered an "original" for the purposes of acceptable legal evidence.

Legality

The core issues that appear at this time are that documents used in trade transactions are paper based and therefore are written and signed by a person who is to be held responsible for that transaction. This has led to the myriad thousands of statutes, laws and rules that have been based on this method of conveying trading information.

These regulations are seen to constitute legal barriers to electronic transactions as electronic messages, electronically signed or not, may not be enforceable. Consequently electronic transactions have been the subject of much debate and legislative activity. The U.S.A. Federal Government plus all 50 States together with governments of at least 55 other countries have enacted legislation and are currently considering further means of enforcing suitably structured electronic transactions.

Model laws for international electronic transactions have been developed by the United Nations Commission on International Trade Law, UNCITRAL. These were completed in 1996 and finalised in 2001 with the law on Electronic Signatures. These model laws have served as the basis for legislation enacted in several countries.

In the U.S.A, the primary federal legislation is based on the Electronic Signatures in Global and National Commerce Act, E-SIGN, enacted in 2000, and the Uniform Electronic Transactions Act, UETA, finalised in 1999, and aimed at achieving uniform state laws.

In the European Union, the Electronic Signatures Directive was adopted in 1999 and the Electronic Commerce Directive adopted in 2000.

These laws and their associated legislation are designed to provide a means of legally authorising suitable electronic transactions. They are intended to provide a similar legal requirement to that which currently exists for paper documents with ink signatures and perhaps embossed seals. By providing a consistent legal framework, electronic commerce may be developed on a substantial and uniform legal basis.

This new legislation still recognises that electronic transactions conform to the basic laws of contract including offer and acceptance. All that is intended is that electronic transactions can duplicate what was previously done on paper.

Thus most legislation aimed at supporting electronic trading transactions is focussed on ensuring that the transaction may be enforced under law. This means that the agreement between the trading partners should encompass:

- **Notice and Consent**. All concerned parties have consented to conduct the particular transaction in electronic form. Preferably this intent should be clearly documented.
- **Signature**. All signature requirements have been addressed. Where necessary legally recognised formats of electronic signature are used.
- **Accessibility**. All copies of the transaction information in the original format are readily available to all parties.
- **Record of the Transaction**. Electronic records of the information will be maintained. All records of each transaction must be legally correct.

The authority to be held responsible for electronic trading transactions remains to be fully resolved in the trading economies. The matter of "trust" between trading partners is now more important than before, as the laws to make transactions 'legally enforceable' are weaker. Further, any additional requirements that may be imposed to permit changes and alterations to an electronic transaction are yet to be defined.

The security of electronically communicating information is often questioned – how reliable is the communication, can it be intercepted, can it be altered, can spurious messages be delivered, can the transmission or reception systems be damaged.

The timeliness of the information may be questioned - at what time is an electronic message deemed to be sent, when is the message regarded as having been received, what time is a reasonable transit time. Further, after defining these times, how will they be measured, monitored and recorded.

The confidentiality of the transaction is essential and the capability to control to whom the information will be disclosed. This requires information to be protected from unauthorised access while making it readily available to authorised persons. Thus the information may be required to possess several authority levels of access. This feature is possible with electronic information but not with paper based information.

Nonrepudiation is a further consideration. Having established that the information has satisfied all the above requirements, the originator of the electronic information is bound by the terms expressed in that information.

This is part of establishing trusted electronic communications. This leads to the present means for achieving security by various methods including:

- Date/time stamping
- Encryption and digital signatures
- Special proprietary algorithms or codes
- Replies and acknowledgments
- Repeat-back acknowledgments
- Identifying words or numbers
- Using an automated process or system
- Using trusted third parties to retain copies of electronic communications

Uniform international laws are preferred to conduct cross border trading. As noted above the various economies and their divers states and agencies all seek to make and enforce laws relating to trade in their precincts. On a broader scale international bodies also endeavour to initiate uniform legislation for trading economies. These international bodies include:

- International Chamber of Commerce, ICC
- European Union
- Organisation for Economic Co-operation and Development, OECD
- United Nations Commission on International Trade Law, UNCITRAL
- World Trade Organisation, WTO
- UN/CEFACT Legal Group Web Site
- National Conference of Commissioners on Uniform State Laws, NCCUSL
- American Bar Association, ABA
- International Convention Proposals (supported from the U.S.)

United Nations

The United Nations recognised the need to assist in overcoming some of the issues that may arise between trading partners who had recourse to international trade law. The United Nations General Assembly under resolution 2205 (XXI) set a task for the Commission on International Trade Law, UNCITRAL, to further the progressive harmonisation and unification of the law of international trade by:

- Coordinating the work of organisations active in this field and encouraging cooperation among them;
- Promoting wider participation in existing international conventions and wider acceptance of existing model and uniform laws;
- Preparing or promoting the adoption of new international conventions, model laws and uniform laws and promoting the codification and wider acceptance of

international trade terms, provisions, customs and practices, in collaboration, where appropriate, with the organisations operating in this field;

- Promoting ways and means of ensuring a uniform interpretation and application of international conventions and uniform laws in the field of the law of international trade;
- Collecting and disseminating information on national legislation and modern legal developments, including case law, in the field of international trade laws;
- Establishing and maintaining a close collaboration with the United Nations Conference on Trade and Development;
- Maintaining liaison with other United Nations organisations and specialised agencies concerned with international trade;
- Taking any other action it may deem useful to fulfil its functions.

This resulted in a framework of which the fundamentals are:

United Nations Commission on International Trade Law (UNCITRAL)

The United Nations Commission on International Trade Law (UNCITRAL) is the core legal body within the United Nations system in the field of international trade law. UNCITRAL was tasked by the General Assembly to further the progressive harmonization and unification of the law of international trade by:

1. ***"Co-ordinating the work of organizations active in this field and encouraging co-operation among them;***
2. ***"Promoting wider participation in existing international conventions and wider acceptance of existing model and uniform laws;***
3. ***"Preparing or promoting the adoption of new international conventions, model laws and uniform laws and promoting the codification and wider acceptance of international trade terms, provisions, customs and practices, in collaboration, where appropriate, with the organizations operating in this field;***
4. ***"Promoting ways and means of ensuring a uniform interpretation and application of international conventions and uniform laws in the field of the law of international trade;***
5. ***"Collecting and disseminating information on national legislation and modern legal developments, including case law, in the field of the law of international trade;***
6. ***"Establishing and maintaining a close collaboration with the United Nations Conference on Trade and Development;***
7. ***"Maintaining liaison with other United Nations organs and specialized agencies concerned with international trade;***
8. ***"Taking any other action it may deem useful to fulfil its functions."***

General Assembly resolution 2205 (XXI).

Individual Economies

Each economy has its own legal infrastructure to carry out the legislative requirements of an economy. These infrastructures are very complex and essentially founded on paper based documentation. This situation is reflected in legislation and subsequently in law enforcement. This significantly impacts the practical implementation of "paperless" or electronic information transmission. This will be addressed further in the "Constraints" section of this report.

Australia

This economy is a federation in which governmental powers are divided between the Federal government and seven State and Territory governments according to the Constitution. The legal system in Australia is based on the English system of common law and equity, but has developed its own individual identity and differs in many areas from English legal concepts.

Australia has embraced the challenges posed by E-commerce and Technology law and has been at the global forefront in its development of laws that address the unique issues that are emerging. Recognising the importance of legislative backing in key areas such as encryption and digital signatures, the Australian Government has strived to provide industry with the surety it needs to develop rapidly.

Legal developments in almost every area of law have enabled the uptake of e-commerce models of doing business in almost every sector. This is facilitated, for example, by legislative attempts such as the Electronic Transactions Act 1999 to put electronic documentation on an equal footing to paper-based documents. Recent years have seen reforms and innovation in areas such as privacy, copyright, trade practices and sales promotions - with extensive discussion for further reform and development in areas such as tax and trademarks.

Digital signature technology has been recognised as a valid form of executing documents under Federal and State Electronic Transactions Acts. This legislation allows digital signature technology to be used, subject to certain conditions.

The Federal Government has also commenced a number of initiatives to promote the use of digital signature and encryption technology in the public and private sector.

The ABN-DSC is a government proposal that will entitle every Australian business with a current Australian Business Number, ABN, to apply for a Digital Signature Certificate, DSC, based on their ABN. The ABN-DSC will allow businesses in future to engage in electronic transactions with government agencies. The government has expressed a hope that the ABN-DSC will eventually become the basis for secure electronic transactions between private organisations.

Selected excerpts of the Australian "Electronic Transactions Act 1999" are provided in Attachment 2. Some further details may be obtained from the Australia section of the Baker & McKenzie E-commerce website "www.bakerinfo.com"

Canada

Canada is a federation in which governmental powers are divided between the federal government and ten provincial governments. The provinces have common law jurisdictions, with the exception of Quebec, which is a civil law jurisdiction. The provinces generally have jurisdiction over private business transactions, however some aspects, such as regulation of trade and commerce, are under federal regulation.

The Uniform Law Conference of Canada, ULCC approved the Uniform Electronic Commerce Act, UECA, in 1999. This legislation was created as a model electronic transactions law. This model legislation is based upon the 1996 UNCITRAL Model Law on Electronic Commerce. At present, all provinces and territories in Canada, except for Quebec, have either proposed or passed an 'electronic transactions' law based on the UECA. In 2001, the province of Quebec enacted e-commerce legislation that differs from the UECA in certain respects.

These efforts have established a stable legal framework for electronic commerce in Canada. The UECA model law addresses many key issues, including the functional equivalence of electronic documents, electronic signatures and online contracting.

Japan

Japan is a Constitutional monarchy with a parliamentary government. The Legislature consists of the House of Representatives and the House of Councillors. The Prime Minister as the head of the government heads the Executive branch. Japan's judicial system is a civil law system based on the model of Roman law.

Japan is seeking to rapidly expand all its electronic business activities. This includes all aspects of e-commerce, which has governmental support directly and with promotion of e-government projects. The increasing use of computers in business and possibility of e-commerce is seen as a revolutionary change in the Japanese environment. The legal infrastructure therefore also needs to be extensively reviewed to ensure it is appropriate.

Digital signatures are recognised under the presumption that an electronic signature on an electronic document is equivalent to the written signature on a paper document. It must therefore be able to be proved that the signature was made by a specific person in relation to information recorded in that electromagnetic record and that record was created to represent authentic information that was established for the intended purpose.

Foreign certification is possible through simplified written procedures in cases where there is a treaty between Japan and the foreign country for internationally compatible certification or mutual recognition.

In the future it is expected that Japan, who considers itself a leader of the Asian electronic business markets, will actively participate with the USA and Europe to develop international e-commerce.

Malaysia

Malaysia is a constitutional monarchy of 13 states and two federal territories. Legislative power is divided between federal and state legislatures. The Malaysian legal system is based on English common law. Peninsular Malaysia, Sabah, and East Malaysia, Sarawak, each have a High Court.

Malaysia is committed to electronic commerce. The "Vision 2020" project establishes specific goals and objectives for long-term economic development. A key component of Vision 2020 is the "Multimedia Super Corridor" project that proposes a centre for multimedia and IT corporations plus a focus on research and development.

The Malaysian Government is providing a comprehensive regulatory framework of cyberlaws and intellectual property laws to facilitate and assist the development of e-commerce and IT. As part of this activity, the Government has enacted laws such as the Digital Signature Act 1997, which provides an avenue for secure online transactions through the use of digital signatures.

Contract law in Malaysia is governed by the Contracts Act 1950, which generally follows the common law. Where information on the Internet simply refers to an alternative method of contracting, such as by telephone or fax, this situation would be adequately dealt with by the vast body of existing laws.

A contract is completed by the traditional means and there is an intention to be bound by the contract. In a contract made over the Internet, there are normally no problems concerning consideration and the intention.

The actual location of the contractual agreement may be important from an electronic consideration. This location may determine which country's laws would govern the contract, legal enforcement and tax liabilities.

The increasing access to the Internet by employees means that they may enter into contracts over the Internet. Issues may arise when the employee has no actual authority to enter into a contract and the other party assumes that there is such authority that is binding on the employer. It may be prudent in some cases to check with the employer whether such authority has been granted.

Philippines

E-Commerce is regulated by Republic Act No. 8792, also known as the Electronic Commerce Act of 2000 ("ECA") since June 2000.

Under the Civil Code, the elements of a contract are the traditional factors including consent of the contracting parties to such a transaction.

Digital signatures are legally recognised. Section 8 indicates that an electronic signature on an electronic document is equivalent to the written signature on a paper document. However this is only the case if it can be proved that a prescribed procedure, not alterable by the parties concerned, where:

i. A method is used to identify the party sought to be bound and to indicate said party's access to the electronic document necessary for his consent or approval through the electronic signature;

ii. The said method is reliable and appropriate for the purpose for which the electronic document was generated or communicated, in the light of all the circumstances, including any relevant agreement;

iii. It is necessary for the party sought to be bound, in order to proceed further with the transaction, to have executed or provided the electronic signature; and

iv. The other party is authorised and enabled to verify the electronic signature and to make the decision to proceed with the transaction authenticated by the same.

Section 9 indicates that an electronic signature shall be presumed to belong to the person to whom it correlates and that the signature was inserted by that person with the intention of approving the electronic document.

There is no official encryption policy or any relevant laws.

It is stated that electronic documents shall have the same legal effect, validity or enforceability as any other document or legal writing. Where the law requires a document to be in writing, that requirement can be met by an electronic document if the electronic document maintains its integrity and reliability and can be authenticated. Therefore it is essential that the electronic document remains unaltered, apart from agreed and any duly authorised changes.

An electronic document is considered to be an electronic data message that is generated, sent, received or stored by electronic, optical or similar means.

Singapore

Singapore was a former British colony that became a republic in 1965. Singapore law is therefore based primarily on British common law. The final connection with the British legal system was severed in 1994 when the Privy Council was replaced by the Singapore Court of Appeal as Singapore's highest court of appeal.

Singapore seeks to be a leader in international electronic commerce. To support this aim, Singapore has passed significant legislation such as the “Electronic Transactions Act” 1998, to validate electronic records, contracts and digital signatures. The government has initiated an “Electronic Commerce Masterplan” to drive and support the goal for Singapore to be a leader in electronic commerce. This plan has the aims of:

- Develop an International e-commerce infrastructure
- Jump start Singapore as an e-commerce hub
- Encourage business to use e-commerce strategically
- Promote usage of e-commerce by business and the public
- Harmonise cross border e-commerce laws and policies.

Singapore has ratified the United Nations Convention on Contracts for the International Sale of Goods ("Vienna Convention") on 1996 by passing the Sale of Goods (United Nations Convention) Act.

The Vienna Convention concerns international commercial contracts between traders and business people. This means that when the buyer in Singapore contracts over the Internet to buy a product for business purposes from another economy, the Vienna Convention will apply.

The Info-communications Development Authority of Singapore Act 1999 ("IDA Act") provides for the formation of the Info-communications Development Authority of Singapore ("IDA"), which is a merger of the National Computer Board and the Telecommunication Authority of Singapore. The IDA Act sets out the powers, functions and duties of IDA as the regulator and promoter of the information and communications technology industry in Singapore. The IDA is the lead agency in charge of e-commerce regulation and policy in Singapore.

The Electronic Transactions Act, ETA, and the associated Electronic Transactions (Certification Authority) Regulations contains specific provisions establishing the legal validity and admissibility of electronic and digital signatures. It also describes 'secure' electronic records and signatures.

Singapore has been developing a public key infrastructure to facilitate the use of digital signatures. Under this infrastructure, the Certification Authority, CA, certifies that a given public key is associated with a given individual. A CA may perform a face-to-face verification of the individual before such a certification is given, in the form of a digital certificate.. Netrust and ID.Safe are Cas who may issue keys for digital signatures in Singapore.

The formation of a binding contract is completed in the traditional manner. There are normally no problems concerning contracts made over the Internet.

United States of America

The United States of America is bound by a multitude of laws spread over the Federal jurisdiction and its 50 States.

The USA has been a leader in e-commerce both nationally and internationally. In general the government has been quick to meet the challenges posed by e-commerce and has enacted legislation to address legal issues that have emerged from business initiatives in conducting e-commerce.

The Internet has become increasingly important in e-commerce to the USA. As the Internet and other means of conducting electronic transactions develop, the legal infrastructure is expected to advance. However the range and innovations of electronic transaction that are emerging will test the capabilities of the legislature.

The American Bar Association is actively involved in all types of e-commerce activity. Its Information Security Committee has released "PKI Assessment Guidelines", PAG, to address the technical and business requirements of PKI components within a legal framework and provide guidance for selecting appropriate controls, procedures and policies to ensure trustworthy PKI operations. This document builds on, updates and expands the concepts presented in the Committee's 1996 Digital Signature Guidelines**.**

Reports on 'E-commerce Security' and 'Legal Liability and E-transactions' were released by the National Electronic Authentication Council of Australia, NEAC, in 2000. These cover the standards and authentication technologies used to secure electronic transactions and the legal liability of electronic authentication systems respectively.

Electronic Transactions

Government

It is essential for an economy that industry and government bodies promote awareness of the opportunities and benefits of electronic commerce to meet the competitive challenges generated by international markets.

This may be recognised by a government through its promotional activities and self use of electronic mediums. Such use causes the people involved to experience first hand the benefits of electronic communication and appreciate the strengths and weaknesses of the medium. This in turn leads to more enlightened legislation and subsequent law application. This practice assists and supports the adoption of international trading using e-commerce.

Governments may use electronic commerce principles for the normal procurement and provision of the goods and services used by the administration. Such activity may commence using simple e-mail communication and develop to issuing tenders for works. Responses may be in paper based form until the people involved gain confidence in using electronic based documentation. This will facilitate a wider adoption of e-commerce throughout the economy in both public and private practice.

It has been suggested that governments in lower GNP valued economies may be able to adopt and implement electronic commerce practices that have already been established and proven.

An basic feature of e-commerce is that it is technically based. This means that people in lower valued GNP economies are usually faced with an educational hurdle to overcome to gain the advantages readily seen and grasped by the more advanced economies. This obstacle need not prevent people gaining the skills, techniques and equipment needed to realise solid e-commerce gains.

Because the techniques and changed practices may not be readily understood, they become feared and artificial barriers may be erected to prevent these changed work practices from occurring. These issues appear to varying degrees across all economies however they seem to be more apparent where the educational levels are lower.

Other trade barriers may be formed by tariff structures, subsidies for various productions or direct refusal to trade in certain products. These protection activities are considered normal in international trade and e-commerce techniques do not change the provision for these factors.

The Australian and New Zealand governments in close cooperation with the United States of America and Canada, have developed a Health Certification procedure that is conducted over the Internet.

Recording of trade transactions is a major issue for legal and security reasons. The following edited extract is provided from the "Guidelines For Australian Government Agencies" on "Improving Electronic Document Management"

"Concerns are being expressed throughout government administration that the corporate foundation of information is being diffused. This is happening with the proliferation of computers and their associated networks without adequate control mechanisms to ensure the availability of information to all who may have a reasonable need for it."

"Electronic document management systems are more than just systems for tracking the location of electronic documents. Such systems should manage documents for their complete life cycle based on the value of the document to the agency's business. Just as there are standard procedures for the registration of paper documents and records, suitable procedures should be implemented to manage each electronic document throughout its life from creation to disposal."

"There are three basic strategies for dealing with electronic documents.

- *fully electronic document management;*
- *parallel electronic and paper systems; and*
- *continued reliance on paper.*

Whatever strategy is adopted, the document management system must:

- *provide adequate context information for documents;*
- *provide means to prove the authenticity of documents used as evidence;*
- *provide for the disposal of records in conformance with the Archives Act 1983;*
- *be robust against organisational or technological change;*
- *provide levels of support for different types of document that accord with agency policy; and*
- *provide links between paper and electronic documents.*

Once the software and procedures for an electronic document management system are in place, it will require on-going operational support in order for it to work."

A full copy is available at "http://www.defence.gov.au/imsc/edmsc/iedmtc.htm"

ASEAN Free Trade Area, AFTA

This organisation was established in 1993. It comprises the initial economies of Singapore, Indonesia, Malaysia, Philippines, Brunei and Thailand plus now Burma, Cambodia, Laos and Vietnam.

AFTA's stated primary goals are to:

- increase ASEAN's competitive edge as a production base in the world market through the elimination, within ASEAN, of tariffs and non-tariff barriers; and
- attract more foreign direct investment to ASEAN.

The primary mechanism for achieving these goals is the Common Effective Preferential Tariff, CEPT, scheme, which established a schedule for phased tariff reductions for ASEAN members and freedom to set tariff levels against non-members. Since 1995, AFTA activities have increased to include services, technical barriers to trade, standards, food health issues, customs procedures, investment and trade-related intellectual property issues, TRIPs.

By January 2002, the six original signatories to the CEPT Agreement had reduced tariffs to the 0 to 5% range on over 96% of the items in the Inclusion List, IL, with most tariffs expected to comply by 2003.

On 14 September 2002, Ministers signed the Australia – New Zealand Closer Economic Relations Trade Agreement, CER, to establish a more effective approach to expanding trade and investment and encouraging regional economic integration between ASEAN economies and the CER. Ministers agreed to an Australian initiative to target doubling ASEAN-CER trade and investment by 2010 which means trade has to increase from A$32.9 billion in 2001 to A$65.8 billion in 2010 with an investment from A$49.5 billion to A$99.0 billion.

The recently established AFTA-CER Business Council, ACBC, met with Ministers to revitalise business involvement of the CEP. The ACBC outlined proposals to enhance business links in Information and Communications Technology, ICT, electronic commerce, human resource development plus SMEs. The ACBC identified non-tariff barriers as a major impediment to increasing ASEAN-CER trade flows and intends to focus on their removal.

Non Government Organisations, NGOs

There are many NGOs concerned with various aspects of cross border trade.

Pacific Economic Cooperative Council, PECC, is active in the region. At the Trade Policy Forum in Auckland New Zealand in June 1999, the Competition Principles Project group outlined the group's broad aims that underpinned PECC's approach to 'competition policy':

(i) to promote the competitive process throughout the Asia/Pacific Region as a means of enhancing economic efficiency (including innovative efficiency) and consumer and economic welfare

(ii) to secure wider acceptance in the Region that enhancement of efficiency and overall economic welfare through the promotion of competition is the common goal of competition policy and trade policy; and to encourage use of competition principles in addressing market access issues

(iii) to foster linkages between competition policy and investment policy as well as trade policy

(iv) to foster linkages between competition principles and liberalisation of trade in services (as well as goods)

(v) to promote wider recognition of the fact that governments in the Region are responsible for many if not most of the existing artificial barriers to market entry and competition; and, given this, to promote the key reinforcing role of domestic deregulation in opening markets and increasing the ability of suppliers to contest them

(vi) to promote a greater degree of transparency of government approaches to competition policy

(vii) to learn of and from experiences with the effective administration of competition regimes, including effective enforcement of competition law targeted at anti-competitive business conduct

(viii) to encourage the application of competition principles to policy making in the Region; this in turn will provide greater predicability and stability for business in respect of APEC's policy environment

(ix) to seek, in relation to economies in the Asia/Pacific Region, greater clarity and understanding of:

- differences in stages of economic development
- differences in constraints on increasing competition
- differences in present political and policy objectives
- differences in legal and institutional arrangements

as well as of the appropriate and realistic steps for individual economies to take over time in the context of their Bogor commitments.

Further details are provided with other finance considerations in Attachment 6.

Constraints, Limitations and Impediments

In addressing these issues, it should be recognised that only the key points may be briefly described in outline due to the restrictions of space. Therefore the points mentioned are those considered most pertinent to the subject issues and summarised to express the main restrictions seen as arising within that framework.

Constraints

Paperless trading is considered a pseudonym for information communication using electronic processing methods. However, any proposed new method is virtually confined to deliver the same information that is being currently conveyed between trading parties and their associates – particularly the financial institutions, government regulators and carriers. This information content is essential to assure the principal parties that the basic precepts of trade that have evolved over the past centuries are still maintained under the new regime.

Yet paperless trading or electronic information communication is a new and radically different mechanism to paper based communication. The evolution is similar to the change that occurred when paper based trading methods supplanted bartering. This resulted in the emergence of financial institutions, money transfer by cheque and engagement of intermediate carriers for trading partners who never physically meet.

The fundamental question that arises is how far can the proposed paperless trading/ electronic communication be progressed at each step of its inevitable evolution. How rapidly can government regulators, financial institutions, legal infrastructures and normal people involved in the daily organisational operations be changed?

Governments do not usually initiate change of such magnitude and at a rate demanded by global traders. However their support is essential. Therefore it must be expected that these types of change will be instigated and driven by commercial demands that will be granted support by their respective governments.

Paperless trading/ electronic communication is a new platform for information transfer. Thus the information should be constructed and formatted to match this new communication method. However, the existing methods of physically conveying the goods between parties, arranging financial controls, legal rules and government regulations are basically unchanged at this stage of development. These factors therefore tend to preclude any significant changes in the information structure and format. These traditional factors are part of the constraints and limitations of implementing the new methods. They are significant and strongly impact on the implementation of any new processes.

Paperless trading/ electronic communication of information may need to be more closely examined and defined if it is to achieve the assumed expectations. Paper documents transmitted between organisations may be construed as meeting certain

criteria. Thus paper records will almost inevitably be maintained for a myriad of reasons. Thus it may be argued that it is only the physical transmission of those documents that is of concern.

Alternatively, it may be argued that the criterion is the actual core data contained in that information that is to be conveyed from one computer system database to another system database. This latter case is certainly the final objective of the paperless trading exercise. However due to those external factors – financial controls, legal rules and government regulations – this computer dialogue is only possible in very limited circumstances at this stage of the process development.

Because e-mail messages with suitable attachments are generally perceived to be information that is a paperless form of electronic communication, this will be adopted as the base criteria for this project at this point of development. Thus e-mail messages, attachments to e-mail messages and the use of the web based services provided over the Internet fall within this definition. Thus documents prepared in Microsoft MS WORD, Adobe Acrobat '.pdf' form and HTML are accepted under this criteria. The definition also encompasses direct computer dialogue using 'traditional' ANSI and UNEDIFACT EDI protocols as well as more recent standards such as XML and HTML. Certain proprietary software packages also enable information to be electronically communicated. These packages are examined on their merits as generally they are excluded from this exercise due to their cost, general availability and limitations. They are not always readily available with suitable ongoing support and can be expensive to install and operate.

Further, the emerging technologies that permit paperless trading/ electronic communication are being adopted by the developing economies at various rates. Less developed economies are often struggling to establish basic facilities. For example, the Internet is widely used in Australia but is not as pervasive in other economies. In those economies, governments have an important role in supporting companies to be competitive by promoting the development of technologies that enable electronic commerce. Until there are common capability standards, the technologies may be deployed at a lower level or adapted to the differing economy skill sets.

The fact that not all economies have the same level, standards or expectations of their technology base, leads the project team to seek the common critical parameters essential for cross border trade. Thus the focus of the exercise will be on basic technical capability to prepare and convey those documents referred to as 'negotiable instruments'. This particularly includes the Letter of Credit, Bill of Lading and the Health Certificate.

Another aspect of these considerations is the purpose and use of the information gathered by the recipient. This significantly impacts the preparation, transmission and final presentation of the information. In the case of Health Certificates for food, the Health and Customs officials of that economy need the certificate to clear the goods for transport to the client's premises.

Traditionally the certificate was initially prepared by the exporter and then signed by the appropriate government authority of the exporting economy. In the case of Australian exporters, this was AQIS. However some economies, for various reasons, required more validation and demanded that other organisations viewed and endorsed the certificate. These bodies included local Chambers of Commerce, Embassies or Consulates as well as other government bodies – DFAT in Australia. The paper base was also made more elaborate. This process changed the document from a simple health assurance between trading partners to an onerous but ostensibly subtle trade barrier between economies.

Production of a Health Certificate is an integral component in the overall documentation process for export of processed food in an economy. For Australian conditions, the AQIS EXDOC program now provides a single window to facilitate this process. This process also encompasses the "Request for Permit", RFP, export process and the Export Clearance Number, ECN, requests and receipts.

Reviewing the fundamental task of the Health Certificate, it was found that an appropriate method of achieving this base objective via electronic means was to provide the information document through a secured Internet web site, accessible by the relevant authorities in the importing economy. The document may be simply viewed and electronically filed or printed, copied and filed in the traditional manner.

More enlightened commercially oriented economies have readily adopted this new method of transferring the Health Certificate between parties and gained the benefits from lower product and transportation costs as well as more rapid transit of goods.

In summary, the project is directed at conveying information through electronic transmission of certain core documents rather than passing electronic data between computers. The core documents may be electronically transferred in a human readable form rather than data formatted for direct computer database lodgement, although the latter is preferred.

To demonstrate this process, it is intended to pursue the transmission of the Health Certification process with the aid of AQIS and Murray Goulburn.

Limitations

Paperless trading using electronic processing and communication methods for information transfer is subject to many and various boundaries. These limits have been described in the preceding sections and associated attachments addressing the Technical, Legal, Financial, Government, Non-government issues.

E-commerce is generally perceived primarily as a technological challenge. Thus the services will be limited by the standard of the economy's telecommunications infrastructure, computer expertise and technical skills. Such communication standards are critical for effective access to the Internet, electronic data transmissions and therefore for electronic commerce.

The level of technical competence substantially affects the selection of an appropriate technological medium for information transfer. Where only a basic telecommunication network is available to overseas suppliers, the simplest technological methods must be used for reliably conveying information. This also impacts the ability of the technology to extract and further process the data contained in that information.

Electronic Data Interchange, EDI, developed early in the 1980s was the first serious attempt to electronically convey business information between trading partners by an open, non-proprietary, means. However EDI proved complex to implement and with subtly changing standards. Hence, EDI poses a severe challenge to establish and maintain.

E-mail is another basic computer based data transfer mechanism. As the demand for e-mail grew, so did the standards and functionality. Attachments may now be added in the form of structured text files or documents plus graphics and dynamic image files. Public access to this facility has produced unsolicited e-mail messages, hackers and unwitting promulgation of computer viruses.

The Internet has evolved and is proving acceptable as a communication medium for commercial transactions. Real and perceived security issues have slowed the acceptance of the Internet for some business functions. Techniques and precautions are becoming increasingly available to improve the security of communication over this medium. These features have emerged in response to commercial demands as the general functionality of the Internet, the lower cost of transactions and ease of use is recognised by business organisations.

As a communication medium, the Internet network and protocol is extremely versatile and increasingly used with expanded functions. Telecommunication carriers and other organisations are now seeking to use the Internet Protocol, IP, for regular voice transmission – Voice Over IP, VOIP.

The eXtensible Markup Language, XML, arose from the HyperText Markup Language, HTML, used in the Internet to transmit flexibly structured text, graphics and dynamic image information content. This technique has been sought for business use for many years but has been slowed by the lack of definitive detailed standards. Now XML is being increasingly adopted by trading partners using their own specifically agreed standards. Generally, IT developers easily understand the XML message attributes and therefore find it attractive to implement. The lack of universal standards is being partially bypassed in practice by individual or groups adopting agreed customs.

The language is flexible and may be converted reasonably readily to other standards such as EDI or HTML.

Static Image files, such as produced by Adobe Acrobat, are also becoming increasingly used for conveying document information. Improved techniques coupled with falling costs are making his form of information transfer more readily available for business use. Vector imaging produces very clear documentation with images that can be easily transmitted using relatively restricted telecommunication lines.

Other technologies and techniques are available such as the use of raster constructed static image files, dynamic image files using a variety of standards plus sound files again with a wide number of standards available.

Impediments

The major impediments to cross border trading arise from political pressures in the form of Tariffs and Non-Tariff barriers. As tariff barriers have fallen, the need to ensure conformance through the application of standards, technical regulations and procedures have become increasingly prominent as impediments to international trade.

The OECD has estimated that, depending on the product, the differing standards and technical regulations in different markets, combined with the need for multiple testing and certification, may constitute between 2 and 10% of overall costs of production.

Tariff barriers for the various economies in the APEC region may be ascertained from APEC information on "www.apec.tariff.org".

It should be noted that the tariff charged may be based on more than the shipped value of goods. All transport costs of carriage, insurance and freight together with other costs such as customs duties and port charges may be added. Further, the goods may be valued based on a pricing structure internal to the importing economy.

According to the WTO, Non-Tariff Barriers may include such items as Registration, Documentation and Customs Procedures, Levies and Charges, (Other than Import Duties), Minimum Import Prices, Import Prohibitions, Import Surveillance, Import Licensing, Import Quotas, Trading Enterprises, Competition Policy, Standards and Other Technical Requirements. Added to this are Government Procurement, Local Content Schemes, Import Balancing Requirements, Pricing and Marketing Arrangements, Trade Defence Instruments not in Conformity with the WTO, Export Restrictions, Interstate or Provincial Barriers and Subsidies.

Other impediments include packaging and labelling of the packaging – both the shipped container and the product wrapping. The size of the packaging from container, pallet, carton or unit may be specified by the importing organisation. This may be dictated from customer requirement, freight handling organisations and government regulations.

The type of packaging such as plastic wrap, cardboard or other material may also be specified by the importing organisation to meet special requirements, such as requested by environmental groups.

Labelling may be required in the language of the importing economy with weights shown net, gross or both. Labels may be barcoded in EAN or other codes as required by the importer, government of the importing economy or non-government regulations.

Other impediments include:

Government and Business awareness. Training and skills development programs may need to be established in the economy. These programs may need to address barrier issues such as:

Project planning – people, resources and dates

Establish and train cross functionality implementation teams

Acquiring, distributing and setting priorities for resources

Senior management commitment

Culture – vision, goals, resources, priorities, ability to cope with change

Cost – how is the cost to be managed

Competitive environment - understanding competitors and their activities

Benchmarking – what is best practice, need for continuous improvement

Perceived business needs and value - Logic versus emotional reasoning

Perceived impact on self, others, company and economy

Language. Governments may legislate to use specifed languages on the product or packaing labels such as French/English in Canada

Policies. Possible conflicts between WTO and Multilateral Environmental Agreements, MEAs. In the APEC situation, MEAs are not generally applicable as the present 6 only arise in the European economies. These are directed at protecting endangered flora and fauna, international trade in hazardous waste, protection of the ozone layer, restrict trade in certain GMOs, restrict use and trade of hazardous chemicals. The Kyoto protocol on greenhouse gases does not have trade provisions at this time.

People. These impediments include the normal resistance to change, perceived and real job jeopardy, personally financially detrimental. These issues may arise particularly when people in the process are poorly paid and rely on unofficial remuneration generated from the processing of paper documents for rewards.

This opposition may take the form of intense criticism of the process – finding “flaws”, inciting worker unrest or attempt or actual damage to the business. More violent opposition in the form of strikes and walkouts may also result.

To address these issues it is suggested that appropriate change management practices, risk management and personnel education and training be conducted well before the proposed changes are to occur.

Security. These issues include local physical prevention of access through to technical communication networking.

The physical protection of people and property is dependent on the business environment.

General security of data against misuse is constantly being addressed by government legislation such as in Electronic Transaction Acts, Data Protection Acts, Protection of Intellectual Property and Copyright laws.

Technical security relies on installing suitable equipment to provide robust electronic platforms, staffed with appropriate skilled resources to agreed acceptable standards with commensurate compatibility, maintenance and upgrades. These facilities are usually required to be supported 24x7 across all time zones for cross border trading.

More detailed technical protection of computers and allied communications includes provision for protection from such issues as:

- Outsiders electronically 'breaking in' by the provision of firewalls and virus scanning programs.
- Outsiders using company PCs to hide their origin and launder data
- Network snooping either directly on the Local Area Network, LAN, or externally accessing wireless LANS
- Network address spoofing by the sender using fake addresses
- E-mail containing worms, forgeries and bugs
- Network file systems using file sharing that may be intercepted
- External access via remote logins particularly for File Transfer Protocols, FTP, and X window's systems
- External access via the web altering data or injecting executable programs such as viruses and Trojan horse programs
- Denial of service attacks by overloading the company systems

General protection policies within the company should include:

- Protection policies for Passwords such as specific rules, enforced change and encryption
- Pre-emptive hacking
- Once use passwords

Conclusion

An analysis was made of export processes and documents used by the Australian Dairy Industry. It was found that the number and type of documents vary depending on the economy, trading partner and products being traded. The key documents that significantly impact cross border "paperless trading" were identified as:

'Commercial Invoice', Letter of Credit', 'Bill of Lading' and 'Health Certificate'.

The Health Certificate is selected as being the key to cross border "paperless trading" as it is widely used by businesses and government agencies in major global economies. Further, the health certification process encompasses a wide range of food products and is the prime subject of this project.

The 'Commercial Invoice' is an agreement between trading partners and thus may be individually agreed without being a universal document. The 'Letter of Credit' and 'Bill of Lading' need the support of all participating banks and shipping lines respectively to overcome both institutional and other less defined trade barriers. While Murray Goulburn are continuing to seek electronic forms of these key documents, the solution will take some considerable effort and time to resolve.

Successful electronic communication of essential documents between trading partners requires agreement on document structures, data transfer methodology and telecommunications platform.

Electronic Data Interchange, EDI, technology was originally designed to achieve these complex objectives. This highly defined and structured technology evolved to have different message types, each with prescribed fields that are fully detailed. This has resulted in a technology that is difficult to implement. Extensive skilled technical effort is necessary to achieve successful transmission and reception of an EDI message. However the technology is sound as evidenced by the banking industry use of EDI for their international SWIFT financial network. For smaller and disparate organisations, the technology has proved to be difficult to implement, requiring skilled personnel to install and maintain the system. It is therefore costly in terms of equipment and resources. Businesses have actively sought and found alternative and more cost-effective methods of information transfer.

Electronic transmissions of trading documents, including the Health Certificate (SANCRT), originally used EDI. This is particularly evidenced in the early stages of Bolero in the USA and TEDI in Japan. Both these systems now utilise an alternate XML technological solution.

The Internet was initially developed to facilitate data transfer between computers for military defence purposes. Transfer protocols were designed to accommodate a wide range of information. The World Wide Web, based on the Internet platform, has become increasingly used for communicating human readable documents. However, it proved to be a target for "hackers" and various means of protecting the information

began to be developed. Encryption and other measures have now become a major feature of secured web sites. Despite these challenges, the Web has continued to increase in number of applications, including those for business use. The Web now supports sensitive financial transactions including on-line banking.

Internet HTML developed further to become XML and is aimed at providing improved business document transfer. The technology is currently hampered by the lack of universal detailed standards, which sometimes leads to reluctance by companies to implement the system. However, the technology is acknowledged as being relatively easy to use, hence inexpensive to implement.

Hence the Internet supported by the XML technology offers a significantly better solution for conveying trading documents by electronic means, at this point in the evolution of cross-border paperless trading.

AQIS became aware of the difficulties being experienced by the SANCRT message format when it commenced to implement the system world wide. Seeking a better solution, the organisation noted the New Zealand government's ECERT sanitary/phytosanitary certification process and the power of the technological base. AQIS further developed an E-Cert application utilising the Internet/XML technology. This method of health certification offers a lower cost, reliable and more readily implemented solution to this aspect of "paperless trading".

However to implement this solution, various constraints, limitations and impediments need to be identified and overcome. These obstacles include government institutional issues through to non-tariff barriers. These hurdles are often preserved by different legislation formulated in each trading economy aimed at protecting trading partners using paper based documents.

The initial APEC economies were limited to those that appear to have the best capabilites in the selection criteria used.

Australia, Canada, Japan, Malaysia, Philippines, Singapore, United States of America.

Accordingly, contact has been established with various companies who import dairy products into these economies.

Economy	***Potential trading company***
Canada	Kraft Canada Inc.
Indonesia	PT Kraft Ultra Jaya Indonesia
Japan	Mitsubishi Corporation, Foods (Products) Division
Malaysia	Premier Milk (Malaysia)
Philippines	Kraft Foods (Philippines) Inc.
Singapore	Malaysia Dairy Industries
USA	Erie Foods International Inc.

These organisations have demonstrable technical skills and have expressed their willingness to actively participate in a "paperless trading" demonstration project.

Therefore to achieve the fundamental aims of this project consistent with the financial and legal requirements of "paperless trading"; it is recommended that the initial primary focus be:

Document ***The Health Certificate***

Electronic communication ***Internet with XML support***

Participating economies

Based on the findings of this report and the responses of the potential participants to our initial contact, the three selected economies are:

Canada, Japan and the United States of America.

The next stage of this project will be to demonstrate the practical issues associated with improving the health certification processes for the Dairy Industry using the AQIS E-Cert system into the three chosen economies with the cooperation of the selected importing companies.

End of document

Glossary

Mnemonics, Acronyms and Abbreviations

Used in Export Activities [1]
[Alternative interpretations in parenthesis]

Term	*Description*
ABS	Australian Bureau of Statistics
ACCI	Australian Chamber of Commerce and Industry
ACS	Australian Customs Service [Aust. Computer Society}
ADC	Australian Dairy Corporation
ADPF	Australian Dairy Products Federation
ADSL	Asymmetrical Digital Subscriber Line
AFFA	Department of Agriculture, Fisheries and Forestry - Australia
AFTA	ASEAN Free Trade Area
AHECC	Australian Harmonised Export Commodity Classifications
ANSI X12	American National Standards Institute standard X12
AQIS	Australian Quarantine and Inspection Service
ASEAN	Association of South East Asian Nations
ATM	Asynchronous Transfer Mode [Automatic Teller Machine]
BL [B/L]	Bill of Lading
Bolero	Bills of Lading Electronic Registry Organisation
C & F	Carriage and Freight {Named port of destination}
CDMA	Code Division Multiple Access
CFR	Cost and FReight {Named port of destination}
CIF	Carriage, Insurance and Freight {Named port of destination}
CIR	Container Inspection Record
CLM	Container Loading Manifest
CMI	Cargo Movement Instruction
CNF	Carriage and Freight {Named port of destination}

[1] This Glossary contains only a selected list of acronyms, mnemonics and abbreviations that are used in the export industry, shipping or within the Murray Goulburn organisation. Further detail may be obtained from other sources such as ICC publications - specifically “incoterms”.

Term	*Description*
COC	Certificate Of Condition
COO	Certificate Of Origin [Chief Operating Officer]
CRF	Clean Report of Findings
CTR	Container Transport Release
D/A	Documents against Acceptance
D/P	Documents against Payment
DDN	Digital Data Network
DDS	Dedicated Digital Service (Telstra)
DFAT	Department of Foreign Affairs and Trade
DHL	International 'document courier company'
DPI	Department of Primary Industry (Superseded, refer DPIE)
DPIE	Department of Primary Industries and Energy (Superseded, refer AFFA)
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
DTS	Dairy Technical Services
E1	1st Level in European standard transmission hierarchy at 2 Mbps
EAN	Barcoding standard
ECA	Electronic Commerce Australia
ECBN	Export Cargo Booking Note
ECD	Export Clearance Declaration
ECN	Export Clearance Number
EDA	Exporter Discrepancy Advice
EDI	Electronic Data Interchange
EDIFACT	UN Economic Commission for Europe, EDI standard (UN-EDIFACT)
EDI-SCA	EDI for Sea Cargo Australia
Edisoft	Standard software package for Australian exporters
EDMI	EDI for Maritime Imports (Tradegate Australia)
EDS	Electronic Data Systems (name)
E-mail [e-Mail]	Electronic messaging service
ERA	Export Receival Advice
ESA	Export Shipping Advice
ETA	Expected Time of Arrival

Term	*Description*
ETD	Expected Time of Despatch/Departure
EXDOC	AQIS standard software package for Australian exporters
EXIT	EXport IT software program from AT&T approved/used by ACS
EXTEDI	Export EDI (Tradegate Australia project. Includes maritime exports)
EXW	EX-Works {Named place}
FCL	Full Container Loads
FLEXNET	FLEXible NETwork service (Telstra)
FOB	Free-On-Board {Named port of shipment}
GATT	General Agreement on Trade and Tariffs
GDC	Global Distribution Centre (Murray Goulburn)
GSM	Groupe Speciale Mobile {Mobile cellular telephone service}
HDSL	High Speed Digital Subscriber Line
IAN	Import Authorisation Number
ICC	International Chamber of Commerce
ICCP	International Conformity Certification Program
ISDN	Integrated Services Digital Network
ISO	International Standards Organisation
IT	Information Technology
LC [L/C]	Letter of Credit
LCL	Less than Container Load
LMDS	Local Multipoint Distribution Service
MAF	Ministry of Agriculture and Forestry, New Zealand
MAR	Multi Access Radio
MG	Murray Goulburn (Co-operative Co. Limited)
MEA	Multilateral Environmental Agreement
MIC	Marine Insurance Certificate
MMDS	Multichannel Multipoint Distribution System
NATA	National Association of Testing Authorities (Australia)
NGO	Non-Governmental Organisations (“Western world”)
NOITE	Notice Of Intention To Export
NTU	Network Termination Unit
OEM	Original Equipment Manufacturer

Term	*Description*
PCM	Pulse Code Modulation
PECC	Pacific Economic Cooperative Council
POD	Port Of Delivery
PLTS	PaLleTS
PSTN	Public Switched Telephone Network
QA	Quality Assurance
RF	Radio Frequency – transmission/reception
RFC	Request For Certification
RFP	Request For Permit
SA	Standards Australia
SANCRT	Sanitary/Phytosanitary Certificate - a UN/EDIFACT message format
SDH	Synchronous Digital Hierarchy
SDSL	Symmetrical Digital Subscriber Line
SGS	Societé Generale de Surveillance
SOE	Standard Operating Environment (used in Information Technology)
SOHO	Small Office Home Office
SWIFT	Society for Worldwide Interbank Financial Telecommunications
TEU	Twentyfoot Equivalent Units
Trident	Proprietary software currently used by MG for export documents.
UCP	Uniform Customs and Practice (From ICC)
UN-EDIFACT	EDI standard adopted by the UN
VDIA	Victorian Dairy Industry Authority
VDSL	Very High Speed Digital Subscriber Line
VECCI	Victorian Employers' Chamber of Commerce and Industry
xDSL	x Generic Digital Subscriber Line
2G/2.5G	2nd (and advanced 2G) Generation cellular system
3G	3rd Generation cellular system

Reference Material

Reference Documents

[In alphabetical order]

The report has made use of information from many sources, some of which was contained in the following reference documents.

A Study of the Trade and Environment Issue June 2002.
Australian APEC Study Centre, Monash University

APEC Economies – Breaking Down the Barriers. Report by the Australian Foreign Affairs and Trade from the APEC Economic Leaders Meeting Shanghai 2001

APEC Economies – Realising the Benefits of Trade Facilitation.
Report prepared by the Australian Foreign Affairs and Trade for the APEC Ministerial Meeting Los Cabos, Mexico 2002

APEC Transportation Working Group – Report on Phase 1 of the Program to assist the Implementation of Electronic Commerce for Commercial Messages (TPT 01/99T) July 2000

APEC Transportation Working Group –
Final Report on Pilot Electronic Commerce training in Maritime Transport February 2002

Assessing APEC Individual Actions Plans (IAPs) & Their Contribution to APEC's Goals
Mr. David Parsons, Project Coordinator 1999

Australia- Paperless Trading Individual Action Plan 2002
Australia's Approach to APEC's Paperless Trading Goals

Australia's Individual Action Plan on Paperless Trading 2002.
Presented at APEC Trade Meeting Puerto Vallarata, Mexico, May 2002

Australian Exports and the Trade Practices Act Guidelines

Building Out the Telecommunications Infrastructure in Asia
David Bealby Vice-President Compaq Telecommunications Division

Cargo Management Re-engineering. Australian Customs Service . February 2001

Communications International magazine

CommunicationsWeek International magazine

E-Commerce: Building the Strategy for New Zealand Progress Report, One Year On, November

2001. Ministry of Economic Development New Zealand.

"Electronic Commerce in Australia"
Australian Department of Industry, Science and Tourism, April 1998

Excerpts from The Official Commentary on the International Standby Practices.
Professor James E. Byrne, Director Institute of International Banking Law & Practice, Inc 200

EXDOC Exporter System, Interface Specification. Australian Quarantine and Inspection Services

Exporters and Importers. John Yelland and Lance Scoular. Halstead Press Sydney, Australia

Freight Logistics in Australia – an agenda for action Transport and Infrastructure Policy Division, Department of Transport and Regional Services. 2002

General Usage for International Digitally Ensured Commerce (GUIDEC)
International Chamber of Commerce

"Getting Business Online"
Australian Department of Industry, Science and Tourism, May 1998

Improving Electronic Document Management - Guidelines For Australian Government Agencies - Australian Defence Force publication 2000

ISP98 & UCP500 Compared.
Professor James E. Byrne, Director Institute of international Banking Law & Practice, Inc 2000

ISSUES@PECC - Asia Pacific and Global Initiatives to Sustain Development and Prosperity
Dr. Mari Pangestu and Prof. Christopher Findlay 1999

ISSUES@PECC - Regional Trading Arrangements: Stock Take & Next Steps
Dr. Mari Pangestu and Mr. Rob Scollay 2001

ISSUES@PECC - The Millennium Trade Agenda for the Asia-Pacific: Responding to New Challenges and Uncertainties Dr. Mari Pangestu and Prof. Christopher Findlay 2000

Pacific Economic Outlook papers

Paperless Trading: Benefits to APEC Australian Department of Foreign Affairs and Trade in conjunction with the Chinese Ministry of Foreign Trade and Economic Cooperation 2001

PECC Competition Principles: for Guiding the Development of a Competition-Driven Policy Framework for APEC Economies 1999
Dr. Kerrin M. Vautier, Convenor, Competition Principles Project 1999

Policy on Paperless Trading of Japan. Trade and Investment Facilitation Division, Ministry of Economy, Trade and Industry Japan - February 2002

Reform Pays Off – Commonwealth of Australia publication. October 2002

The Australian "Electronic Transactions Act 1999"

Trade and Investment Barriers to Australian Exporters in Key Markets.
T McGrane, Department of Industry, Science and Tourism. July 1998

Tradegate Annual Report and Accounts for the year ending 30th June 2002

UNCITRAL – Model Law on Electronic Signatures with Guide to Enactment 2001.
United Nations ISBN 92-1-133653-8

Understanding ebXML, UDDI and XML/EDI. XML Global October 2000

Yankee Group Reports

Internet Reference Sites

The report has made use of information from many sources, some of which was obtained through the following reference Internet web sites.

Organisation	*Acronym*	*Internet reference*
AFTA CER Business Council	ACBC	www.dfat.gov.au/cer_afta/
Department of Foreign Affairs and Trade	DFAT	www.dfat.gov.au
ASEAN Free Trade Area established 1993.	AFTA	www.aseansec.org/
Asia Pacific Economic Cooperation.	APEC	www.apec.org www.apecsec.org.sg
Association of Southeast Asian Nations	ASEAN	www.asean.or.id
Australia New Zealand Food Authority	ANZFA	www.anzfa.gov.au
APEC Competition and Law Database		www.apeccp.org.tw
Bolero		www.boleroltd.com
Closer Economic Relations Aust/Nz	CER	www.dfat.gov.au/cer_afta/
Codex Alimentarius Commission [Sets international food standards.]	CODEX	www.codexalimentarius.net
Ecert (New Zealand)		www.nzfsa.govt.nz/ecert
Legal issues of e-commerce in various economies in the world.		www.bakerinfo.com
Electronic document management guide		www.defence.gov.au
Electronic Transaction Act	ETA	www.dep.state.pa.us/dep www.nccusl.org
Electronic Transactions Act 1999		www.law.gov.au/ecommerce
General Agreement On Tariffs And Trade	GATT	www.natlaw.com/treaties/gatt.htm
Global Trade Analysis	GTAP	www.gtap.agecon.purdue.edu
International Chamber of Commerce	ICC	www.iccwbo.org
Japanese Trade EDI	TEDI	www.tediclub.com
Ministry of Agriculture & Forestry, NZ	MAF	www.maf.govt.nz
Multilateral Environment Agreement	MEA	www.wto.org
Organisation for Economic Co-operation and Development	OECD	www.oecd.org

Organisation	*Acronym*	*Internet reference*
Pacific Economic Cooperative Council	PECC	www.pecc.net
Pacific Economic Outlook	PEO	www.pacificeconomicoutlook.com
Privacy Amendment (Private Sector) Act 2000		www.ag.gov.au
Standards Australia	SA	www.standards.org.au
Trade Practices Act	TPA	www.australia.gov.au
Tradegate		www.tradegate.com.au
Tradenet (Singapore)		www.tradenet.com.sg
United Nations Commission on International Trade Law	UN CITRAL	www.uncitral.org
US Department of State - Country Reports on Economic Policy and Trade Practices		www.state.gov
World Trade Organization	WTO	www.wto.org

End of document

Attachment 1

Financial

Banks

Banks have a tradition of being conservative. Due to the financial nature of their business, they are usually significantly regulated by governments. The differences in economic demands, origin of the bank and government regulations all combine to produce varying standards for businesses to address.

The basic banking issues of capital reserves for credit, operational risks and market forces are all impacted differently in trading economies. These matters are being addressed in the financial industry as recently reported by the Pacific Economic Cooperation Council, PECC.

The core role of banks in cross-border trading is the support of the financial aspects of the trade. This is generally achieved through direct payments between trading partners or through Letters of Credit.

Letter of Credit

It is reported that banks are extremely reticent about advising how often Letters Of Credit, L/C, are rejected as they have little interest in disclosing a faulty product. It is advised that Britain's Midland Bank International and the Simplification of International Trade Procedures Board, SITPRO, found that during three random weeks, one out of two of all documentary presentations against credits were rejected. It was estimated that total letter of credit business gone wrong in Britain was five billion pounds annually. ("Euromoney Trade Finance Report", April, 1985.)

Reports are that in the U.S., the National Council on Trade Documentation showed initial L/C failure rates of 77% in Saint Louis, 75% in San Francisco and for four banks in New York, 40%, 55%, 70% and 50%. Major companies, with a rejection rate of 49%, were as unsuccessful in obtaining payment as small organisations. The worst record was held by companies doing business in the 50 to 100 million dollar range with a failure rate of 63.3% on L/C.

The rules for payment under an L/C are codified in a publication sponsored by the International Chamber of Commerce, ICC, known as the Uniform Customs and Practice for Documentary Credits. The version of the rules for L/Cs is given in ICC Publication No. 500, 1993 Revision, UCP 500. Copies of the UCP 500 are available from any of the ICC offices.

The rules in the UCP 500 are drafted by and for the banking community. One of the main purposes is to protect the banks from liability in L/C transactions. The banks are providing a service by financing the transaction and they seek to avoid any involvement in any disputes that may arise between the traders. The “independence principle” is an important concept in L/C transactions. This means that the L/C and the associated documents required under the L/C for payment are completely independent from the underlying transaction between buyer and seller.

The bank is then independent of the terms of the contract between buyer and seller - whether these are performed or not. The bank's sole regard is whether the documents presented by the seller conform to the documents required under the L/C and that they are presented within the required time. The bank clerks examining the documents simply check that the documents presented by the seller/beneficiary comply strictly with the documents required by the L/C.

This means that during sales negotiations, the seller should seek to choose the bank to issue the L/C. If the seller can use a correspondent bank to its own bank from which to have the L/C issued, the process can generally proceed more expeditiously.

The seller should insist that the buyer use a bank with a high international reputation. Since the bank issuing the L/C assumes the risk of the buyer's insolvency, if the bank is financially weak, the L/C is also weak.

Where the issuing bank is suspect, the L/C should be confirmed by a reputable local bank. When a local bank confirms a L/C issued by a foreign bank, it undertakes the payment obligation. There is a charge for this type of confirmation, which is related to the degree of risk perceived by the local bank. In some situations, the risk may be considered so high that an underwriting bank cannot be found either locally or overseas. The payment of the underwriting charge should be negotiated with the buyer before the sale is concluded.

The seller should negotiate with the buyer exactly what documents must be presented to the bank for payment under the L/C prior to the issuance of the L/C. For the seller it is desirable to minimise the number and type of documents required under the L/C. The information contained in the documents should be as simple as possible. It is essential to ensure that all documents stipulated can be produced as stated in the time allowed, particularly if the document is to be produced by an external organisation.

The majority of L/C's require a Commercial Invoice and a Bill of Lading. The commercial invoice must state the description of the goods exactly as described in the L/C. Should the description of the goods vary in any way, the seller may not be paid.

In most cases when the documents do not comply exactly, the buyer will agree to waive any discrepancies and, if the bank agrees, the payment will occur.

In summary, the documents must be accurate. If an error is discovered in any of the documents which the L/C requires, then the seller should not ship the goods until the L/C has been amended. The UCP 500 Article 9(d) makes clear that no amendment can take place unless the issuing bank and any confirming bank plus the seller agree to the change in writing. Written confirmation is then needed from the involved banks that the amendment to the L/C has been issued and the amendment has been accepted.

Usually a seller will not pass possession of the goods until payment under the LC has been effected. To maintain the goods in the seller’s possession, the seller should have the Bill of Lading consigned to order of the bank. Since the Bill of Lading is a title document, a consignment to order of the bank gives the bank title to the goods until the

buyer has paid. Assuming proper payment, the bank may then transfer title to the buyer, who can then take the Bill of Lading to receive the goods. Where payment is not completed, the bank is obliged to hold or return the documents to the seller.

Every L/C has three important dates - date by which goods must be shipped, date by which documents must be presented and the expiry date for the L/C. A seller must ensure that these dates can be met and should allow a large margin for error.

The exporter should allow sufficient time to permit correction, if possible, of any mistakes in the documents. Under the UCP 500, the bank has a maximum of seven days after presentation of the documents to let the beneficiary know if there are any discrepancies. If discrepancies can be corrected, then the documents must be resubmitted before the expiry date of the L/C.

Above text derived from "Controlling The Letter of Credit Transaction"
By Margaret L. Moses ***Of Counsel*** at "www.cfg-lawfirm.com/articles/moses1.html

Letter of Credit Formats

Various types of L/C are available. These are used for particular purposes as:

Confirmed Irrevocable Letter of Credit.

An irrevocable L/C is opened by an issuing bank whose authenticity has been confirmed by the advising bank and where the advising bank has confirmed the credit. The words "**we confirm the credit and hereby undertake ...**" or "**we add our confirmation to this credit and hereby undertake ...**" are normally included.

An exporter whose method of payment is a confirmed irrevocable L/C is assured of payment even if the importer or the issuing bank defaults. The confirmed irrevocable L/C is particularly important from buyers in an economy that is economically or politically unstable.

In a confirmed letter of credit, the exporter or the importer pays an extra charge called the **confirmation fee**, which may vary from bank to bank within an economy. The fee usually is added to the exporter's account. The exporter may indicate in the sales contract that the confirmation fee and other charges outside the seller's country are on the buyer's account.

Unconfirmed Irrevocable Letter of Credit

An irrevocable L/C opened by an issuing bank in which the advising bank does not add its confirmation to the credit. The promise to pay comes from the issuing bank only, unlike a confirmed irrevocable L/C where both the issuing bank and the advising bank promise to pay the beneficiary.

Restricted Negotiable Letter of Credit

In a **restricted negotiable letter of credit**, the authorisation from the issuing bank to pay the beneficiary is restricted to a specific nominated bank.

Freely Negotiable Letter of Credit

In a **freely negotiable letter of credit**, the authorisation from the issuing bank to pay the beneficiary is not restricted to a specific bank. Any bank can be a nominated bank as long as the bank is willing to pay, to accept drafts, to incur a deferred payment undertaking or to negotiate the L/C. The words "**this credit is not restricted to any bank for negotiation**" or "**this credit may be negotiated at any bank**", or similar words, may be included in the L/C.

Revolving Letter of Credit

When the L/C is specifically designated "**revolving letter of credit**", the amount involved when utilised is reinstated, that is, the amount becomes available again without issuing another L/C and usually under the same terms and conditions.

The revolving L/C may be used in shipments of a wide range of goods to a buyer within a period of time, usually several months to one year.

Transferable Letter of Credit

A L/C can be transferable or non-transferable. The L/C usually indicates "transferable" in the case of a transferable credit and in the absence of such indication, the L/C is deemed to be non-transferable.

In a **transferable letter of credit**, the first beneficiary, the exporter, may request the paying, accepting or negotiating bank to make the credit available in whole or in part to one or more second beneficiaries. The second beneficiary can be an export-manufacturer or an export-trader. The L/C is expressly designated "transferable" by the issuing bank on instructions of the applicant. If the words "transmissible", "assignable", "divisible", and "fractionable" are used, the L/C is not transferable.

The letter of credit that was transferred or made available to the second beneficiary is known as the **transferred credit**. The bank that makes the transfer is known as the **transferring bank**. The term "transferable credit" should not be confused with "transferred credit" as the two terms are different.

Unless otherwise agreed between the first and second beneficiary, the first beneficiary must pay the **transferring bank charges** including commissions, fees, costs or expenses in respect to a letter of credit transfer.

Unless otherwise stipulated in the L/C, the second beneficiary cannot transfer the L/C to any subsequent third beneficiary. The second beneficiary can retransfer the L/C to the first beneficiary.

Fractions of a transferable L/C can be transferred separately, provided that the sum of the fractions does not exceed the amount of the credit and the partial shipment or partial drawing in the case of exporting the services and the arrangement is permitted in the L/C.

The L/C can be transferred only on the terms and conditions stipulated in the original L/C, except with the following which may be changed:

- the amount of the L/C,
- the unit price of goods (if stated in the original L/C),
- the time of shipment,
- the last date for presentation of negotiation documents,
- the expiry date of L/C.

Any or all of the above may be reduced in the transferred credit to the second beneficiary.

The name of the applicant can be substituted with the name of the first beneficiary, unless the original L/C stipulates that the name of the applicant be used in any documents other than the invoice.

In a transferable L/C, the first beneficiary can substitute the invoice and draft of the second beneficiary with their own invoice and draft. However in this situation, the amount must not exceed the amount of the original L/C and the unit price shown on the invoice must be the same as stated in the original L/C. The difference, if any, between the invoice of the second beneficiary and first beneficiary's invoice is the amount that the first beneficiary retains.

Since a transferred credit is backed or supported by another credit, it is referred to as the back-to-back credit in some economies.

Banks in most economies have no problem issuing a transferable L/C. However, when it comes to transferring a transferable L/C to the second beneficiary, it is advised that the banks either restrict or refuse to accept the L/C. Generally bigger banks are more restrictive. Some of the reasons the bank may refuse to transfer a transferable L/C are as follows:

- The beneficiary of the L/C does not maintain an account or existing credit line with the bank.
- The beneficiary of the L/C does not have sufficient past export records or transactions with the bank from which it may gauge the ability of the beneficiary to perform under the L/C.

- The business relationship between the transferring bank and issuing or reimbursing bank is not well established.
- The beneficiary of the L/C lacks personal ties to the bank. Personal relationships are very important in certain economies.

Non-transferable Letter of Credit

In a **non-transferable L/C**, the beneficiary cannot transfer the credit to other beneficiary. The L/C usually indicates "non-transferable" or "not transferable."

In a non-transferable letter of credit, the beneficiary may assign any proceeds that may be entitled under the L/C, but not the right to perform under the L/C. The assignment of proceeds is not limited to a non-transferable L/C, all letters of credit are assignable.

Parties Associated with a Letter of Credit

Applicant

The **applicant** is the party who requests and instructs the issuing bank to open a L/C in favour of the beneficiary. The applicant usually is the importer or the buyer of goods and/or services.

Confirming house

The applicant can also be another party acting on behalf of the importer, such as a confirming house. The **confirming house** is equivalent to a buying office, it acts as an intermediary between importer and exporter and it can be located in a third country or in the exporter's country. The confirming house negotiates and books the order on behalf of the importer and guarantees payment to the exporter and often finances the importer. When dealing with importers in an economy with a foreign exchange shortage, the exporter may deal with the confirming house in another country to ensure payment.

Beneficiary

The **beneficiary** is the party in whose favour the issuing bank opens a L/C. The beneficiary usually is the exporter or the seller of goods and/or services.

Issuing Bank

The **issuing or opening bank** opens an L/C in favour of the beneficiary, at the request and on the instructions of the applicant. The issuing bank usually is located in the applicant's country.

Advising Bank

The **advising or notifying bank** advises the beneficiary that an L/C opened by the issuing bank is available and informs the beneficiary about the terms and conditions of the L/C. The advising bank is not necessarily responsible for the payment of the credit that it advises.

The issuing bank most often sends the L/C through its branch office or correspondent bank to avoid fraud. The branch office or the correspondent bank maintains specimen signatures on file where it may check the signatures on the L/C. The bank usually has a coding system with a secret test key to distinguish a genuine L/C.

An exporter can request the importer to specify the exporter's chosen bank as the advising bank in a L/C application. In many economies, it is beneficial to the exporter when the advising bank is the exporter's bank, where the exporter may receive reduced bank charges and fees because of special relationships with the bank.

Correspondent Bank

The term **correspondent bank** or **correspondent** used in international trade refers to an alternate bank in another country with which the first bank maintains a banking service agreement.

Confirming Bank

The advising bank that confirms the credit by adding its promise to pay, upon authorisation or request of the issuing bank is known as the **confirming bank**.

Nominated Bank

The bank designated by the issuing bank that is authorised to pay, to accept drafts, to incur a deferred payment undertaking or to negotiate the L/C. The nominated bank can be a party other than the advising bank.

Paying, Accepting or Negotiating Bank

The bank which:

- makes payment to the sight draft drawn by the beneficiary is the **paying bank**,
- accepts the term draft drawn by the beneficiary is the **accepting bank**,
- negotiates the draft and/or documents presented by the beneficiary or bona fide holder is the **negotiating bank**.
- When the bank negotiates the draft and/or documents, it gives value to such draft and/or documents, not only by examination of the documents.

Transferring Bank

The paying, accepting or negotiating bank that makes the credit available in whole or in part to one or more second beneficiaries at the request of the first beneficiary is the **transferring bank**.

Claiming Bank and Reimbursing Bank

The **claiming bank** is a paying, accepting or negotiating bank which claims for reimbursement on another party. The reimbursing bank can be other than the issuing bank.

Checking the Incoming Letters of Credit

If the exporter receives a L/C directly from an issuing bank in the importing country, it must be very carefully checked to ensure the integrity of the issuing bank is known and the credit is authentic.

Errors in the terms and conditions of a L/C may occur as a result of the applicant's error in preparing the L/C application and/or the issuing bank's error in preparing the L/C. The exporter must check the L/C immediately and thoroughly upon receipt from the bank to ensure that the terms and conditions stipulated in the L/C are correct and conform to the sales contract. Further that the exporter must exactly comply with all the L/C requirements. Otherwise, the exporter must immediately ask the importer to amend the L/C.

If any deviation occurs from the terms and conditions of the L/C, no matter how small, a discrepancy is said to occur and this may delay or prevent the payment.

The exporter should check the details of the L/C, including:

- The names and addresses are complete and spelled correctly.
- The L/C is irrevocable and confirmed by the advising bank plus the text conforms to the sales contract.
- The amount is sufficient to cover the consignment.
- The description of goods is correct and exact.
- The quantity is correct.
- The unit price of goods, if stated in the L/C, conforms to the contract price.
- The latest date for shipment or the shipping date is sufficient.
- The latest date for negotiation or the expiry date is sufficient to present all documents and drafts to the bank.

- The port of shipment and the port of destination are correct, including any transit ports.
- The partial shipment/drawing is permitted or prohibited.
- The transhipment is permitted or prohibited.
- The L/C is transferable or non-transferable.
- The type of risk and the amount of insurance coverage, if required.
- The documents required are obtainable in the stipulated time frame.
- The following words, or similar, are present in the L/C:

"Unless otherwise expressly stated, this Credit is subject to the Uniform Customs and Practice for Documentary Credits, 1993 Revision, International Chamber of Commerce Publication No. 500."

Opening, Amendments and Notification in a Letter of Credit

Opening

A L/C is opened at the request and on the instructions of the applicant. The applicant files a L/C application with their bank. The application contains all the necessary information required of a L/C to the beneficiary.

The L/C application in some economies must be accompanied by a pro forma invoice to confirm the sale and the importer may be required to deposit 20% to 100% of the invoice value in local or foreign currency, which is a form of non-tariff barrier. The deposits, plus other fees and charges, can be expensive and may discourage importers from using the L/C in payment.

Importers unable to open the L/C on time as promised are reported as not uncommon. The delay and perhaps even the order cancellation are often attributed to the barriers in the importing country and/or the bureaucracy of that company. The buyer's delay in opening the L/C after an order is placed can occur in such circumstances when:

- Delay occurs in issuing the import permit.
- There is a shortage in the foreign exchange reserves.
- The buyer who placed the order does not have the authority to open the L/C.
- The importer is in a restricted financial position.
- The domestic selling price of the imported goods drops.

- The currency of the importing country is devalued.
- The buyer who books the order is no longer employed by the importer.
- The company is acquired or merged with another company.

Regardless of the means used in opening an L/C, it is important to request the importer to fax in advance the following information;

- L/C number,
- L/C issuing and expiry dates,
- issuing bank name and location
- advising bank name and location
- L/C amount.

Once this information is available, the exporter can follow up with the advising bank. This may save a few days of mail time from the advising bank to the beneficiary.

There have been cases in which the importer provided false L/C information in order to convince the exporter that the L/C was opened promptly. The importer actually did not apply for the L/C.

Amendments

Amendments may be necessary when the stipulation of the credit does not comply to the sales contract or when there is a need to modify the stipulation of the credit or the wording in the credit. A small typographical error may significantly affect the exportation and importation of the goods.

The L/C is often amended by means of a full text cable. The L/C amendment is advised through the same advising bank that advised the credit. Nevertheless, the advising bank that has confirmed the L/C may not add its confirmation to the amendment of the L/C.

The advising bank mails the amendment advice to the beneficiary. The beneficiary pays an amendment fee to claim the L/C amendment from the advising bank.

In the event of an amendment, the beneficiary must give notification of acceptance or rejection of the amendment to the advising bank. If the beneficiary fails to notify the advising bank, it is deemed that the beneficiary has accepted the amendment.

In the case of a transferable L/C that is transferred to more than one second beneficiary, if one or more second beneficiaries reject the amendment, the L/C remains unamended with respect to those who rejected the amendment. Nevertheless, with respect to the other second beneficiaries who accepted the amendment, the L/C is amended accordingly.

The **latest negotiation date** is the last day of the period of time allowed by the L/C for the presentation of documents and/or draft to the bank. The latest negotiation date is not necessarily the L/C expiry date. In case the L/C does not stipulate the latest negotiation, it is within 21 days after the date of issuance of the transport documents, but on or before the L/C expiry date.

The **expiry date and place** is the last day of validity of the credit and the place allowed by the L/C for the presentation of documents and/or draft for payment, acceptance or negotiation. Generally the validity starts from the issuance date of the L/C by the issuing bank. A bank normally discourages stating the L/C validity in a period of time.

When the expiry date and/or the latest negotiation date occurs when the bank is closed, the expiry date and/or the latest negotiation date is extended to the first day on which the bank is opened. This includes reasons such as acts of God, strikes, riots, civil commotions, lockouts, insurrections, wars or any other causes beyond the bank's control, Such extension, however, does not extend the latest date of shipment.

The **draft drawn on** specifies which bank or who is the drawee, the payer, of the draft. The draft is usually drawn on the confirming bank or the issuing bank. In some cases, the draft is drawn on the applicant.

The **draft drawn at** specifies the terms. This can be a sight draft where payment is on demand or on presentation or a term draft where payment is at a fixed or determinable future time.

The **draft drawn under** specifies under which credit and credit of which bank.

The **latest shipment** is the last day of the period of time allowed by the L/C for shipment, dispatch or taking in charge.

The **port or point of origin** is the port or place of loading, dispatch or taking in charge.
The **port or point of destination** is the port or place of discharge or delivery.

Freight

The following outlines the terms and general meanings when associated with carriage of goods between locations. These terms are associated with the Letters of Credit.

Freight Payment is usually described in International Commercial Terms, INCOTERMS, that determine whether the shipper or the consignee is responsible for paying the freight.

Freight prepaid means the freight has been paid or prepaid by the shipper. The trade terms **CFR (C&F)**, **CIF**, **DAF**, **CPT**, **CIP**, **DDU**, **DDP**, **DES** and **DEQ** require a prepayment of the carriage cost.

In a prepaid delivery, the L/C normally requires that the words "**Freight Prepaid**" be marked on the bill of lading to clearly indicate payment or prepayment of freight at port or point of origin.

Freight collect means that the freight still has to be paid by the consignee. The terms **FOB**, **FAS**, **EXW**, and **FCA** require a collection of the carriage cost.

In a collect delivery, the L/C normally requires that the words "**Freight Collect**" be marked on the bill of lading, clearly indicating freight payable at destination. The mark may appear by stamp or be indicated by other means.

A collection charge usually is included in the freight rate or is collected separately. Freight charged on a collect basis is normally higher than on a prepaid basis.

Control of the **date of shipment** is very important in exporting. A delayed shipment may mean losing the order and the customer's trust.

An **earliest date of shipment** may be specified by the importer in the L/C to prevent the exporter from shipping the goods too early. Thus the importer avoids high inventory, warehouse congestion and financial strain.

The **latest date of shipment** or the **last date for shipment** stipulated in the L/C prevents the exporter from shipping the goods too late, thus avoiding an inventory shortage. This is important for seasonal goods in the importing country, where a late shipment may render the goods unsaleable or cost more to the importer.

Partial or part shipment is allowed, unless otherwise stipulated in the L/C.

Instalment shipment means shipping an order in different batches and on different periods stipulated in the L/C.

Where there is a failure to ship an instalment within the stipulated period, the L/C will be made unavailable or inoperative for that instalment and any subsequent instalments, unless the L/C states otherwise.

The **customs closing date** is the last date that the carrier accepts the cargo for shipment in a specified voyage at designated delivery location or closing location at the container terminal or dock. The delivery date and location and the customs closing date for the goods are specified in the shipping order.

The United States of America has recently passed an Act requiring all shipping manifests to be produced to their customs office in the port of destination four working days prior to shipment. This means the product must be packed ready for shipment on the dockside before the documents are despatched to the USA Customs Department. This is an onerous task for most exporters.

The **authorised delivery date** can be 2 days, including the day before the closing date, prior to loading the shipment. When the cargo arrives at the container terminal earlier than the date specified by the carrier and the vessel has not arrived then the carrier may not accept the cargo. The cargo may incur warehousing charges if it is not returned to the shipper.

Insurance

This is an essential item for exporting organisations to ensure their goods are adequately protected against inadvertent mishaps during their transport from their place of origin to their final destination.

Due to the nature of Murray Goulburn export arrangements, the insurance cost has been simplified to a fixed percentage of the value of the exported products.

This document may be simply transmitted as an e-mail attachment in lieu of the paper 'hard copy' or facsimile version. The need is to confirm that goods of a notified value have been despatched on a certain date and the signatory is the contactable person in case of any subsequent query.

ABAC

In May 2002 a symposium was held in Sydney, Australia to discuss Risk Management, Pricing and Capital Provisioning. This was the initiative of the Finance task Force of the APEC Business Advisory Council, ABAC, in collaboration with the Finance forum of the PECC. It was part of the plan for strengthening the financial systems in the region.

A reported outcome of the symposium was the new Basel Capital Accord (or Basel 2) for the supervision of banks. This is considered to hold promise for a more internationally coherent and efficient approach to bank supervision. This may assist promoting a more resilient and stable financial sector in the APEC region. This Accord builds on the original Basel Accord of 1988. In that Accord, banks were to maintain a capital adequacy requirement equal to 8% of a basket of risk weighted assets. Basel 2 offers a two tier approach for the transition period so that banks may have an opportunity to calibrate their capital reserves for credit, market and operational risks. The base tier is for domestic focussed banks with simpler business models and the second tier is for more complex operations particularly in the international sphere.

This Accord is aimed at strengthening active credit risk portfolio management by financial institutions with rewards and sanctions. Similarly it is directed toward minimising operational risks. These risks of loss arise from inadequate or failed internal processes, people or systems, or from external events. Such external events include a very broad range of actions by governments and regulators, financial infrastructure failure, errors, fraud, legal disputes, compliance failures, theft, damage to premises and other crimes.

The key pillars of Basel 2 are:

1. Minimum capital requirements that adequately reflect risk taking by banks, so that there is an adequate capital buffer to absorb risk and that the risk has been appropriately priced.

An efficient and effective supervisory process to increase the cooperation between banks and regulators.

Increased reliance on information disclosure and the discipline of the overall financial market.

The symposium made 11 recommendations:

Recommendation 1. APEC economies should recognise that there is a crucial need for better risk management and pricing and capital allocation measures as reflected in Basel 2.

Recommendation 2. The need for a sound risk management and pricing system as an integral element of a bank's management and governance systems apply irrespective of

whether a. bank elects to use the standardised approach or the advanced approach of Basel 2.

Recommendation 3. To facilitate the adoption of Basel 2 across the APEC region, noting the complexities of the issues involved.

Recommendation 4. Consider the resourcing needs of financial regulatory agencies as Basel 2 is implemented.

Recommendation 5. Develop information sharing arrangements between regulatory bodies on regulatory developments and in such areas as the promotion of regional credit markets

Recommendation 6. Develop practical and transparent transition arrangements that will guide banks on the implementation of Basel 2 and promote co-ordination between regulators in the region aimed at avoiding regulatory discrepancies and minimising opportunities for regulatory arbitrage as Basel 2 is implemented

Recommendation 7. Give special attention to supporting capacity building of bank regulators to prepare for implementation of Basel 2.

Recommendation 8. Consider lower risk weights for SME loan portfolios.

Recommendation 9. Seek to be involved in consultations with the BIS on the further development of Basel 2.

Recommendation 10. Develop joint private/public sector initiatives for training and building the skills of bank risk managers (and bank boards) and bank regulators in the techniques and strategies to support Basel 2.

Recommendation 11. Build on the work of the Symposium to develop further public/private sector initiatives to support APEC economies in institutional strengthening of regulatory agencies in the banking sector in preparing for the implementation of Basel 2.

The implementation of Basel 2 in the Asia Pacific region is predicted to pose significant challenges and resource intensive tasks for bank regulators. Thus the task will address the process of interpreting, influencing and implementing Basel 2 over the next years.

Adopting Basel 2 in the Asia Pacific region will be difficult given the broad range of economies at different stages of development in their banking and broader product and capital markets. It was noted that banks from within the Asia Pacific region have not been actively involved in the formulation of Basel 2 and there is some urgency to consult the region as Basel 2 is further refined before implementation.

While this approach is aimed at achieving a more standardised banking procedure for risk management, pricing policies and reliability, many types of trade payments are to be conducted through this complex system as quickly, efficiently and securely as possible. Banks have established the Society for Worldwide Interbank Financial Telecommunications, SWIFT, network for processing financial transactions and secure

this against normal business or public access. This is essentially a private financial processing network dedicated to the banking industry protected by firewall systems that ensure that only authorised traffic from authorised sources is carried. This also enables regulators to monitor financial transactions between economies and restrict certain transactions, if necessary, such as persons listed on the U.S. Government's Denied Person's List.

The SWIFT network provides a powerful base for the banks to offer to support e-commerce business trading. This concept is evidenced in the Bolero project started under Bolero International Ltd. BOLERO, Bills of Lading Electronic Registry Organisation, was created in April 1998 in the USA. Bolero is an equal joint venture between SWIFT and the Through Transport Club, TT Club.

End of Attachment

Attachment 2

Australian "Electronic Transactions Act 1999"

Excerpts Sections 8 to 14

The Australian "ELECTRONIC TRANSACTIONS ACT 1999" Sections 8 to 14 has to be complied with for any electronic transactions carried out in Australia, including "paperless trading". The following extract contains what is considered to be the most pertinent sections of this Act relevant to this project.

8 Validity of electronic transactions

(1) For the purposes of a law of the Commonwealth, a transaction is not invalid because it took place wholly or partly by means of one or more electronic communications.

(2) The general rule in subsection (1) does not apply in relation to the validity of a transaction to the extent to which another, more specific provision of this Part deals with the validity of the transaction.

Exemptions

(3) The regulations may provide that subsection (1) does not apply to a specified transaction.

(4) The regulations may provide that subsection (1) does not apply to a specified law of the Commonwealth.

9 Writing

Requirement to give information in writing

(1) If, under a law of the Commonwealth, a person is required to give information in writing, that requirement is taken to have been met if the person gives the information by means of an electronic communication, where:

(a) in all cases- at the time the information was given, it was reasonable to expect that the information would be readily accessible so as to be useable for subsequent reference; and

(b) if the information is required to be given to a Commonwealth entity, or to a person acting on behalf of a Commonwealth entity, and the entity requires that the information be given, in accordance with particular information technology requirements, by means of a particular kind of electronic communication- the entity's requirement has been met; and

(c) if the information is required to be given to a Commonwealth entity, or to a person acting on behalf of a Commonwealth entity, and the entity requires that particular action be taken by way of verifying the receipt of the information- the entity's requirement has been met; and

(d) if the information is required to be given to a person who is neither a Commonwealth entity nor a person acting on behalf of a Commonwealth entity- the

person to whom the information is required to be given consents to the information being given by way of electronic communication.

Permission to give information in writing

(2) If, under a law of the Commonwealth, a person is permitted to give information in writing, the person may give the information by means of an electronic communication, where: (a) in all cases- at the time the information was given, it was reasonable to expect that the information would be readily accessible so as to be useable for subsequent reference; and

(b) if the information is permitted to be given to a Commonwealth entity, or to a person acting on behalf of a Commonwealth entity, and the entity requires that the information be given, in accordance with particular information technology requirements, by means of a particular kind of electronic communication- the entity's requirement has been met; and

(c) if the information is permitted to be given to a Commonwealth entity, or to a person acting on behalf of a Commonwealth entity, and the entity requires that particular action be taken by way of verifying the receipt of the information- the entity's requirement has been met; and

(d) if the information is permitted to be given to a person who is neither a Commonwealth entity nor a person acting on behalf of a Commonwealth entity- the person to whom the information is permitted to be given consents to the information being given by way of electronic communication.

Certain other laws not affected

(3) This section does not affect the operation of any other law of the Commonwealth that makes provision for or in relation to requiring or permitting information to be given, in accordance with particular information technology requirements:

(a) on a particular kind of data storage device; or

(b) by means of a particular kind of electronic communication.

Giving information

(4) This section applies to a requirement or permission to give information, whether the expression *give* , *send* or *serve* , or any other expression, is used.

(5) For the purposes of this section, *giving information* includes, but is not limited to, the following:

(a) making an application;

(b) making or lodging a claim;

(c) giving, sending or serving a notification;

(d) lodging a return;

(e) making a request;

(f) making a declaration;

(g) lodging or issuing a certificate;

(h) making, varying or cancelling an election;

(i) lodging an objection;

(j) giving a statement of reasons.

10 Signature

Requirement for signature

(1) If, under a law of the Commonwealth, the signature of a person is required, that requirement is taken to have been met in relation to an electronic communication if:

(a) in all cases- a method is used to identify the person and to indicate the person's approval of the information communicated; and

(b) in all cases- having regard to all the relevant circumstances at the time the method was used, the method was as reliable as was appropriate for the purposes for which the information was communicated; and

(c) if the signature is required to be given to a Commonwealth entity, or to a person acting on behalf of a Commonwealth entity, and the entity requires that the method used as mentioned in paragraph (a) be in accordance with particular information technology requirements- the entity's requirement has been met; and

(d) if the signature is required to be given to a person who is neither a Commonwealth entity nor a person acting on behalf of a Commonwealth entity- the person to whom the signature is required to be given consents to that requirement being met by way of the use of the method mentioned in paragraph (a).

Certain other laws not affected

(2) This section does not affect the operation of any other law of the Commonwealth that makes provision for or in relation to requiring:

(a) an electronic communication to contain an electronic signature (however described); or

(b) an electronic communication to contain a unique identification in an electronic form; or

(c) a particular method to be used in relation to an electronic communication to identify the originator of the communication and to indicate the originator's approval of the information communicated.

11 Production of document

Requirement to produce a document

(1) If, under a law of the Commonwealth, a person is required to produce a document that is in the form of paper, an article or other material, that requirement is taken to have been met if the person produces, by means of an electronic communication, an electronic form of the document, where:

(a) in all cases- having regard to all the relevant circumstances at the time of the communication, the method of generating the electronic form of the document provided a reliable means of assuring the maintenance of the integrity of the information contained in the document; and

(b) in all cases- at the time the communication was sent, it was reasonable to expect that the information contained in the electronic form of the document would be readily accessible so as to be useable for subsequent reference; and

(c) if the document is required to be produced to a Commonwealth entity, or to a person acting on behalf of a Commonwealth entity, and the entity requires that an electronic form of the document be produced, in accordance with particular information technology requirements, by means of a particular kind of electronic communication- the entity's requirement has been met; and

(d) if the document is required to be produced to a Commonwealth entity, or to a person acting on behalf of a Commonwealth entity, and the entity requires that particular action be taken by way of verifying the receipt of the document- the entity's requirement has been met; and

(e) if the document is required to be produced to a person who is neither a Commonwealth entity nor a person acting on behalf of a Commonwealth entity- the person to whom the document is required to be produced consents to the production, by means of an electronic communication, of an electronic form of the document.

Permission to produce a document

(2) If, under a law of the Commonwealth, a person is permitted to produce a document that is in the form of paper, an article or other material, then, instead of producing the document in that form, the person may produce, by means of an electronic communication, an electronic form of the document, where:

(a) in all cases- having regard to all the relevant circumstances at the time of the communication, the method of generating the electronic form of the document provided

a reliable means of assuring the maintenance of the integrity of the information contained in the document; and

(b) in all cases- at the time the communication was sent, it was reasonable to expect that the information contained in the electronic form of the document would be readily accessible so as to be useable for subsequent reference; and

(c) if the document is permitted to be produced to a Commonwealth entity, or to a person acting on behalf of a Commonwealth entity, and the entity requires that an electronic form of the document be produced, in accordance with particular information technology requirements, by means of a particular kind of electronic communication- the entity's requirement has been met; and

(d) if the document is permitted to be produced to a Commonwealth entity, or to a person acting on behalf of a Commonwealth entity, and the entity requires that particular action be taken by way of verifying the receipt of the document- the entity's requirement has been met; and

(e) if the document is permitted to be produced to a person who is neither a Commonwealth entity nor a person acting on behalf of a Commonwealth entity- the person to whom the document is permitted to be produced consents to the production, by means of an electronic communication, of an electronic form of the document.

Integrity of information

(3) For the purposes of this section, the integrity of information contained in a document is maintained if, and only if, the information has remained complete and unaltered, apart from:

(a) the addition of any endorsement; or

(b) any immaterial change;

which arises in the normal course of communication, storage or display.

Certain other laws not affected

(4) This section does not affect the operation of any other law of the Commonwealth that makes provision for or in relation to requiring or permitting electronic forms of documents to be produced, in accordance with particular information technology requirements:

(a) on a particular kind of data storage device; or

(b) by means of a particular kind of electronic communication.

Exemption- migration and citizenship documents

(5) SCHEDULE - 1 has effect.

Copyright

(6) The following provisions have effect:

(a) the generation of an electronic form of a document for the purposes of:

(i) this section; or

(ii) a law of a State or Territory that corresponds to this section;

does not constitute an infringement of the copyright in a work or other subject matter embodied in the document.

(b) the production, by means of an electronic communication, of an electronic form of a document for the purposes of:

(i) this section; or

(ii) a law of a State or Territory that corresponds to this section;

does not constitute an infringement of the copyright in a work or other subject matter embodied in the document.

12 Retention

Recording of information

(1) If, under a law of the Commonwealth, a person is required to record information in writing, that requirement is taken to have been met if the person records the information in electronic form, where:

(a) in all cases- at the time of the recording of the information, it was reasonable to expect that the information would be readily accessible so as to be useable for subsequent reference; and

(b) if the regulations require that the information be recorded, in electronic form, on a particular kind of data storage device- that requirement has been met.

Retention of written document

(2) If, under a law of the Commonwealth, a person is required to retain, for a particular period, a document that is in the form of paper, an article or other material, that requirement is taken to have been met if the person retains an electronic form of the document throughout that period, where:

(a) in all cases- having regard to all the relevant circumstances at the time of the generation of the electronic form of the document, the method of generating the electronic form of the document provided a reliable means of assuring the maintenance of the integrity of the information contained in the document; and

(b) in all cases- at the time of the generation of the electronic form of the document, it was reasonable to expect that the information contained in the electronic form of the document would be readily accessible so as to be useable for subsequent reference; and

(c) if the regulations require that the electronic form of the document be retained on a particular kind of data storage device- that requirement has been met.

(3) For the purposes of subsection (2), the integrity of information contained in a document is maintained if, and only if, the information has remained complete and unaltered, apart from:

(a) the addition of any endorsement; or

(b) any immaterial change;

which arises in the normal course of communication, storage or display.

Retention of electronic communications

(4) If, under a law of the Commonwealth, a person (the *first person*) is required to retain, for a particular period, information that was the subject of an electronic communication, that requirement is taken to be met if the first person retains, or causes another person to retain, in electronic form, the information throughout that period, where:

(a) in all cases- at the time of commencement of the retention of the information, it was reasonable to expect that the information would be readily accessible so as to be useable for subsequent reference; and

(b) in all cases- having regard to all the relevant circumstances at the time of commencement of the retention of the information, the method of retaining the information in electronic form provided a reliable means of assuring the maintenance of the integrity of the information contained in the electronic communication; and

(c) in all cases- throughout that period, the first person also retains, or causes the other person to retain, in electronic form, such additional information obtained by the first person as is sufficient to enable the identification of the following:

(i) the origin of the electronic communication;

(ii) the destination of the electronic communication;

(iii) the time when the electronic communication was sent;

(iv) the time when the electronic communication was received; and

(d) in all cases- at the time of commencement of the retention of the additional information covered by paragraph (c), it was reasonable to expect that the additional

information would be readily accessible so as to be useable for subsequent reference; and

(e) if the regulations require that the information be retained, in electronic form, on a particular kind of data storage device- that requirement is met throughout that period.

(5) For the purposes of subsection (4), the integrity of information that was the subject of an electronic communication is maintained if, and only if, the information has remained complete and unaltered, apart from:

(a) the addition of any endorsement; or

(b) any immaterial change;

which arises in the normal course of communication, storage or display.

Copyright

(6) The generation of an electronic form of a document for the purposes of:

(a) this section; or

(b) a law of a State or Territory that corresponds to this section;

does not constitute an infringement of the copyright in a work or other subject matter embodied in the document.

14 Time and place of dispatch and receipt of electronic communications

Time of dispatch

(1) For the purposes of a law of the Commonwealth, if an electronic communication enters a single information system outside the control of the originator, then, unless otherwise agreed between the originator and the addressee of the electronic communication, the dispatch of the electronic communication occurs when it enters that information system.

(2) For the purposes of a law of the Commonwealth, if an electronic communication enters successively 2 or more information systems outside the control of the originator, then, unless otherwise agreed between the originator and the addressee of the electronic communication, the dispatch of the electronic communication occurs when it enters the first of those information systems.

Time of receipt

(3) For the purposes of a law of the Commonwealth, if the addressee of an electronic communication has designated an information system for the purpose of receiving electronic communications, then, unless otherwise agreed between the originator and the addressee of the electronic communication, the time of receipt of the electronic

communication is the time when the electronic communication enters that information system.

(4) For the purposes of a law of the Commonwealth, if the addressee of an electronic communication has not designated an information system for the purpose of receiving electronic communications, then, unless otherwise agreed between the originator and the addressee of the electronic communication, the time of receipt of the electronic communication is the time when the electronic communication comes to the attention of the addressee.

Place of dispatch and receipt

(5) For the purposes of a law of the Commonwealth, unless otherwise agreed between the originator and the addressee of an electronic communication:

(a) the electronic communication is taken to have been dispatched at the place where the originator has its place of business; and

(b) the electronic communication is taken to have been received at the place where the addressee has its place of business.

(6) For the purposes of the application of subsection (5) to an electronic communication:

(a) if the originator or addressee has more than one place of business, and one of those places has a closer relationship to the underlying transaction- it is to be assumed that that place of business is the originator's or addressee's only place of business; and

(b) if the originator or addressee has more than one place of business, but paragraph (a) does not apply- it is to be assumed that the originator's or addressee's principal place of business is the originator's or addressee's only place of business; and

(c) if the originator or addressee does not have a place of business- it is to be assumed that the originator's or addressee's place of business is the place where the originator or addressee ordinarily resides.

Exemptions

(7) The regulations may provide that this section does not apply to a specified electronic communication.

(8) The regulations may provide that this section does not apply to a specified law of the Commonwealth.

End of Attachment

Attachment 3

EDI, Internet and XML

Electronic Data Interchange, EDI

History

Businesses that installed computers were able to store and process data electronically. However companies needed an expedient method to communicate this data between users. Using existing telecommunication networks, companies could transmit data electronically over telephone lines and have the data directly inserted into a trading partner's computer based business application. These electronic interchanges improved response time, reduced paperwork and eliminated the potential transcription errors. These early computer communications only solved part of the problem.

These electronic interchanges were based on proprietary formats agreed between two trading partners. Due to differing document formats, it was difficult for a company to exchange data electronically with many trading partners. A *standard* format for the data being exchanged was needed if multiple companies were to participate.

In the 1960's a cooperative effort between industry groups made an attempt to achieve common data formats. This attempt at implementing a "paperless" office was mainly conducted by companies in transportation, grocery, and retail industry segments. It related primarily for intra-industry transactions to convey purchasing, transportation and finance data.

In 1968, the transportation industry recognised that the volume paperwork required to conduct their businesses was beginning to present a major problem. The time to process this paperwork was slowing the movement and consignment of shipments. The transportation industry established a committee, the Transportation Data Committee, TDCC, to develop suitable standard formats for exchanging business information.

Although EDI never eliminated paper documents, it decreased the number of times such documents were handled, resulting in fewer errors and faster transfers. Unfortunately, it also increased the complexity of moving those electronic documents around.

In 1978, the American National Standards Institute, ANSI, used the pioneering work of TDCC to work on a national Electronic Data Interchange, EDI, standards by a group of industry representatives called the Accredited Standards Committee. The base requirements were to create a set of standard data formats that:

- were computer and network hardware independent;
- were unambiguous so they could be used by all trading partners;
- reduced the labour intensive data tasks; and
- allowed the sender of the data to control the exchange, including transaction receipt.

Security and reliability were a major concern, so the result was a rigorous solid data-exchange system that unfortunately was also massive, unwieldy and insular.

Initially squabbling vendors pushing their proprietary standards added to the confusion resulting in only trading companies that subscribed to a compatible system could exchange data. Finally vendors and users worked together to produce the first standard from the American National Standards Institute, ANSI X-12

Many industries influenced the development of EDI. One particularly notable industry was the Auto Industry Action Group, AIAG, which insisted that by 1988 all U.S. automakers and their suppliers would communicate electronically using the ANSI standards and if they could not, they would take their business elsewhere.

In 1983, ANSI published the first five American National Standards for EDI, that is now widely used in the USA.. Today there are well over 300 additional standards and guidelines in development.

Standards

As the ANSI X12 standard began to be more widely adopted in the USA, companies encountered limitations when communicating electronically beyond their national boundaries. International users often found that the U.S. standards did not meet their needs. In 1988, the United Nations chartered UN/EDIFACT (Electronic Data Interchange For Administration, Commerce and Trade) to develop international EDI standards. These standards take the form of United Nations Standard Messages (UNSMs), which are analogous to what ANSI X12 terms Transaction Sets.

UN/EDIFACT has increased competitiveness and helped to remove trade barriers in Europe and in other economies. However, UN/EDIFACT is not solely a "European Standard" and Canada, like Australia, has selected UN/EDIFACT as its national EDI standard.

A major issue with EDI is its high cost of implementation and operation. This cost arises from several sources:

- EDI enabling software – either purchased or developed in-house.
- Implementation of the software program between traders.
- Annual software maintenance, again either contracted or supported in-house. This work is needed due to the continuing evolution of EDI standards
- Telecommunications charges.
- Additional hardware may be needed to support the system plus initial and ongoing training may be required for the EDI operators.
- Business processes may have to be re-configured to accommodate the EDI implementation.

The initial software purchase and implementation costs can be less than the annual software support cost and telecommunications charges can also range from several hundred dollars to several thousand dollars per month.

EDI-compliant bar-code label printing and scanning equipment may be required for the products to take advantage of the electronic nature of the EDI technology.

In large companies, the cost of EDI may be offset by increased efficiencies, however for smaller companies that cost may be prohibitive. Many large enterprises, especially those in low-margin retail businesses such as Coles and Woolworths insist on conducting business using EDI transactions.

Dramatic cost savings have been claimed when using EDI such as cutting costs of a paper based purchase order from almost $70 to less than $1. Further, EDI's single data entry minimises repetitive entry and therefore reduces costly keystroke errors. The almost instantaneous nature of an EDI transaction shortens the time to seconds between creating a purchase order and sending an invoice.

Future

Until recently, there were few alternatives to EDI that offered the speed, standardisation and acceptance in the global business community. Now, Internet-based EDI solutions show potential to cut the costs and constrictions of EDI.

Many companies implement EDI and insist all transactions are subsequently EDI compatible or the trading partner takes the risk of being disconnected. This is considered a dangerous approach that has led to underwhelming results. Small to medium size companies have often not participated as their costs for implementing and operating the EDI technology are prohibitive.

Business processes may have to be re-engineered to match the EDI implementation and IT systems applications need to be upgraded to meet the increased information flow. Further, technology has changed significantly with improved capability and lower costs since EDI standards were established and sometimes technical hurdles that the standards were designed to overcome now no longer exist.

Hence the suitable solution to meet today’s competitive economic realities may be to provide trading partners with electronic information in any agreed format provided it contains the essential data to meet later processing and information requirements.

Organisational business processes are now being re-engineered across functional lines to meet new internal organisational demands. The needs result from causes such as implementation of Enterprise Resource Planning, ERP, systems. To match a multiple EDI functions to this complexity and achieve expected productivity improvements, is an ambitious undertaking. Translation and processing software must be rules-based, flexible and easily maintained directly by “Knowledge” experts to minimise manual effort and automate the complex business processes.

The Internet

The Internet is now a core communications mechanism. It is constructed quite differently from telecommunications networks because it arose from interlinking computers and data as distinct from transmitting speech. The mechanism of this linking is commonly known as the Internet.

It is more than a new transmission technology. It embodies the inter-communication of available computers around the world using a common data language. It has different attributes to the telecommunications networks and therefore has different strengths and weaknesses. To appreciate these differences it is necessary to understand the basis of the Internet and its major application - the World Wide Web.

The Internet has been described as:

> "an autonomous, self-organising, open, private infrastructure"

The official definition of the Internet was made in a resolution dated 24 October 1995, when the U.S. Federal Networking Council, FNC, unanimously passed a motion. This activity is recorded and available at "http://www.fnc.gov/Internet_res.html." This definition was developed in consultation with members of the Internet and intellectual property rights communities.

The Federal Networking Council agreed that the following language reflects the definition of the term "Internet".

"Internet" refers to the global information system that:

i. is logically linked together by a globally unique address space based on the Internet Protocol, IP, or its subsequent extensions/follow-ons;

ii. is able to support communications using the Transmission Control Protocol/Internet Protocol, TCP/IP, suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols; and

iii. provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein.

Access to the Internet usually takes place via the public switched telephone network, PSTN, however once a signal has been passed to the Internet, it passes through a series of privately owned networks and hosts. These components are not part of the PSTN

These private networks include large backbone networks through to small Local Area Network, LAN, systems. Any LAN that has a permanent connection with an Internet Service Provider, ISP, is considered an integral part of the global Internet.

Thus the Internet includes every private and public network plus any LAN in the world that has agreed to communicate using the TCP/IP protocol.

The Internet contains many web sites about the Internet's history. The most authoritative source is "A Brief History of the Internet", written by the original network architects that begins in 1962.

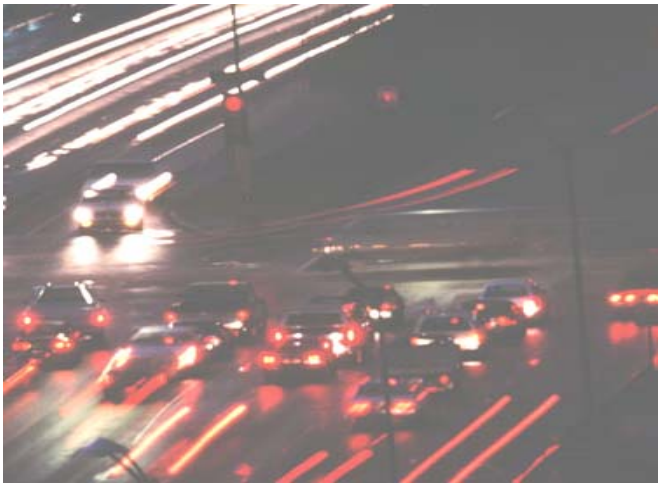
"The first recorded description of the social interactions that could be enabled through networking was a series of memos written by J.C.R. Licklider of MIT in August 1962 discussing his "Galactic Network" concept. He envisioned a globally interconnected set of computers through which everyone could quickly access data and programs from any site. In spirit, the concept was very much like the Internet of today. Licklider was the first head of the computer research program at DARPA (Defense Advanced Research Projects Agency), starting in October 1962. While at DARPA he convinced his successors at DARPA, Ivan Sutherland, Bob Taylor, and MIT researcher Lawrence G. Roberts, of the importance of this networking concept.

"Leonard Kleinrock at MIT published the first paper on packet switching theory in July 1961 and the first book on the subject in 1964. Kleinrock convinced Roberts of the theoretical feasibility of communications using packets rather than circuits, which was a major step along the path towards computer networking. The other key step was to make the computers talk together. To explore this, in 1965 working with Thomas Merrill, Roberts connected a computer in Massachusetts to another in California with a low speed dial-up telephone line creating the first wide-area computer network ever built. The result of this experiment was the realisation that the time-shared computers could work well together, running programs and retrieving data as necessary on the remote machine, but that the circuit switched telephone system was totally inadequate for the job. Kleinrock's conviction of the need for packet switching was confirmed."

The basic idea of the Internet was to get computers to communicate, independently of their internal software architectures or their manufacturers. Its design philosophy was open communication. From the beginning, its inventors decided that the circuit-switched architecture of the telephone system was inadequate to the task of allowing computers to communicate. They set about to redesign how data could be most effectively communicated.

In a circuit-switched system, control is the essence of reliable signal transmission. Telecommunications networks often use the analogy of a railway and railway switching to describe this technique.

Packet switching was the first major concepts introduced to achieve better data communication. In this case, the answer is in the relationship between packets of data and telecommunication network switches.



If packets are used then switches are not needed. To control the movement of the data signal, a device called the router is used. Routers direct the data signal in a manner similar to road signs as distinct from the railway switch. This extends a freedom and autonomy into the networks previously impossible to attain.

In a packet/routing system, there is minimal specification. Different signal packets can travel across the same transmission network. However with more freedom there may be less reliability in the system.

In a packet-switched system, each packet is individually addressed and routed across the network from its origin to its destination. At the destination the packets are reassembled into the original message. Packets that fail to arrive at their destination are automatically retransmitted. The destination address is contained in the header of each packet. Routers read this address and direct the packet towards that address. The routers can direct packets around route obstruction or network congestion points. The system can therefore withstand the effects of linkage dropouts and hence is very robust.

Packets can be built of different sizes or made to be uniform in size. The Asynchronous Transfer Mode, ATM, technology uses this technique to improve transmission efficiency. This method allows many different types of communication technologies to use the network simultaneously.

In a normal telephone circuit-switched system, the signal depends on the availability of the linkages to provide a connection. The circuit is opened through the sequence of switches by dialling a telephone number.

In the packet-routed system, packets are routed by their internal addressing and hence can seek the most efficient path. Packets may be sent along different routes and therefore packets may arrive out of order. Before computers a packet switched system was impossible as disassembly and reassembly of a message into packets can only be done by computers.

The Internet communications are suggested to float above the physical facilities used to transport the signal. The packets are separated from the physical medium of copper wire, coaxial cable or the airwaves.

The early telephone system was designed to direct analog signals through electro-mechanical switches. Later developments in computer based switching only continued these basic ideas of signal transmission. The telephone companies continued to

establish, maintain, take down the call and suitably bill the user. The system was predicated on the basis that an average call would last, on average, about three minutes.

Data traffic as generated by the Internet exploded these assumptions on which the PSTN was designed and constructed. In the opinion of the Internet founders, the PSTN was inadequate for computer communications.

A major feature of the Internet is the open architecture to enable equal communication between peers.

"The original ARPANET grew into the Internet. The Internet embodies a key underlying technical idea of open architecture networking. In this approach, the choice of any individual network technology was not dictated by a particular network architecture but rather could be selected freely by a provider and made to interwork with the other networks. Up until that time there was only the traditional circuit switching method where networks that would interconnect at the circuit level, passing individual bits on a synchronous basis along a portion of an end-to-end circuit between a pair of end locations. Recall that Kleinrock had shown in 1961 that packet switching was a more efficient switching method. Along with packet switching, special purpose interconnection arrangements between networks were another possibility. While there were other limited ways to interconnect different networks, they required that one be used as a component of the other, rather than acting as a peer of the other in offering end-to-end service….

"The idea of open-architecture networking was first introduced by [Bob] Kahn shortly after having arrived at DARPA in 1972….

Kahn decided to develop a new version of the protocol which could meet the needs of an open-architecture network environment. This protocol would eventually be called the Transmission Control Protocol/Internet Protocol (TCP/IP)…."

Kahn's early thinking gave four critical ground rules:

- Each distinct network would have to stand on its own and no internal changes could be required to any such network to connect it to the Internet.
- Communications would be on a best effort basis. If a packet didn't make it to the final destination, it would shortly be retransmitted from the source.
- Black boxes would be used to connect the networks; these would later be called *gateways* and *routers*. There would be no information retained by the gateways about the individual flows of packets passing through them, thereby keeping them simple and avoiding complicated adaptation and recovery from various failure modes.
- There would be no global control at the operations level.

It can be seen that the major features of the Internet were laid down from its inception. Total connectivity of networks was its goal. All vendors and all platforms are treated as equal. All operating systems are treated as equal.

The system is robust and simple. There are no records kept of what passes through the gateways and there is no overall control of operations of the system.

The aims for the Internet structure are achieved by the protocol by the way the Internet operates - the Transmission Control Protocol/ Internet Protocol, TCP/IP. The key feature of this technique is to permit multiple networks to connect to each other. Initially it was the academics and other specialised users who employed the TCP/IP technology because it provided no-cost networking.

In the early 1980's, the US Secretary of Defense mandated that all computers connected to the ARPANET had to use TCP/IP. On 1 January 1983, the Network Control Protocol, NCP, was abandoned as systems were moved onto TCP/IP. Now all TCP/IP based systems could communicate with any other network and the modern Internet became a reality.

A protocol defines how computers will communicate. Protocol definitions include how bits are placed in a packet to the electronic mail formats. Standard protocols allow computers of different makes and using completely different software to communicate.

The Internet Protocol, IP, provides a unique 32-bit address for each computer connected to the Internet. It also handles packet addressing and forwarding.

The Transmission Control Protocol, TCP, enables two computers to transmit data back and forth in a manner recognisable to each operating system. It defines how the packets are handled, including segmentation, reassembly, concatenation, separation and recovery of lost packets.

There are other protocols for the interconnecting computers, however the TCP/IP used by the Internet has become the major protocol.

The idea of layers in data communications represents a very useful method for analysing and exploiting networks for computer based data flows. Layers provide a clear understanding of how the various requirements for robust reliable services will be met and who will provide what and when.

Understanding of the existence of layers is fundamental to understanding how the Internet works and how it differs from other data transporting mediums.

The International Standards Organisation, ISO, developed definitions of network architecture under the Open Systems Interconnect, ISO, framework. This poses seven layers in an OSI Reference Model.

Layer 1 - the physical layer. This comprises copper wire, optic fibre etc.

Layer 2 - the data link layer. This splits the continuous data stream into packets to be transmitted across the physical layer.

Layer 3 - the network layer. This is the IP layer. It receives the data packets from layer 2 and routes them to the correct destination network address. Where multiple routes are available, the network layer decides the best route.

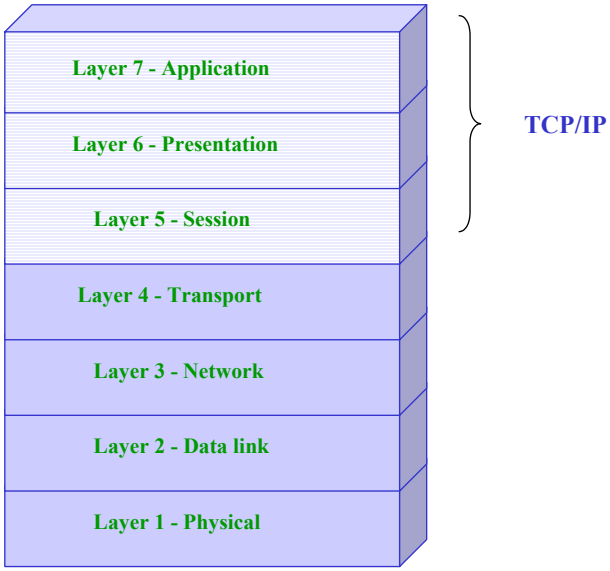
Layer 4 - the transport layer. This layer is the TCP layer. It ensures the packets are present, valid and they arrive in the correct order.

Layer 5 - the session layer. This layer is the final TCP/IP platform layer. It establishes and coordinates a connection session between two computers.

Layer 6 - the presentation layer. This layer handles the different file formats that may be transferred between computers.

Layer 7 - the application layer. This top layer is the visible operational layer for e-mail, Internet, file transfer etc.

Although the Internet uses a layered signal architecture it does not conform to the ISO seven layer model. The TCP/IP occupies the top three layers as the application layer. Hence the equivalent ISO model becomes:



The significance of the layers is that it enables computer networks to be clearly constructed and analysed. By this means a computer network using open protocols may be readily contrasted with a network operating under proprietary systems. The significance of layers can be summarised in the following points:

- Layers, above the physical transport layer, are composed of software protocols.
- Layers contain instructions and information signals for computers and routers.
- Layers are developed through a collaborative and open process by technical experts so their acceptance becomes an industry standard.
- Changes in one layer will not necessarily affect other layers.

The definition of the Internet made by the Federal Networking Council stated that it was a global information system that it is logically linked together by a globally unique address space based on the Internet Protocol, IP, or its subsequent extensions. This

means that there is a unique IP 32-bit binary number assigned to every device connected to the Internet. The IP numbers include four address blocks of numbers consisting of numbers between 0 and 256, separated by periods.

To make the system a little more user friendly, the Domain Name System, DNS, was invented in 1987 by Paul Mockapetris. Despite the amount of controversy that has arisen inside Internet circles about the future of domain names there are basically six top level domains:

.com ***.net*** ***.org*** ***.mil*** ***.gov*** ***.edu***

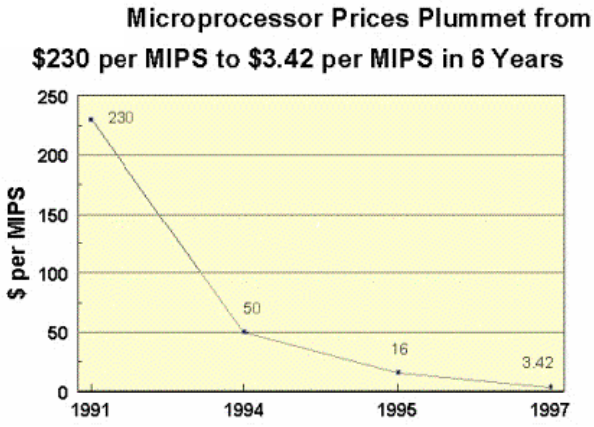
The single ".com", ".mil" and ".gov" are reserved for the United States government. There are also 144 national level determined domains, such as ".au" (Australia), ".sg" (Singapore) and ".jp" (Japan) etc.

The domain name system complicates but does not alter the basic features of the Internet. A request for a website such as APEC's "www.apec.org.sg" is sent from one computer to one of the few central computers, usually in the United States. These computers return a message indicating where the website can be found. The top level directory or "root server" directs the inquiry to the secondary or "supreme"directory which then directs the signal to another server located at an IP address. Thus the connection finally made, the website downloads.

Thus there is a significant volume of long distance traffic on the Internet as distinct from the PSTN. It is stated that more than 90% of Internet traffic transits through the United States due to many reasons including the fact that many domain name servers are located in that country.

Local Internet websites may be provided by *caching* information closer to the user base. Internet Service Providers can also provide popular websites by storing those sites in their entirety in Australia, Japan or Malaysia. This *mirroring* technique avoids the constant transoceanic download of data from the United States.

With continued falling costs, the Internet is providing new models for conducting direct business by producing related products simply consisting of software programs. Thus the aim of many Internet entrepreneurs is to turn their software *product* into a *standard*. This can be done by many methods including giving the product away to create a large user base as Microsoft did by freely distributing the Internet



Source: Intel at http://developer.intel.com/solutions/archive/issue2/focus.htm"
MIPS = Millions of Instructions Per Second

Explorer web browser. The end users then find out the uses, advantages and disadvantages. Other notable products in this category are Java and Linux.

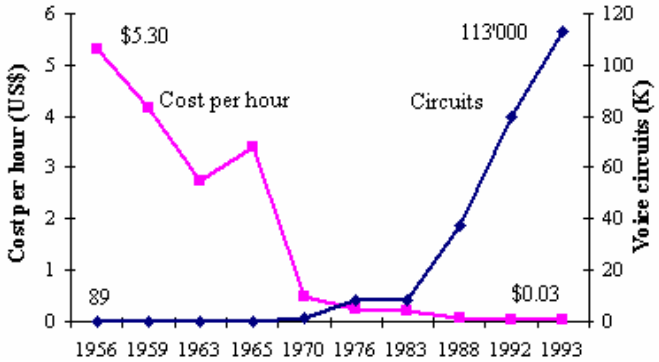
Currently work is being conducted on the *session layer* within the Internet Engineering Task Force, IETF, concerned with Internet telephony or Voice Over IP, VOIP. This will mean that Internet telephony, compared to the Plain Old Telephone System, POTS, will be able to accommodate many media types. There are no changes needed to the network infrastructure, which now becomes transparent to the media carried. Thus the Internet allows the separation of services from the underlying transport medium as they are independent to the transport layer.

Another significant change with packet switching is service pricing. Voice services are priced based on circuit switched distance, time and bandwidth used. Services may also differ in price depending on whether it is a business or residential customer. For packet switched networks, the transport layer is always present and there is no recognisable "call". Particular packets cannot be attributed to specific customers as the packets would have to be opened and the header examined to identify the origin and destination. Further there is no way to know if the packets contain voice, video or sound data. Thus there is no basis for price discrimination based on the nature of the signal traffic, only on the quality of service requested out of the network.

Computer developments are steadily reducing the cost and increasing the power of computers. It is therefore expected that the number of servers connecting to the Internet will continue to increase. The cost of computations and bandwidth are decreasing in accordance to Moore's Law - capability approximately doubles every 18 months.

Since the Internet is a computer communication methodology, the growth in traffic does not necessarily follow human voice traffic growth. For example:

Drop in Price of Transatlantic Circuits & Rise in Capacity, 1956-1993

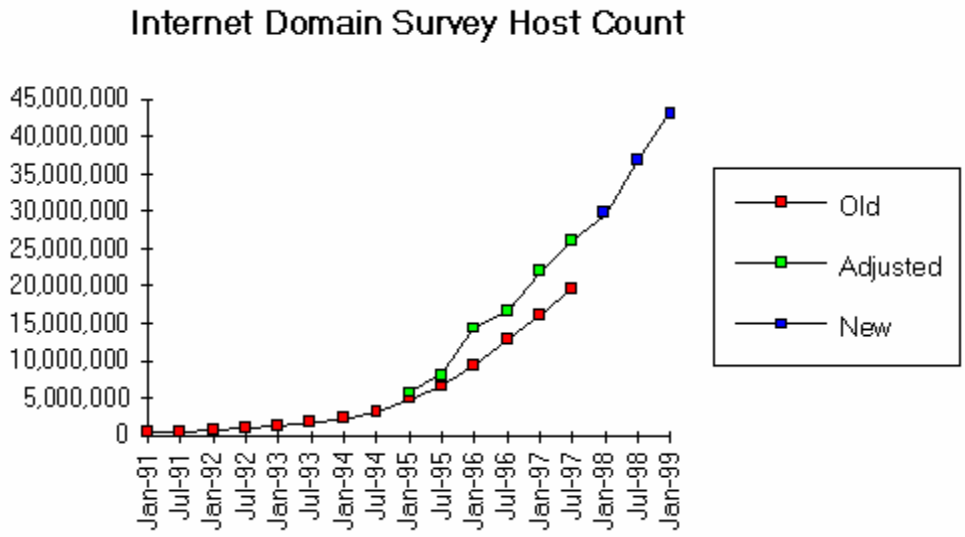


Source: ITU World Telecommunication Development Report 1995 "www.itu.int/ti/wtdr95/graphics/ov6.gif"

Thus the Internet is designed to take advantage of technology. It is providing faster and cheaper computation with significantly greater bandwidth. This results in national telecommunications infrastructures that are able to be constructed at about one tenth the cost of the earlier voice networks.

Generally, in a developed economy, increases in voice telecommunications traffic are consistent with the growth in population and economy. For a growth of 5 - 10% per annum, voice traffic increases about 8% per annum. However the Internet demands a much greater rate of growth and this is in the order of doubling bandwidth every 3.5 months. This is equivalent to some tenfold increase per year, which is significantly greater than the Moore's Law criteria.

Hence telecommunication characteristics are being significantly changed by the communications demanded by computers. Transmission capacities and computing power are rapidly increasing as costs are equally rapidly decreasing.



Source: http://www.tmdenton.com/internet.htm

While the Internet is a platform that enables computers to communicate with each other, the World Wide Web, WWW, is an application that uses the Internet to allow international freedom for information sharing.

Tim Berners-Lee, an English physicist, originally developed the World Wide Web concept at CERN in Geneva. The idea was to facilitate rapid dissemination of information to geographically dispersed teams. This has resulted in taking the Internet into the home and facilitating business communications. The development of the WWW commenced in 1989, some fifteen years after the basic Internet protocols were conceived and relies on the openness of the Internet to provide these new services.

The WWW world comprises documents linked through indexes. The HyperText Transfer Protocol, HTTP, is used with a browser program in a remote information server to retrieve documents identified by a keyword.

The web contains many differently formatted documents. The documents that are in hypertext may contain links to other documents or places within other documents. To action a link, a reader clicks with a mouse or types in a location number.

The WWW enables many different data formats to be conveyed between a browser and a server. This system for locating information by browsers was developed independently of the Internet TCP/IP protocols. This has resulted in a very fast proliferation of the number of Internet hosts and the number of Domain names.

In conclusion it is seen that the Internet and World Wide Web are proving to benefit business. The costs are minimal as implementation is easy and the PC terminals are usually readily available. However the method is prone to "hacking" by unauthorised persons and suitable precautions have to be made to adequately secure communications.

Because it uses a dynamic multi-path network, communication time for the packets varies. This makes voice traffic difficult and hence this type of communication – Voice Over IP (VOIP) - is only just emerging. This characteristic may also impact data traffic and occasionally an e-mail message becomes 'lost' when in transiting a particularly complex network arrangement. These attributes need to be recognised and managed for continued successful use of this new communication medium.

XML

EDI has proved to be cumbersome to implement and operate and this has limited its broad based acceptance in the general business environment. As described in the technology section, the XML technology that arose from the Internet HTML promised to be the replacement methodology. While this technology offers significant advantages, the lack of international documentation standards is perceived as a distinct limitation to rapid global adoption. The next generation global electronic data transfer mechanism has been described as possessing the following "must have" capabilities:

1. Reduce the cost of doing global or local business.
2. Reduce cost of entry and operational use of conducting eBusiness.
3. Provide ease of maintenance and ready availability of appropriate tools.
4. Improve data integrity, robustness and accessibility.
5. Provide suitable security and control.
6. Provide expandable, extendable and controllable technology.
7. Integrate with current systems in use by business.
8. Utilise open standards.
9. Provide good system interoperability.
10. Provide ease of use with minimal operator and user training.

Various sub-forms of XML now start to appear to address the omissions of basic XML. It is claimed that ebXML is proving that it has the elements to meet the above objectives. Details of the ebXML initiative may be viewed at the Internet site "www.ebXML.org". The ebXML system is sponsored by UN/CEFACT and OASIS. The details may be viewed at the Internet site "www.oasis-open.org".

ebXML has concentrated on modelling tools to capture the business processes and the associated transactions plus it stores standard definitions in globally accessible registries. The aim is to reduce the costs and complexities for small businesses to adopt the technology by using existing process models and available application solutions.

Alternatively XML/edi redefines the EDI message formats into XML for the purpose of being able to view them on the Internet. XML/edi guidelines have added two components - Process Templates and Software Agents - to assist in this process. The aim is to produce dynamic software processes by using the capability of XML to define both the data and the processing scripting systems.

Thus within an integrated XML/edi system, XML provides the transmission foundation while the Process Templates provide the structure for the overall XML/edi system. Further XML/edi details may be viewed at the Internet site "www.xmlguide.org".

The Universal Description, Discovery and Integration, UDDI, initiative was started by IBM, Ariba and Microsoft based on the concept of standard registry services that provide Yellow, White and Green Page business functionality. This is aimed at facilitating the interoperation of networks and integrating business services using the Internet. Thus the focus is on providing large organisations the means to reach out to and manage their network of smaller business customers. UDDI details may be viewed at the Internet site "www.uddi.org".

XML Emergence

Internet documents based on HTML are defined in terms of headings, paragraphs, images, graphics and sound. However while HTML is easy to use it is directed towards describing how data should be presented to a Web browser.

The World Wide Web Consortium under the general SGML structure later developed the Xtensible Markup Language, XML. This is a more complex metalanguage that allows users to create their own markup language. The programming syntax is very similar to HTML but with a different purpose.

Companies including IBM, Microsoft, Sun and Netscape are adopting this technology as they believe that it will be the future protocol for data exchange over the Internet.

XML is a more powerful and flexible protocol that allows users to define their own customised markup languages with different tags to HTML. The XML tags describe the data and not the data's presentation. This provides a simple method that enables information to be readily exchanged.

Because XML separates the presentation of data from the actual data, separate files may be constructed to define how the data is to be presented. Documents may be prepared to suit the medium being used to view them. These may be Web browsers, cell phones or Personal Digital Assistants. In general, XML can provide greater control over the data presentation than HTML.

Because XML is an open protocol it can be an excellent solution for sharing data and storing in computer databases. The introduction of XML opens up entirely new routes for the exchange of computer based data.

However XML is an evolving standard. This means that while it is very attractive to the computer industry because it offers practical solutions, it does not contain recognisable international standard document sets sought by many organisations and available in other methodologies such as Electronic Data Interchange, EDI.

Insertions similar to the HTML documents that may contain other text, graphics and sound are also available in XML. Data Type Definition, DTD, documents are used to formally define a particular type of XML document. They define the various types of data contained within documents and their possible values and ensure that all documents that belong to a certain type are built and named in a conforming manner. Industries

can develop their own DTDs to ensure consistent XML use within their niche, enhancing their data-sharing capabilities.

This feature allows organisations to design their own data structure and to make this design - the DTD - available to others. Another example of an XML based language is Chemical Markup Language, CML, which can be used to denote chemical formulas. It's a platform-independent specification for exchanging information between organisations in the molecular sciences.

International organisations are therefore now being linked with both voice and data communications. The reliance on data communications now is greater than that for voice. The physical linkage also being heavily supplemented with wireless technologies including satellite communications.

In conclusion it is considered that XML offers the most technical advantages for business use at the lowest cost and risk.

End of Attachment

Attachment 4

Telecommunication Requirements and Capabilities

Data Services

Before examining the telecommunication capabilities of the different APEC economies that may participate in this project, this section supplies a brief identification of what is required for data communication and how that requirement may be delivered.

A minimum speed of 128 kbps is considered necessary to deliver dedicated broadband access to trading organisations. Larger companies will need more capacity and these demands will expand over time.

The data services required to be delivered should have the capability to provide symmetrical dedicated access at a minimum speed of 128 kbps. The maximum telephone line "dial up" speed is about 56 kbps and may be considerably less where long lines are deployed. A 64 kbps data rate may be attained where the Integrated Services Digital Network, ISDN, is available. This network also has the advantage of simultaneous voice transmission.

It is expected that a company would realistically need a basic starting rate of 256 to 384 kbps and this would increase to 512 kbps as their requirements expand.

Technologies

The applicable technologies that are involved in achieving these transmission characteristics are:

- Copper Cable Based Technology
- Optical Cable Based Technology
- Fixed Wireless and Radio Access Technologies
- Cellular Systems
- Satellite Systems

Copper cables have been traditionally used to connect customers to the telecommunications networks. To be capable of handling technology such as the Internet, ISDN switched data services and various types of Digital Subscriber Line, DSL, the accessing local loop lengths need to be limited to minimise line losses and signal delay characteristics.

Copper cables continue to be the most economic technology of choice for local customer loops but limited to some 7 km from the nearest switching centre. Longer loops need to be reduced in length to improve transmission performance. The major impediment to data transmission is the degrading performance due to signal to noise ratio of ageing copper cables. This results from poor connections, unbalance, water ingress and corrosion. These characteristics permit increasing interference from external systems that use electric power supplies.

Integrated Services Digital Network services provide data speeds up to 128 kbps.

Digital Subscriber Line systems can be deployed with symmetrical or asymmetrical configurations and various speeds. These are described collectively as "xDSL" systems. The major types are:

Type	Max. Data Rates	Range	Typical Application
HDSL (High Speed)	2 Mbps	5 km	E1 dedicated connections to switches and customers.
SDSL (Symmetrical)	192 kbps to 2.32 Mbps	6 km	ISP, data, videoconference access to customers. Replaces ISDN.
ADSL (Asymmetrical)	Up to 8 Mbps	2 km	Internet access. Greater range at lower speeds, typically to 4 to 5 km at 2 Mbps.
VDSL (Very High Speed)	Up to 60 Mbps	Up to 1.5 km	High-speed data access for business, symmetric or asymmetric.

Where the delivery method employs xDSL over local copper cable loops, a Digital Subscriber Line Access Multiplexer, DSLAM, will be required at the switch location.

As well as the DSLAM at the switch, a Network Termination Unit, NTU, is required at the "customer" end to interface the xDSL line to the user PC either through an internal computer card or an external modem.

Fibre optic cables are being installed more extensively as costs of the cable and laying are reducing dramatically with time. Many larger copper cables have been replaced or bypassed using this technology as the fibre optic cable has a much higher transmission capacity.

Fibre optic cable and transmission systems have been increasingly deployed within the telecommunications ‘backbone’ or switched networks. This trend will continue and expand in usage. Fibre optic cables have many advantages including their relatively small size for their carrying capacity, immunity to corrosion and electrical interference. However they do concentrate critical data communication into a single line that can be damaged resulting in very significant interruption to transmissions.

With fibre optic cable and transmission systems other possibilities emerge to deliver high capacity data services over optical cables. These include the Synchronous Digital Hierarchy, SDH, Asynchronous Transfer Mode, ATM, and Internet Protocol ,IP, based technologies.

Fixed Wireless and Radio Access technologies can service customers at the limits of the networks. Wireless Local Loop systems are being used in many regions to provide

businesses with Internet access however deployment costs are significantly higher than in metropolitan areas with direct data connections.

Wireless access is becoming increasingly used in metropolitan areas for data transmission to connect terminals to central servers and to provide high speed Internet access. This technology removes the need for the installation of dedicated cables and permits freer movement of staff. However this also permits "war chalking" where the wireless connectivity 'leaks' into the nearby surrounds or streets where people outside the organisation may connect into the organisation's network and use their facilities. These dedicated systems are relatively easy to deploy and the higher cost offset against the ease of installation.

Local Multipoint Distribution Service, LMDS, and Multichannel Multipoint Distribution Systems, MMDS have limited range due to the very high microwave frequencies that are used by this technology.

The mobile phone cellular radio networks using Groupe Speciale Mobile, GSM, cellular systems and Code Division Multiple Access, CDMA, cellular systems are continually developing their capabilities, including higher speed data access and increased coverage. However, mobile phone operators currently appear focused on gaining voice call volume and are not promoting their systems for data communication.

Satellite systems provide an option for access however with limitations, particularly as capital and operating costs are high. Data transmission rates are restricted, typically reported as up to 56 kbps and are often offered as asymmetric services. Voice services generally suffer from delay due to long path lengths and therefore are usually avoided by customers.

APEC Region Capabilities.

The following briefly outlines the status of the various APEC economies telecommunications capabilities.

Canada

Canada has developed one of the most capable and widely available telecommunications infrastructures in the world. This is attributed to its unique geographic, demographic and political character, as well as its physical closeness to the USA and Europe. During the last twenty years the Canadian federal government has strenuously encouraged competition with service availability that is uniform, affordable and current throughout the country. This coupled with extensive research, development and investment in infrastructure, has led to achieving an integrated national broadband telecommunications platform.

Activities in the market include developing DSL systems, wireless systems for local access, satellite systems, ISDN, intelligent networks, packet switched networks, frame relay and ATM networks plus longer distance mobile networks, fibre optics and digital radio-relay systems. International communication includes satellite systems and submarine cable networks

Canada's government is helping their Telecommunications Industry reach national and international recognition by laying groundwork to help the nation's communication equipment suppliers. Tax credits are given to the private sector to stimulate research and development. Canada was the first to deploy many telecommunication advancements such as the first public packet switching network, pioneering fibre optic use and intercontinental ATM transmission. In 1995, Canada's communications sector made a profit of almost $23 billion of which over $20 billion was revenue from the telephone industry. The Canadian Telecommunications Industry supported about 150 companies, most of whom were re-sellers, that captured about 10% of the estimated $6 billion long distance market from incumbent operators. Canada's city telecommunications nodes are in Vancouver, Ottawa, Montreal, and Toronto.

The major companies involved in this work are:

- Nortel (www.nortel.com) Northern Telecom is the best known of Canada's telecom companies and is the world's sixth largest equipment supplier and developer of communications products, systems and networks.
- MPR Teltech is an innovator of communications and business systems concentrating in ATM, multimedia applications and wireless communications, including digital and cellular digital packet data and wireless local loop.

- Newbridge Networks (www.newbridge.com) is a leader in the global telecommunication industry, specifically for ATM wide-area networks with almost one-half the market share and T1/E1 multiplexing markets with nearly one-third of the market share.
- West End Networks is a member of the Newbridge Networks Group and provides access over hybrid fiber/coax (HFC), frame relay, X.25, and ISDN network media and is expanding into VSDL and ATM.
- TimeStep is an affiliate of the Newbridge Networks Group, experienced in security and cryptology over TCP/IP networks for LANs, Internet communications and branch/remote offices.
- Other Canadian telecommunication leaders include Cross Keys, Consultronics, Mitel, VIVE Synergies, Hewlett-Packard Canada, The Canadian Networks Operation, and GN Nettest.

Domestically, Canada has a strong domestic satellite system with about 300 earth stations. Internationally, Canada has 5 coaxial submarine cables; satellite earth stations 5 Intelsat (4 Atlantic Ocean, 1 Pacific Ocean) and 2 Intersputnik (Atlantic Ocean).

Source: Telecom Magazine , CIA-World Fact Book 1999

Canadian business, with the support of their government has funded growth into telecommunication market innovations such as switching systems, fibre optic cabling, satellite networking, wireless, voice recognition and video over telephony, electronic commerce and encryption plus several broadband and new media products and services. Canada ranks high in most telecommunication segments such as in telecom spending, top telecom operators, fixed-line telecom operators and equipment vendors. Canada stands strong in the telecommunication industry by providing fast, reasonably priced products to their Canadian consumers and Canadian businesses in order for them to be internationally competitive.

Indonesia

In 1994 the Indonesian government launched its Joint Operating Service (KSO) strategy for the development of fixed line telecommunications. Whilst the program may be less than expected this is probably due to the impact of the 1997/98 economic crisis.

The report also provides an overview of the Internet and other data services in Indonesia.

Activities in the market have expanded the Joint operating service (KSO) ventures with the five-zone plan and re-examined the KSO strategy, proposing restructuring of some KSOs and networks. Other work has include telephony installation plans in Central Java, Wireless Local Loop, WLL, the Sumatra High Performance Back Bone project plus revised international gateway exchanges and submarine cable networks.

The major companies involved in this work are:

Alcatel	AT&T Corp	Cable & Wireless plc
France Telecom	Indonesia	Lucent Technologies
NTT Corporation	PT Indosat	PT Telkom
Siemens	Telstra	

Unfortunately there is little evidence of e-commerce initiatives in Indonesia and it is not expected to develop in any substantial way until after the break up of PT Telkom or the introduction of competition. The e-commerce that is occurring is largely through sites based in Singapore. These factors and current uncertainties in the Indonesian government indicate that the forecast for e-commerce activities is not promising in the immediate future.

Estimated e-commerce in Indonesia may be viewed at "http://www.ecatt.com/country/indonesia/inhalt_id.htm"

Japan

The Japanese telecommunications sector is one of the world's leading markets. The market continues to grow through various new and novel means despite the global experience with difficult telecommunications markets. NTT DoCoMo, launched the world's first third generation, 3G, mobile network in 2001.

Some key factors are NTT's new fibre optic backbone, C&W's national fibre optic network, satellite systems, international fibre optic cable networks, the Australia-Japan Cable, Flag Pacific-1 (FP-1), Tiger cable system (Level 3) and the Japan-US cable Network (JUSCN)

Nippon Telegraph and Telephone Public Corporation was established in 1952 and for 33 years it had a monopoly over most phone services in Japan. In 1985, Nippon Telegraph and Telephone became a private company and in 1998 it reached the first section of the Tokyo Stock Exchange. NTT has been a very profitable enterprise, aided by the lack of real competition. In recent years, laws have been passed to try and reform this situation by taking away NTT's monopoly position. In 1999, NTT was reorganised into several entities including NTT East and NTT West, all under the banner of the NTT Group. The reform measures have improved the position of competing carriers, culminating in the establishment of the MYLINE option.

NTT continues in many ways to dominate the telecommunications industry. NTT still controls most of the telecommunications infrastructure used by itself and other domestic carriers. NTT has branched out into a broad spectrum of services, including ADSL (OCN) and cell phones (DoCoMo), where they continue to command the market. Japanese people in general are not bargain hunters and will knowingly pay a higher rate for a well known service, rather than switch to an emerging carrier.

NTT being the largest company with analog phone lines having optional features including call waiting, call forwarding, voice mail, caller ID, etc. These are expensive. Touch-tone dialling is considered an upgrade and thus is an extra cost. An analog line is necessary to connect for ADSL or to use a standard dial-up modem.

Following recent reforms, customers now have the opportunity to choose their own primary phone carriers. This new ability is called MyLine and is governed by the MyLine Carriers Association. The purpose of the MyLine program was to give consumers a choice and hopefully create competition in the domestic phone industry. Prices have been reported to have fallen but not as low as possibly expected.

Cable, CATV, has its own network that completely bypasses NTT. The cable service is not available everywhere and may incur separate charges for TV, Internet and phone services.

Access the Internet is via Dial-Up, CATV Cable, ISDN or ASDL. For ADSL service, NTT and ADSL providers charge separately. Telecommunications companies can arrange automatic debiting of Japanese bank accounts.

Malaysia

Malaysia has made rapid progress developing a sound telecommunications infrastructure. However, the economy has a target to increase penetration to 45 phone lines per 100 people by 2005. The government of Malaysia is promoting policies to actively increase the growth rate in the entire telecommunications industry, including the fixed line market. The government has issued eight new licences for new telecommunications companies.

Malaysia is installing a digital fibre optic cable network as demand for capacity increases. This network is planned to eventually replace the bulk of the present copper network. The fibre optic network will facilitate introduction of advanced telecommunications services although currently they only form the backbone of the major analogue networks.

The ISDN services introduced by Telekom Malaysia have a low market penetration. The growth rate is expected to rise with the upgrading of the telecommunications infrastructure and implementation of new networks such as digital, fibre optics, broadband, wireless and cellular to support ATM and ISDN technologies.

The mobile phone or wireless phone market is one area of Malaysia's telecommunications industry that has been prospering and usage is one of the highest in the region. The cellular market has grown at approximately 30% over three years and should reach a total of about 2.5 million handset users by the year 2005.

Five new networks were launched in 1995 - two GSM networks - Binariang and Celcom - and three Personal Communication Networks, PCN, - Mutiara, Sapura Digital and MRCB Telecommunications. PCN is an enhanced version of the European GSM.

There were many concerns about the cost of duplicated networks and commercial viability of having five domestic service networks, five international gateways and eight cellular networks in a country of 19.3 million people.

Malaysia has had very strong economic growth of more than 8 percent during the last decade. Growth has been in a range of industries from manufacturing to services. One important growth area is the communications infrastructure.

Malaysia is moving toward an unregulated telecommunication industry, similar to other developed economies, where competition is encouraged between the various carriers. The telecommunication industry is not unregulated at the moment but deregulated. Jabatan Telekom Malaysia, JTM, is the regulatory body for the industry.

Like Australia, the major issue faced by the government of Malaysia concerning unregulation, is the possible rise in cost to the consumer and the loss of interest by the telecommunication industry to provide quality service to the rural regions in the country. The projected target is for telephone density to reach 45 per cent in cities and 25 per cent in rural by the year 2005.

From 1st January 1999, customers chose their long distance carrier regardless of their local PSTN connection. When compared to the total population, the number of main lines is very low; due largely to the low number of lines in rural areas. Also, as in Australia, the quality of services provided in rural areas may be less than in the cities.

Generally the increase of telephone density can be achieved by providing services equal or better than those in the cities. One way in which this can be done in Malaysia is to lay telephone lines along the main roads leading from south to north of Peninsular Malaysia and also east to west of East Malaysia.

Malaysia launched a satellite network in January 1996 with MEASAT1. The result was the immediate upgrading of the telecommunications capability throughout the Malaysia's islands. MEASAT1 is owned and operated by Binariang Satellite Systems Sdn Bhd, BSS, a subsidiary of Binariang Sdn Bhd.

Measat 2 was launched in late October of 1996. Both satellites have C band transponders that provide broadband capacity for video, data and voice services. These features produce commercial and economic benefits to all regional network operators. A third satellite is now available.

Satellite services have allowed Malaysia to rapidly advance their communications infrastructure. The Very Small Aperture Terminal, VSAT, operators group now offers different technology to consumers. From the beginning Malaysia's VSAT operators have enjoyed the freedom of full unregulation. This means they have full international connection rights and do not have to first connect to a local international carrier. Only Malaysia and Philippines have their VSAT industry fully unregulated in Asia.

Although fibre optic is used for local telecommunication, satellites provide an alternate route between Peninsular and East Malaysia should the fibre optic cable be damaged.

A Malaysian wide fibre optic infrastructure has been installed since 1996. A joint venture company, Fiberail Sdn. Bhd., was setup in 1993 between Telekom Malaysia and Keretapi Tanah Melayu Berhad, KTMB, to install, manage and maintain the network. KTMB operates the railway network in the country. The cable runs north and south along the railway route spanning a total of 1,600 km.

The fibre optic network uses Synchronous Digital Hierarchy, SDH, technology and an integrated Network Management System, which allows for future adding or dropping of lines into towns along the way. Services available include the rental of "dark fibre", leasing of 2 or 3 Mbps circuits, data transmission, teleconferencing, multimedia.

The fibre optic network in Peninsular Malaysia has been very efficient as it is within reach of major towns due to the geographical layout of the country. East Malaysia is connected by submarine cables between Miri in the East and Mersing in Johore. The target is to have one of the best telecommunication system in South East Asia.

Although there have been great changes in the telecommunications infrastructure since 1996 there are still some important issues to be addressed. Advances have included the installation of fibre optic and satellite systems, reduction in call costs, government moves toward deregulation and foreign ownership in telecommunication carriers increased from 30 to 61 per cent.

The economic boom in Malaysia, with resulting skilled labour shortages impacted the telecommunications industry as it caused fund shortages in bank loans and incomes. Equipment, usually paid for in US dollars, became very expensive to buy and install.

Despite the economic problems, the telecommunications infrastructure is expected to grow. The future networks will be better planned and Malaysia has already implemented high speed networks.

Malaysia now faces some uncertainty due to the general Asian economic crisis that hit hard into every economy. Telecommunication infrastructures are essential for both the advancement of a country as well as for economic growth. Malaysia has also aimed to be an emerging communication hub with the launch of its satellites.

For more information see
http://www.american.edu/academic.depts/ksb/mogit/

Singapore

Singapore possesses one of the most advanced telecommunications infrastructures in the world. It provides a fully digital network, the first 100% available ISDN, the highest urban concentration of optical fibre, one of the lowest telecommunications charges and a target date of 2005 for optical Fiber-To-The-Home, FTTH.

In 1989 the government of Singapore commenced removing restrictions on the sale of telecom consumer goods. Recently the Singapore government have taken a number of

steps to open the market and the path to telecommunications deregulation. The government is now working to attract new competitors, lower prices and provide a greater range of products and services. Also barriers to market access have been reduced and currently Singapore does not have any barriers to imported telecommunication equipment.

As a result of these deregulation activities, the telecommunications market is a fast growing sector of the economy providing opportunities for companies to enter the telecommunications market. Singapore Telecom was partially privatised some three years ago. However the government affiliated monopoly will maintain its monopoly on fixed voice services until the year 2007.

In April 1997 Singapore received its second mobile network operator, MobileOne Asia Ltd., which is a joint venture between Keppel Corporation and Singapore Press Holdings with Hong Kong Telecom and Cable & Wireless.

Currently Singapore is a relatively high-cost producer, when compared with their local production costs of the 1980s and neighbouring economies. Because of this, Singapore has tended to develop products using the latest technology and have them mass produced elsewhere.

Singapore's telecommunications network is completely digitalised which enables a broader range of services to be offered. It has 29 fibre optic linked telephone exchanges. There are about 365 phone lines per 1,000 people with over 1.2 million telephones in use. This compares favourably with Japan where there are 461 phone lines per 1000 and Hong Kong with 448 lines per 1000 in and the U.S.A. with 552 lines per 1000 people.

Although Singapore emphasises the use of IT, parts of the telecommunications infrastructure are reported to be significantly lacking appropriate facilities. The time required to upgrade the phone lines to accommodate broad-band telecommunications is considered excessive, as it is predicted to take 5 to 10 years.

Singapore Telecom has been working with the Telecommunication Authority of Singapore in order to provide a complete network of fibre optic cables that will connect government subsidised housing and commercial building by the year 2005. This network will provide simultaneous sound and vision signals. In 1993 Singapore Telecom completed the first fibre optics Submarine Cable SEA-ME-WEII linking Singapore to Southeast Asia, the Middle East, and Western Europe.

Singapore has three INTELSAT earth stations covering both the Indian and Pacific Oceans. Singapore mobile phone services comprise two analogue cellular telephone systems and a third digital cellular telephone system.

There are eight telecommunications companies in Singapore which employ nearly 10,000 people. The major companies in the telecommunications market in Singapore include AT&T, Goldtron, Motorola, and PCI.

Internet services were first offered to the public in July 1994 through the Internet provider Singapore Telecom, SingNet. The present three licensed Internet operators in Singapore are SingNet, Pacific InterNet and Cyberway. File Transfer Protocol, FTP, Servers in Singapore include SingNet FTP Archives, Technet FTP Archives, the National University of Singapore FTP Archives, the Nanyany Technological University FTP Archives and the National Computer Board FTP Archives.

Singapore also has a Web Directory which lists 57 Web Servers in Singapore. These can be broken down into various categories including academic, R&D, government and quasi-government, commercial and experimental and miscellaneous.

For more information see
http://gurukul.ucc.american.edu/MOGIT/jj7134a/intepage.html

USA

Building new capabilities and refurbishing existing telecommunications infrastructures has hesitated in the USA as many of the telecommunications carriers are battling for survival and are burdened by massive debts. They are now focussing on making current networks profitable and this is being made increasingly difficult due to reductions in prices. The telecommunications infrastructure market is not expected to restart until 2003 or 2004 when the market adjusts to the changed conditions.

Activities in the market include deployment of fibre optic networks with the latest DWDM technology, Internet growth, continued expansion of data transmission, last mile network strategies and continued migration from circuit switched to packet switched networks. Infrastructure trends will include new competitors building facilities-based networks, different cable TV infrastructures, fibre-to-the-home/curb/building plus international changes in infrastructure such as satellite networks and expansion in transoceanic cable capacity.

The United States is undisputedly a world leader in the telecommunications industry.

End of Attachment

Attachment 5

E-commerce in Economies

Australian EXDOC, ECert

Japan TEDI

USA Bolero

Australia

Government

The following Australian Commonwealth Government Export departments are involved in cross border trading in Australia:

Department of Agriculture, Fisheries and Forestry
AFFA has the dual roles of providing customer services to the agricultural, food, fisheries and forest industries plus addressing the challenges of natural resource management.

Australian Fisheries Management Authority
AFMA is the statutory authority responsible for the efficient management of Commonwealth fishery resources and provides management, advisory, compliance and licensing services.

Australian Quarantine and Inspection Service
AQIS provides quarantine inspections services and certification for a range of products exported from Australia

Wheat Export Authority
The WEA is a statutory authority to control the export of wheat

Attorney-General's Department
The Attorney-General's Department, AGS, provides essential expert support to the government in the maintenance and improvement of Australia's system of Law and Justice

Australian Customs Service
ACS's principal roles are: to facilitate trade maintaining appropriate compliance with Australian law and to administer specific industry assistance schemes and trade measures

Department of Communications, Information Technology and the Arts
DCITA provides policy advice and program support to the Australian Government, on arts, information technology, communications and sport portfolio issues.

Australian Communications Authority
ACA is responsible for regulating telecommunications and radio communications, including promoting industry self-regulation and managing the radiofrequency spectrum.

National Office for the Information Economy
NOIE is Australia's lead Commonwealth agency for information economy issues.

Department of Defence
DOD scientific research and development, defence procurement and purchasing, including offsets for defence purposes defence industry development and co-operation.

Defence Exporters Council
The Defence Exporters Council, DEC, provides policy guidance to the Minister for Defence on issues relating to defence exports.

Department of Foreign Affairs and Trade
DFAT is responsible for the protection and advancement of Australia's international interests through contributions to international security, national economic and trade performance and global cooperation

Australian Trade Commission
Austrade is Australia's front-line export marketing organisation provides services to enterprises to help them win business overseas and attracts investment to Australia. Austrade operates in more than 100 cities in 60 countries.

Australian Agency for International Development
AusAid is responsible for the management of the official Australian Government overseas aid program

Export Finance and Insurance Corporation
EFIC assists Australian exporters to compete internationally by providing insurance and finance facilities to support their overseas contracts.

TradeWatch
Provides information Service for Australians doing business overseas.

Department of Health and Ageing
DHA provides expert policy advice, analysis and other services to the Government and manages the Commonwealth's Health and Ageing programs to ensure the provision of quality, cost effective care.

Australia New Zealand Food Authority
ANZFA is an independent statutory authority that develops food standards, which apply to all food products, or imported, for sale in Australia and New Zealand.

Therapeutic Goods Administration
The TGA carries out a range of assessment and monitoring activities to ensure therapeutic goods available in Australia are of an acceptable standard.

Department of Industry, Tourism and Resources
DITR has a key role in increasing national prosperity by building the competitiveness of Australian business and fostering excellence in Australian science and technology.

AusIndustry
is the Commonwealth Government's business unit is designed to help Australian businesses become more innovative and internationally competitive.

Invest Australia
National investment agency, which promotes Australia as an investment location, facilitates major projects and provides a wide range of services to companies seeking to establish or invest in operations in Australia.

IP Australia
IPA is the federal government agency that grants rights in patents, trade marks and designs.

Department of Prime Minister and Cabinet
DPMC provides advice and information to the Prime Minister on major policy matters of domestic and international concern.

These departments all play various roles in Australia's export activities. Some specific examples are:

Australia's Paperless Trading Individual Action Plan 2002 was presented at APEC Trade Meeting Puerto Vallarata, Mexico, May 2002. Page 4 of that paper described the following situation:

Quote

"Australia's Approach to APEC's Paperless Trading Goals

Australia is committed to pursuing APEC's paperless trading goals through legal reforms, policy coordination measures and a number of practical actions to facilitate electronic systems within specific business sectors.

Australia's priorities are clearly manifest in the Electronic Transactions Act 1999 which was designed to ensure technology neutrality (i.e. no form of technology or IT business approach should be favoured over another) and media neutrality (i.e paper-based commerce and e-commerce should be treated equally by the law). Australia is aiming for a regulatory environment which encourages innovation and growth and is consistent across Australia and with widely agreed international positions. http://www.law.gov.au/ecommerce/

Australia has improved the regulatory framework for e-commerce by introducing new private sector privacy provisions. The new legislation, effective from 21 December 2001, introduces a co-regulatory approach to privacy protection which allows businesses to develop privacy codes tailored to meet their industry needs provided the codes meet the minimum standards in the Privacy Amendment (Private Sector) Act 2000. http://www.ag.gov.au

Australia recognises that, as major users and customers, governments will be significant catalysts for change, encouraging uptake by signalling their commitment to new technologies and supporting the development of a critical mass of users. The Australian Government has developed a new single entry point for government information and services, provides all appropriate government services on-line and allows all simple procurement suppliers to deal with the government electronically using open standards. http://www.australia.gov.au

The Australian Business Entry Point (BEP) website provides a single window into the Australian Government, offering: a secure environment for businesses to complete online transactions with, for example, the Australian Taxation Office; a database of government, business and industry programs and services; advice on running a business; and links to government licences, codes of practice and compliance guidelines. http://Www.business.gov.au

The Department of Foreign Affairs and Trade chairs a Working Group on Paperless Trading which consists of officials from key Departments responsible for trade documentation.

Through its overseas aid program Australia continues to provide training to agencies from several developing APEC economies to assist them develop paperless trading systems. In 2001 an Australian and Chinese study, *Paperless Trading: Benefits to APEC,* demonstrated significant benefits of achieving APEC's paperless trading goals.

Australia's EXDOC system provides electronic delivery of export documentation for all food commodities and allows access to both the Australian quarantine and customs systems through a Single Electronic Window (SEW). EXDOC is currently being developed to automate export documentation for wool, skin and hide exports. Australia has developed an electronic health certificate (SANCRT) which has been used to clear all Australian edible meat shipments into Japan since March 1998 and this system is being trialled with other APEC economies.

The Management Advisory Committee (MAC) advises the Government on matters relating to the management of the Australian Public Service. The MAC has established an Information Technology Architecture and Governance Sub-Committee (ITAG) to oversee and review governance and investment frameworks for the federal government's use of information and communications technology."

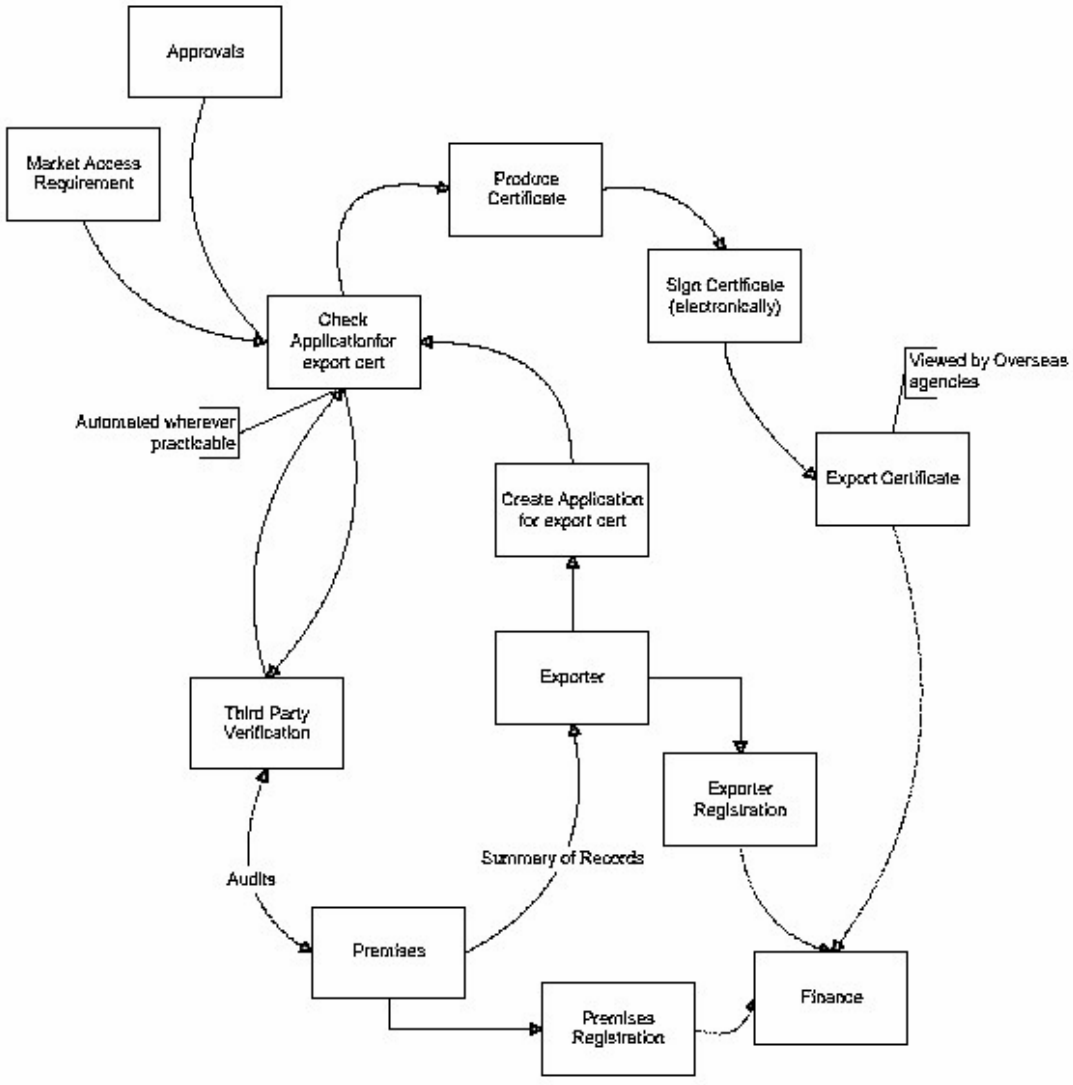
Unquote

Dairy Electronic Certification

Background

Australia, Canada and the United States of America have watched the implementation of the Dairy Electronic Certification implemented in 2000 in New Zealand. This system provides government to government assurance of the compliance of meat and seafood products. The system also reduced instances of fraud in the export meat and seafood sectors. The Dairy E-cert has now become a critical part of the New Zealand process for exporting dairy products. AQIS has actively pursued an analogous system for some years. It is this system that forms the core of the project into "paperless trading".

A flow diagram of the New Zealand Dairy E-cert process was prepared as shown:



Initial Issues

Several issues were encountered during the early stages of implementation. These included:

- System overloading caused by E-certs with large history texts resulting in slow response times and delays in processing.
- System review and upgrading taking longer than expected.
- System aberrations incorrectly indicating that the system had 'timed out' when it was being slow to process. Internal system conflict between transaction and query processing.
- Users inadvertently overloading the system by re-initiating actions under the impression the system had failed due to its slow response.
- System maintenance requirements removing the system from service for lengthy and occasionally undefined periods.
- Other early implementation issues included the time to complete various forms, delays between screens, data entered now appearing to be incorrect or missing, inadvertent duplications, interactions with terminal firewalls and virus checkers and security issues

Contact for enquiries:

New Zealand Food Safety Authority
68-86 Jervois Quay
PO Box 2835
Wellington
NEW ZEALAND

Phone: +64 4 463 2500
Fax: +64 4 463 2501

Australia, Canada and the United States of America have all expressed keen interest in adopting the E-cert program.

The Australian Quarantine and Inspection Services, AQIS, in the Australian Department of Agriculture Fisheries and Forestry group has made a most significant breakthrough in the field of "paperless trading" with their ECERT initiative as described below:

AQIS
AUSTRALIAN QUARANTINE

Edmund Barton Building Barton ACT
GPO Box 858 Canberra ACT 2601
ph +61 2 6272 3933 fax +61 2 6272 5161
www.affa.gov.au

AUSTRALIA

Department of
AGRICULTURE
FISHERIES &
FORESTRY -
AUSTRALIA

ABN 24 113 085 695

E-cert FACTS SHEET

ELECTRONIC CERTIFICATION OF AUSTRALIAN AGRICULTURAL EXPORTS

- The decision by APEC Ministers to adopt the proposed Australia/New Zealand electronic certification system will deliver many direct and indirect benefits for Australian agricultural exporters.

- The reasons behind Australia and New Zealand proposing the web-based system for electronic certification are the quarantine, public health, food safety and trade facilitation benefits it offers. The electronic system also offers reduced costs, timely and secure delivery of data, reduced security risks and improvements in Government to Government communications.

- Sanitary and phytosanitary certificates are required for the majority of agricultural products traded around the world. On these certificates exporting countries verify the safety of the product for human consumption and that the product meets the standards required by the importing country.

- The issue of security of traded food product has escalated given the threat of bio-terrorism in the United States and the increasing incidence of fraudulent documentation world-wide.

- The electronic solution proposed by Australia and New Zealand will strengthen the security of traded food. Certification data will be securely transferred direct from Government to Government and remove the need for the current paper system. The risk of forged documentation and fraudulent activity such as foreign product being traded under Australian paper certificates will be all but eliminated.

- The beauty of the new web-based E-cert system is that all countries will be able to commence receiving electronic certificates straight away. It does not rely on importing countries having costly information technology systems. All a country needs is a computer with access to the World Wide Web. Certificates will be able to be viewed on-line via the Internet, similar to Internet banking, and those countries that wish can download data in XML format for integration into import management systems.

- It is expected that the new E-cert system will be adopted by most Asia-Pacific countries in the next 12-18 months.

AGRICULTURE, FISHERIES AND FORESTRY - AUSTRALIA

Non Government

Tradegate

The organisation structure and objectives of Tradegate are described in the report are expanded in this section.

The Community Based Electronic Commerce Services are created under the following guidelines:

- To develop a comprehensive strategy for responding to the community's need for Electronic Commerce Services through a consultative process.
- To arrange for the creation, implementation and operation of Electronic Commerce Services as required by communities of like interest from within the Member base - the principal example of this being Australia's international trading and transportation sectors.
- To manage, administer and market these community based Electronic Commerce Services on behalf of the Members.
- To collect statistical information from the Electronic Commerce Services for the purpose of measuring performance and market penetration.
- To encourage technology and information providers to add value to the Electronic Commerce Services through the provision of additional services as required by the Members.

The other primary goals are:

- To promote the establishment and implementation of national and international standards that reflect the business requirements of Members and enables the cost effective facilitation of electronic commerce.
- To represent Members on the relevant national and international electronic commerce bodies.
- To represent the interests of Members and to advise and influence Government where policy modifications are required to assist the facilitation of electronic commerce.
- To assist Members in their understanding of the implications of Electronic Commerce Services through the provision of targeted training and education services.
- To manage appropriate projects that demonstrate the use of the various technologies required to implement effective Electronic Commerce Services.
- To provide Members with a source of information on all matters related to electronic commerce and to distribute the information effectively to Members.

The principal operating philosophy of the Company is to provide a neutral environment where Members can openly discuss the community issues involved in the changes to business practice through the use of Electronic Commerce Services.

The Company must at all times ensure that its Board of Directors and management practice open, effective communication at all levels, lead by example and do not become dominated by the needs of particular industry sectors, other sectional or factional interests, or particular electronic commerce technologies.

As noted in the report, Tradegate Australia Ltd operate under registered trademarks and offer services of:

- Exit 1
- ExportNet™
- ImportNet™
- Payments
- RailHub
- Sea Cargo
- Tradeway

In addition Tradegate provides assistance with their Bureau Service, Consulting - Training / Education and UN/EDIFACT EDI User Guidelines.

The Tradegate publication about ExportNet is reproduced for information on the following 2 pages.

November 2001

ExportNet™

Export Documentation and Logistics Management at www.tradegate.com.au

A web-based service allowing exporters, packers, agents, and carriers (road, rail and sea) to cost effectively simplify the creation and exchange of critical export and logistics documents.

The Concept

ExportNet acts as an industry shared data hub - allowing consignment information to be moved amongst the many parties involved in the export process. ExportNet allows data to be aggregated and eliminates the need to re-key data between users in the export chain. It enables B2B e-commerce using international standards.

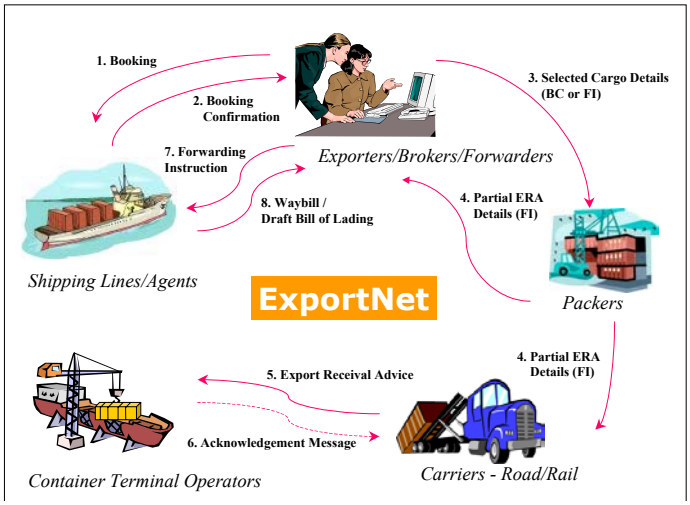
This supply chain solution is based on years of industry consultation and is easily accessible to all users via an internet browser or the exchange of structured messages. **To use ExportNet all users must be registered with the service at www.tradegate.com.au**

ExportNet can accommodate any number of export documentation flows; one possible scenario is illustrated below.

ExportNet produces the following electronic documents:

- Booking,
- Booking Confirmation (BC)
- Forwarding Instruction (FI)
- Waybill/ Draft Bill of Lading
- Export Receival Advice (ERA)

(The acknowledgment is delivered as either an EDI message or an email).



Infomotion in action!

The Benefits

✓ Accuracy	✓ Tracking	✓ Save time
✓ Flexibility	✓ Standards-based	✓ Convenience
✓ Privacy & Security	✓ Low cost	✓ Australian

According to studies completed by the Asia Pacific Economic Cooperation (APEC) forum, the average international transaction involves 27-30 different parties, 40 documents, 200 data elements (30 of which are repeated at least 30 times) and the re-keying of 60-70% of all data at least once.

ExportNet allows you to take the paper and rekeying out of the transport document phase of international trade.

Key Benefits of the TradeGate ExportNet Service

✓*Accuracy*

ExportNet allows each party along the export chain to *add* information pertaining to the identified consignment. This not only reduces data entry workloads but eradicates transcription errors. Research by the Victorian Government's Department of State and Regional Development found that the traditional method of distributing or sharing information has caused 40% of paper-based ERAs (Export Receival Advice) to contain errors. These errors have led to significant on-costs to exporters, shipping companies and their agents/contractors.

✓*Flexibility*

ExportNet users exchange information with as many other parties as they choose. For example, an exporter may supply to or receive information from packers/consolidators, forwarders, shipping companies and truckers. Each of these parties may similarly conduct exchanges of information with other parties on a similar basis. Though primarily a web-based service for SMEs, ExportNet is also capable of sending and receiving EDI messages and therefore enables SMEs to transact with large organisations (and vice-versa).

✓*Privacy and Security*

ExportNet ensures that each party communicating with another can elect exactly what consignment information the other party may receive or 'see'. The service operates on a dedicated secure server using bank strength encryption technology.

✓*Save time*

ExportNet has the ability to *selectively* request information from one consignment and append it to another. This allows for the creation of master bills from house bills and vice-versa. The "clone" facility allows the automatic creation of repeat or similar consignments from a master or template consignment record.

✓*Standards-based*

ExportNet uses international EDI messaging standards (UN/EDIFACT). For data entry and for printed output, ExportNet has been designed using UN Document Layout Keys and other international layout standards.

✓*Convenience - only one system to learn*

ExportNet users do not need to learn the idiosyncrasies of many different proprietary web-based applications. Why learn different companies' applications when you can interface with everyone through the one standards-based system?

✓*Tracking - made easy*

ExportNet allows each of the many parties to assign their own reference number. These numbers are aggregated within the consignment details and passed on from party to party as the consignment details are added to, which means any party can request information using their own internal reference.

✓*Low cost - user pays*

Each user pays per consignment. That is, as soon as a new consignment is started that user is charged a small fee and can embellish and forward, to any number of parties, that same consignment as many times as needed. The next user is then charged the same amount when they access that consignment and can again embellish and forward that same consignment as many times as needed (contact Tradegate ECA for current charges).

✓*ExportNet is not just an Australian product – it is truly international*

Anyone anywhere with an internet connection and browser can receive or contribute consignment information and share it with registered users, anywhere else in the world.

Product Status

ExportNet is available from December 2001.

For further information contact:

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Trade gate also offer services such as access to the Australian Customs Service, ACS, Exit 1 and Sea Cargo Automation, SCA, services for Small Enterprises. These organisations can log onto "tradegate.com.au" to gain access to the electronic messaging systems.

The service can be accessed through any Internet Service Provider and provides small users ability to lodge Australian export declarations and receive export clearances through the EXIT 1 system and to lodge import manifests through the Sea Cargo Automation system.

No special software is required and the service is available on a pre-paid subscription basis. Tradegate ECA developed this service as a means of promoting the use of electronic trading techniques throughout the trading community, and especially to bring the benefits of these techniques within the reach of small business.

Access to the Australian Customs' Exit 1 and Sea Cargo Automation services

Through the TradeGate at TradeGate.com.au

This innovative electronic trading solution for small business combines "industrial strength" Electronic Data Interchange (EDI) with the accessibility and low cost of the Internet, bringing EDI within the reach of very small users for the first time.

How does it work?

Small enterprises can log into TradeGate.com.au to access the Australian Customs Service (ACS) Exit 1 and Sea Cargo Automation (SCA) services. This provides access to sophisticated electronic messaging systems, which until now, have been restricted to larger corporations with their own software developers or access to purpose-built third-party software.

What this means is that small users will be able to comply with the technical requirements of the ACS without extensive development and testing, and at a very low initial investment cost.

The service allow users to lodge Australian export declarations and receive export clearances through the EXIT 1 system, and to lodge import manifests through the Sea Cargo Automation system.

No software is required by the small user other than access to the Internet and a web browser such as Netscape Navigator or Microsoft Internet Explorer. The service can be accessed through any Internet Service Provider, and is available on a pre-paid subscription basis.

Tradegate ECA developed this service as a means of promoting the use of electronic trading techniques throughout the trading community, and especially to bring the benefits of these techniques within the reach of small business.

The service uses Web Forms for data entry, and generates UN/EDIFACT standard EDI messages automatically. The service receives responses from the ACS (including error messages) and displays the results to the user on a status screen. Provision has been made for corrections and re-transmissions in order to complete a particular transaction.

The UN/EDIFACT messages generated by the service are developed to comply with the specifications set by the ACS, and are fully tested in advance. The small user is therefore able to use the service with confidence.

The combination of Web Forms, UN/EDIFACT messaging and a transaction database make this service a powerful tool for the small user.

What does it cost?

All messaging required to complete a given transaction is covered by the single low transaction fee, for example:

EXIT 1	**Incl. GST**
Tradegate ECA members	AUD 3.30
Others	AUD 4.40

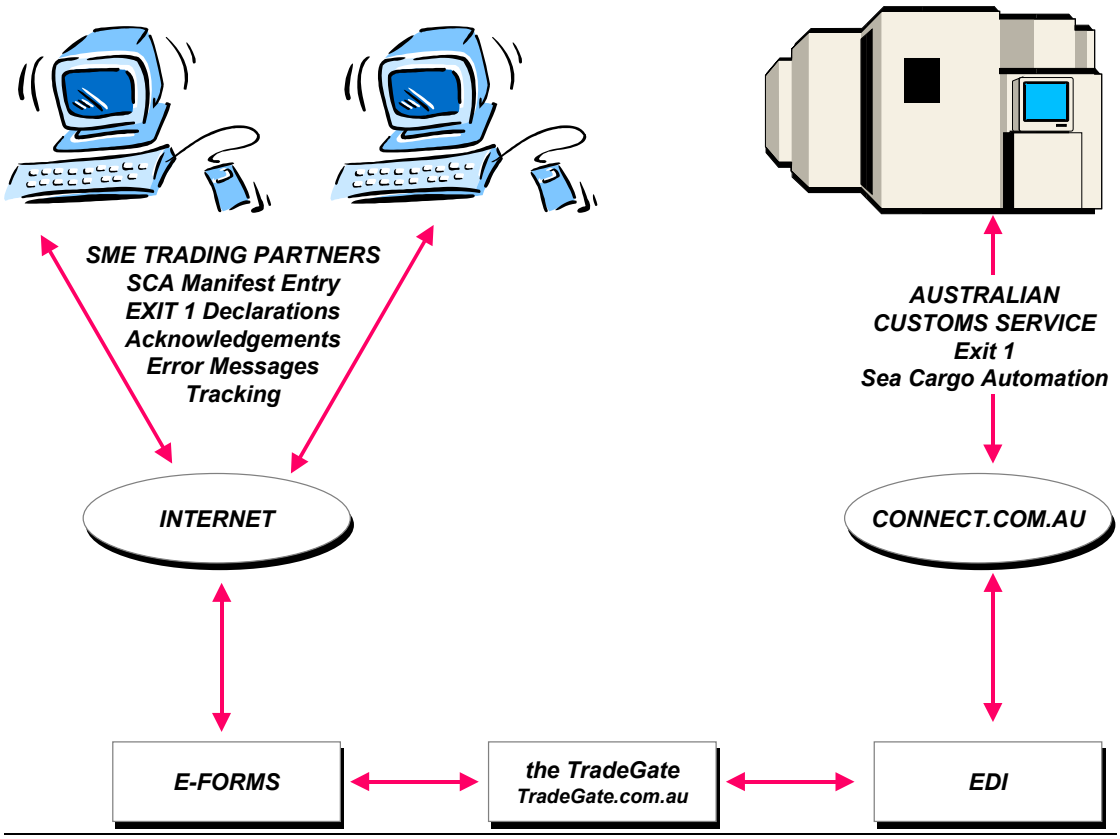
SEA CARGO AUTOMATION	**Incl. GST**
Tradegate ECA members	AUD 3.30
Others	AUD 4.40

Since inception, the number of registered users has grown to over 400 with the majority using the EXIT1 Export declaration process. This represents a clear commentary on the reception by the user community of the simplicity, ease of use and cost effectiveness of these Tradegate inspired e-commerce services.

To use the service, an account must first be established. Users first register as subscribers to the service, and purchase a block of message credits (minimum AUD 60.00) in advance. The service accepts Bankcard, Mastercard, Visa, American Express and Diners Club.

Additional credits may be purchased at any time, and will normally be processed on the next working day.

EXIT1 and SCA



Users wishing to access the ACS EXIT 1 and Sea Cargo Automation systems must also register separately with the ACS. TradeGate will advise the results of this registration to the user.
For ACS services, new registrations will normally be processed on the next working day (Australian Eastern Standard Time) and no later than five days from lodgement. Users are notified by email when their registration has been accepted and their account has been established.

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Japan

The Trade Electronic Data Interchange, TEDI, commenced as an EDI based system that has now converted to using XML technology. The fundamental objective remains to exchange data electronically over a robust network rather than via paper documents.

Trade documents such as Bills of Lading are to be exchanged between industries in a standardised format and conveyed using electronic XML technology. TEDI can provide automatic copying and matching thus minimising errors and discrepancies. The system enables data exchange between trading partners both nationally and internationally. A discrepancy in this sense is an error, flaw, or inconsistency between trade documents such as an inconsistency in the conditions of a Letter of Credit.

TEDI report that in the average trading transaction, almost 40 documents are exchanged between up to 30 related enterprises and organisations. Each document contains as many as 200 entries, 70% of which are re-entered through copying or re-keying.

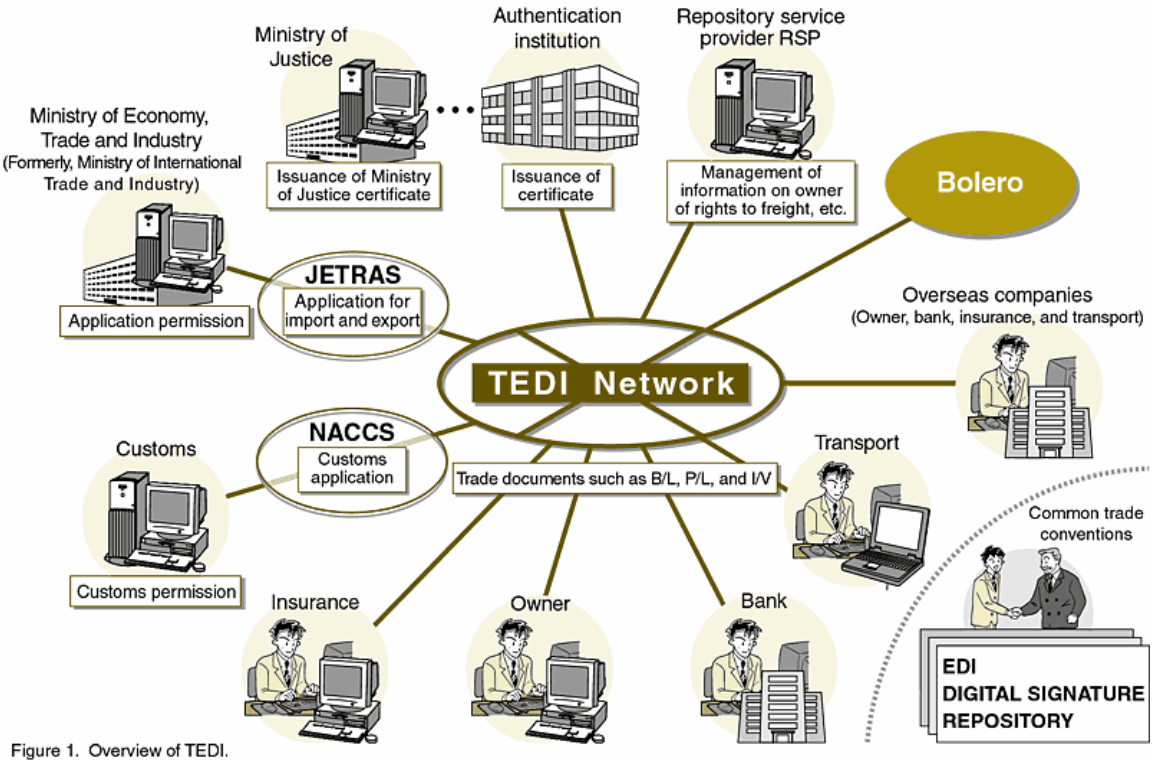

Figure 1. Overview of TEDI.

TEDI state that as enterprises begin to deal on a global basis, the competition of the global players for survival is becoming more intense. In this environment, it is becoming increasingly necessary to achieve even greater efficiency and speed in

conducting transactions while maintaining safety, confidence, and reliability. Achieving the above goal also leads to enhanced global competitiveness and superiority in conducting transactions.

The main components sought to conduct secure and reliable trade transactions are considered to be:

1. Safe and certain data exchange. This may be achieved through encryption and electronic authentication. The use of encryption prevents the leakage of data and maintains the confidentiality of business actions. A digital signature may be added to each document to prevent tampering, unauthorised access and spoofing.
2. Management of trade documents and rights of owners. The message exchange rules for transfer of documents and rights are established and managed by a Repository Service Provider, RSP, to implement denial rejection in both transmission and reception.

   An RSP acts as a reliable third-party organisation and substitutes for the Bill Of Lading function as a warranty. It also functions to guarantee the original copy, verify the absence of tampering, manage rights related information such as the ownership of freight plus certifies transmission and reception records. The RSP is run by the Japan Electronic Trading Service, JETS, as an impartial third-party.

   Denial rejection is the condition under which the sender cannot deny having sent a message and the receiver cannot deny having received a message.

   Screens, forms and templates may be formatted to meet particular company requirements according to their operational procedures.
3. Electronic commerce based on common business rules. Due to the change to an electronic format, many of the legal strictures and conventional commercial customs are no longer valid. TEDI provides an alternate framework for resolution of legal issues to facilitate trading transactions. These are based on common business rules, including using the following guidelines:

   - Data exchange convention agreement.
   - Use of an electronic signature and agreement on its effect.
   - Agreement on the effects of freight right owner information tables to supersede the Bill of Lading function
   - Agreement on the assurance of safety on rights that are frequently transferred.
   - Agreement on the use of an RSP that provides information and the repository service covenant.
   - Specification of RSP services compliant to TEDI.
   - Covenant to be applied to all TEDI participants.

- Digital signature service and application contract.
- Specification of digital signature service consistent with existing Certificate Authority, CA, as specified by TEDI

In Japan, the Certificate Authority, CA, is a system or organisation that issues a digital certificate, the electronic certificate, when public key encryption is used. A CA is indispensable in constructing a Public Key Infrastructure, PKI, where encryption uses different keys for encoding and decoding the message sent between parties. An organisation issuing digital certificates is known as an Issuing Authority, IA, and both an IA and the checking Registration Authority, RA, are referred to as CAs.

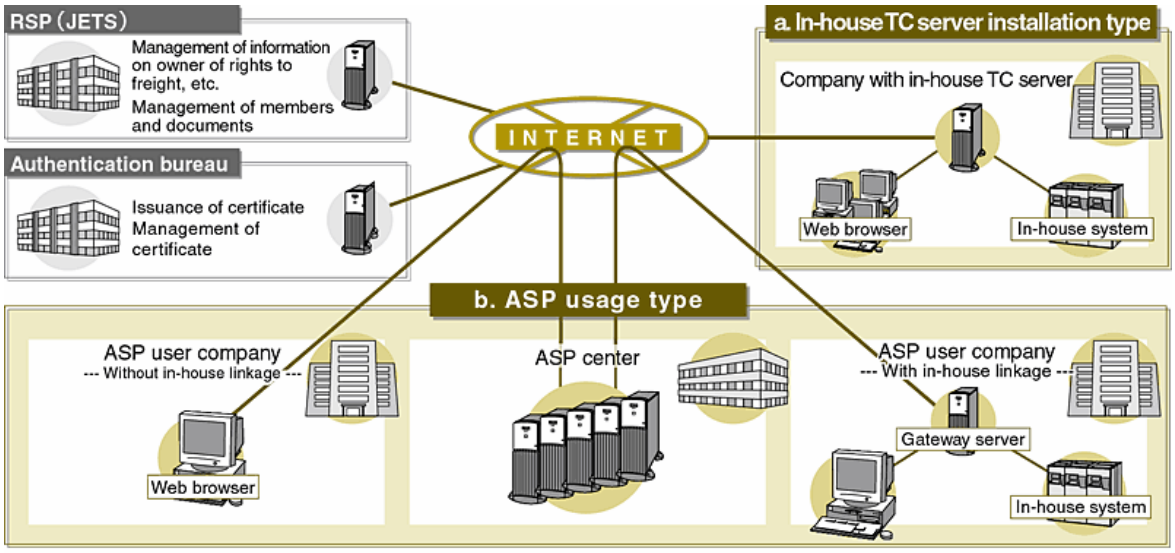

Figure 2. Components of the TEDI system.

Any company can register and use the TEDI system if it has access to the Internet. No special software is required. The personal computer accesses the company's Internet server that may then access the TEDI Application Service Provider, ASP, centre. A server may be installed at the company premises for TEDI if required. A Trade Chain server, TC server, may also be installed to enable a trade document to be distributed through a series of partner companies connected like a chain.

An exporter must interface with many outside organisations to produce correct export documentation. These tasks include applying to various government bodies and agencies as well as embassies, insurance companies, freight forwarders, shipping companies and importer. Subsequently arranging for issue of a bill of lading, notifying the importer of the shipment and negotiating a letter of credit with a bank. The exporting company staff usually conduct these procedures using telephones, paper,

facsimile and e-mail. The exporter must also check that all documents contain consistent data.

TEDI provides a user configured web browser template screen to create a suitable trade document in-house. An in-house linkage interface enables data entry into standard trade documents. TEDI provides functions such as copying for facilitating accurate data transfer from L/Cs and information from other documents. Sample documents may be established and copied to minimise repeatedly entering the same data and to prevent errors in copying and accidental omissions. A standard TEDI document is created as XML data.

The role of the RSP is to guarantee the original document data and manage the ownership after the document is converted to an electronic format. Thus the RSP must be able to prove that a document that is received and stored in-house is the original.

The denial rejection function is provided as an impartial third-party organisation both during transmission and reception. Rules are provided for sequencing the exchange of TEDI messages. Therefore as the RSP manages the message transmission and reception records, no company can state that it has not sent or received a message.

1	Trade information	14	Document arrival notice with and without L/C
2	Certificate of origin	15	Discrepancy report
3	Packing list	16	Discrepancy reply
4	Commercial Invoice	17	Confirmation of acceptance and payment (Letter of undertaking)
5	Shipping Instructions (S/I)	18	Confirmation of acceptance and payment (Debit authorization)
6	General Certificate	19	Cover letter (for shipping documents) with or without L/C
7	Shipping Advice	20	Insurance policy and certificate of insurance
8	Applications (from owner, transport, and bank)	21	Debit note and statement of premium due
9	L/C information (cover letter, L/C, and amendments)	22	Application for marine insurance
10	Application for collection with and without L/C	23	Shipment information (B/L)
11	Application for negotiation with and without L/C	24	Dock receipt
12	Bill of exchange with and without L/C	25	Arrival notice of cargo
13	Cover letter(for documents sent between banks)with and without L/C	26	Delivery instructions

Table 1. List of standard TEDI documents.

The TEDI Club is aimed at supporting the TEDI system. The club comprises members from many fields, including shipping, banking and insurance. It considers the main purpose of the EDI project for trade finance is to reduce the time and cost of trade business and increase international competitive power. This is to be achieved by encouraging fewer paper documents and more electronic documents to be exchanged over a safe and reliable network.

In Japan, up to forty paper documents per transaction have routinely been exchanged between separated or associated trading companies. These companies need to streamline and expedite the trading business to complete transactions quickly. Thus

trading companies seek to reform their procedures and streamline their businesses by seamlessly integrating reliable proven techniques into existing computing systems.

To adapt to the new wave of computerised trade business, companies need to change their traditional systems, revise conventions and establish new systems or rules. The TEDI Club is an organisation that supports the realisation of EDI for trade finance through system and rule maintenance and revision and through the promotion of standardisation for the member companies.

Singapore

In 1988 Singapore established TradeNet, operated by Singapore Network Services, SNS and based on EDI. This system enables electronic submission of trade declarations for all imports and exports to relevant governmental agencies. Some 23 agencies are involved in international trade including the Trade Development Board, Customs and Excise Department and any appropriate controlling agencies for those particular goods. TradeNet users now prepare a single permit application through a single entry window for submission to the various regulatory authorities instead of the multiple copies of forms. Trading companies can now send these forms electronically to the relevant government agencies for processing and approval file rather than physically delivering them. Permit applications, after approval, may be returned for printing at the trading company's offices. Payments of taxes, customs duties and other fees are automatically transferred from the trading companys' bank accounts.

The original process was costly and time consuming to trading companies, plus government agencies had to manually process extensive paperwork. This meant more staff and accommodation plus increasing management overheads as trade expanded.

In 1986 an EDI system was commenced to enable traders to electronically submit trade declarations and in 1989 TradeNet was implemented. TradeNet has significantly impacted the trade documentation process in Singapore and has been recognised as one of the strategic national information systems that have enhanced the competitiveness of the Singapore economy. Most permit applications for imports and exports are now processed through TradeNet. It is reported that more than half a million permit applications are processed through TradeNet every month.

Philippines

Philippines introduced the Super Green Lane, SGL, an EDI system, which is a special customs clearance process to speed processing and clearance of imports for traders who are considered a low risk to customs control. SGL shipments may now be effectively cleared before they arrive at the Philippine ports. Currently the SGL is available at three major ports in Metro Manilla and to 1000 importers.

The Philippine Bureau of Customs installed the Automated Customs Operations System (ACOS) using the Automated System for Customs Data Management (ASYCUDA ++) developed by UNCTAD. This was undertaken as the Bureau of Customs recognised that paper based manual processes were highly inefficient and they needed to be aligned with international developments.

The Bureau of Customs then implemented a risk assessment program and developed a Selectivity System that inspects all cargoes by computerised scrutiny to determine their risk levels and hence the extent of examination required. At present 40 per cent of shipments are classified as Green Lane, 40 per cent are Red Lane and the remaining 20 per cent are Yellow Lane. The Super Green Lane is a further advance forming a special customs clearance.

Using EDI technology, qualified importers may use their computers connected to the Bureau of Custom's computer system to lodge import entries at any time. This system has provided users with significant efficiencies in customs processing plus faster release of imports, quicker goods deliveries and lower costs. Shipments subject to SGL may be released from customs in about three hours after their arrival at Philippine ports compared with some 6 days previously.

United States of America

Bolero

Bolero International Ltd trades under the name "bolero.net". This is a global electronic trade community that has been set-up by the world's logistics and banking industries to facilitate paperless electronic transfer of business data and documentation between participating organisations.

The investments made by the two mutual organisations alone brings together over 12,500 freight forwarders, container fleet carriers, port authorities and financial institutions. In unison with the Bolero Association, over the past two years over five hundred companies and industry organisations around the world have worked together to review the functional and legal capabilities of the Bolero service.

This cross industry ownership of "bolero.net" is claimed to provide the company with a unique neutral positioning which sets it apart from previous proprietary initiatives. Proprietary systems either inside or outside companies, industries, or regional communities inevitably favour particular interests of a specific company, market or country and cannot satisfy the need for an open, shared platform for the entire world.

Basic Structure

The initial system was based on EDI communication and directed at Bills of Lading particularly in the Latin-America region.

The new Internet based system utilising XML technology seeks to eliminate the amount of paperwork involved in cross-border trade such as bills of lading, insurance certificates and other documentation and is already in use by some of the world's largest multinationals. Logistics and financial service providers are pressured to help the world's importers and exporters deal with:

- Shortening product lifecycles
- Growing globalisation of product sourcing and distribution
- Acceleration of e-commerce trade

The "bolero.net" system now offers a set of protocols and methodology that allows members to exchange documents over the Internet and comprises:

- A legal framework to ensure the electronic documents exchanged between trading partners have the same validity as the replaced paper documents.
- A Title Registry that assures all members of a trade chain when and to whom ownership of goods passes.

- A Core Messaging Platform that conveys secured messages between Users and their Value Added Networks
- A "bolero.net" community of users who are growing and expanding the usefulness of the network and system.

To become a 'partner' under "boero.net" umbrella a corporation:

- must have "bolero.net" enabled products or services with a demonstrably satisfied customer base
- should have a reputation for quality services and products
- is likely to have a high market share within their domain of operation
- have a demonstrated strategic commitment to exploit the potential of bolero.net.

Participants

It is reported that seven out of the world's top ten banks have now signed up to "bolero.net", plus major trading houses Mitsui and Marubeni and carriers including K Line, Cosco and Evergreen.

The "bolero.net" system is directed at providing a neutral, open system rather than "proprietary" developments that force businesses down one particular path. This gives technology and consultancy service suppliers an opportunity to build ""bolero.net" enabled" products. These products and solutions may be marketed to the logistics, financial services and trading community. These products may be focussed on specific trading or consultancy services or specific implementation needs.

Every member of the "bolero.net" community is authenticated and bound by its structures. Thus "bolero.net" claims to exceed the present reliability that businesses expect to have when conducting paper trade transactions. The "bolero.net" messaging system is operated by SWIFT and utilises the latest encryption technology. Messages are validated and a rigorous registration procedure acts as the gatekeeper for prospective members of the "bolero.net" community.

This community encompasses:

- Importers
- Exporters
- Freight forwarders
- Port authorities
- Inspection agencies
- Carriers

- Ship agents
- Customs agencies
- Financial Institutions

The initial "bolero.net" partners were SWIFT and IMRglobal, both of whom have developed front end communication products that support users in connecting to the "bolero.net" service. IMRglobal is a leading international provider of business and information technology solutions to Global 2000 companies in vertical industries. Transeon is a new product that will allow users to take full advantage of the "bolero.net" service. Associated Appian Bridge products include Genius Merchant where shipping documents may be created and sent to the trading partners and have them completed and returned. Then reuse this information to create other documents and reports. BSB Solutions acts as the "bolero.net" sales agency in Japan. In 2002, Global Crossing left the managed services market and was replaced with Infonet, Equant and Colt to manage the managed Internet protocol network services for SWIFT over the next three years.

A more detailed description of these services as provided by those *initial partner* organisations is attached at the end of this section.

System Architecture

The Core Messaging Platform that "bolero.net" provides is used to secure messaging between all users and guarantees the delivery of all trade documents.

The Title Registry is a database application that allows for the creation and the transfer of rights and obligations related to an electronic bill of lading to "bolero.net" and then to the recipient.

The concerns of web security for commercial transactions involving sensitive trade documentation have been addressed through the use of sophisticated encryption technology. The security offered is claimed to be greater than that associated with paper documents or conventional e-mail. Members of Bolero must also go through an extensive registration process that includes bank references. This extra security is to allay concerns about the ease of making fraudulent transactions. As all documentation is transmitted through Bolero, this means there is effectively an independent arbitrator between the main players in the contract that is claimed to add extra security. In addition, a new Bolero Rule Book will act much like International Chamber of Commerce guidelines such as Incoterms and UCP500 as a code of conduct setting out the rights and obligations of the parties involved in the transaction and through which any disputes can be resolved.

Thus the cryptographic technology employed by "bolero.net" provides the highest levels of security for all transactions. All messages are digitally signed and the service

also allows for the use of encryption. Access to web-services and mailboxes are also fully authenticated.

The critical "bolero.net" service core messaging platform has now been outsourced to SWIFT as the systems become more closely tied in an effort to minimise costs and achieve improved credibility.

Core messaging platform

The Core Messaging Platform is the hub of the "bolero.net" service. It is responsible for all common functions between Users and between Users and Value Added Services.

To secure trade documents sent through the Core Messaging Platform, the "bolero.net" service relies on advanced cryptographic techniques, commonly known as digital signatures and encryption. These techniques are claimed to provide security far superior to what exists in both the paper world and the Internet.

For example, a confidential paper document can be copied and presented to outside parties without the knowledge of its sender. It can also be forged and successfully passed on as an original. The same things can happen to Internet delivered messages, such as e-mail.

However, none of these scenarios are possible with "bolero.net" security. Encryption prevents viewing of a document by any party other than the intended receiver and digital signatures ensure that signed documents cannot be altered.

Companies have been wary of electronic exchange of trade documents because of a lack of delivery acknowledgments. On the Internet it is stated that once e-mail is sent it is impossible to tell whether it has been or will be received.

The "bolero.net" service solves this problem with a unique messaging protocol. When the sender transmits a message, "bolero.net" acknowledges receipt immediately and then forwards the message to the receiver. When the receiver downloads the message, it automatically acknowledges receipt to "bolero.net". The "bolero.net" system can then notify the sender that the message has been received.

The delivery guarantee is based upon these acknowledgments. The "bolero.net" system will deliver the message or it will inform the sender that the receiver was not available within the time permitted.

When documents are forwarded as part of a trade transaction, companies need to have absolute certainty that the document has not changed. The "bolero.net" service ensures that a document is original by maintaining its reference in the central system. When the document is forwarded, "bolero.net" matches the original content against the forwarded content and if any character has changed, "bolero.net" will reject the document.

Interoperability

This term describes the ability of different computer systems to work together, facilitating business transactions across organisations. The objective of the bolero$_{XML}$ initiative is to create a simple and robust method for trading partners to exchange data and documents over the Internet without the need for a bilateral data interchange agreement. The bolero$_{XML}$ strategy is based on the notion that the precise documentation standards required do not exist for the needs of the Bolero community.

Thus there is a need to create a common business model of the trade process. The release of a series of bolero$_{XML}$ document definitions describes those electronic trade documents using XML for structure and content.

Transactional environment

A key problem in trade processing today is the inability to reconcile trade documents received. The “bolero.net” system provides a solution through a comprehensive referencing scheme. These references are unique to a company but can be shared with all parties in the trade transaction.

In addition, “bolero.net” allows each company to categorise references based upon their view of the transaction. For instance, an importer may need to use distinct references to differentiate between a long-term contract with the supplier and the specific purchase order sent under this contract. Through these mechanisms, companies can reconcile messages and documents received from their counter-parties according to the local referencing scheme or schemes they devise.

Time critical

In a “bolero.net” environment, documents can be moved from sender to receiver in a matter of seconds. The “bolero.net” provides features to distinguish between highly critical and less time sensitive documents. Through a "time out" function, the sender can receive warnings from “bolero.net” when a document is not received by its counter-party. The sender can also mark messages "urgent" to allow the receiver to prioritise properly.

Logging

As a neutral, trusted third party to a transaction, “bolero.net” maintains full logs of all messages sent and received. These logs are securely maintained in the “bolero.net” operations centre and are stored for up to three years. The logs include the digital signatures used in each message and can be used in the event of dispute.

Title registry

The Title Registry is the first Value Added Service connected to the Core Messaging Platform. It is an application for recording and transferring the rights and obligations contained in a Bolero Bill of Lading.

The Bolero Bill of Lading possesses all the attributes of an electronic waybill but with all the benefits of control and pledging capability associated with paper bills of lading.

The Title Registry and Bolero Bill of Lading provide a fully functional equivalent to the paper bill of lading. The Bolero Bill of Lading can be created, transferred, amended and surrendered. In each case, only authorised companies can instruct the Title Registry to complete a transaction. The functionality is provided with the complete security of the Core Messaging Platform.

While a paper bill of lading can be transferred to a bank for settlement of a letter of credit, it only provides appropriate security when the bill is endorsed to the bank. In the Bolero Title Registry, this security interest is enhanced through the addition of a Pledgee. A Pledgee is a party whose rights and obligations over the Bolero Bill of Lading are exercised only when the pledge is enforced.

The Title Registry only acts on instructions by authorised companies and also acknowledges the actions taken and automatically notifies affected parties. This enables operational controls to prevent sending the Bolero Bill of Lading to the wrong party, as well internal auditing of all activities.

The Title Registry prevents all amendments unless authorised by the originating carrier thus eliminating the potential for fraudulently altered bills of lading. When the Title Registry receives an amendment request, it suspends all actions on the Bolero Bill of Lading until the carrier grants or denies the amendment. The Title Registry also supports combining, splitting and switching the Bolero Bill of Lading in addition to normal one-to-one amendments.

In the paper world, an endorsement chain includes all parties to a bill of lading. The Title Registry also maintains an endorsement chain for each Bolero Bill of Lading, reflecting the transfer of rights and obligations between parties. In addition, the Title Registry also maintains a timestamp of each endorsement in the endorsement chain so that a fully accurate record of the Bolero Bill of Lading is provided.

As is the case with the Core Messaging Platform, the Title Registry maintains a full log of all Bolero Bill of Lading transactions. These logs can be compared to the digitally signed messages maintained by the Core Messaging Platform to prove transaction integrity and resolve any disputes.

The above information is derived from the Bolero Product Bulletin April 2002 and associated papers available on the Internet.

SURF

SURF is the latest Value Added Service provided to extend the "bolero.net" trade transaction capability by providing a delivery versus payment system.

It is a fully automated documentary settlement system and exploits the secure, guaranteed transaction services provided by the Core Messaging Platform. It is based on Bolero XML standards to provide document compliance services with optional bank guarantees.

The SURF system can automatically check all commonly used trade documents such as commercial invoices, bills of lading and certificates of weight and analysis.

The system supports a full range of settlement options including:

- Service guarantees for each "bolero.net" customer covering its service offering. Guarantees are backed by a Responsibility and Liability insurance policy.
- Liability coverage is based on the User business environment. If a"bolero.net" fails to meet their service obligations resulting in a direct loss for a User, "bolero.net" has limited liability up to US$ 100,000 for each loss.
- The "bolero.net" coverage assures the User that messages will not be lost, misdirected or delayed.
- The "bolero.net" service also assures accuracy of messages sent via the "bolero.net" central system. This assurance covers tampered messages, falsely created messages and improperly validated messages. If the "bolero.net" validation routines fail to identify a fraudulent digital signature that results in a direct loss for the receiver, these losses will be covered.
- The "bolero.net" service plays an important role as a trusted third party for world trade that is supported through comprehensive logging of all trade transactions. The Responsibility & Liability policy provides confidence that all messages and documents will be logged, that logs will be properly maintained and that information will be kept completely confidential.

DataWeb

The USA has also introduced the DataWeb database, the Electronic Document Imaging System, EDIS, and the Production, Supply and Distribution Database, PSD, on the Internet to make trade related information more readily available.

DataWeb provides tariff, trade regulation and trade flow data from the US International Trade Commission, USITC. The documents produced for the USITC hearings are provided through EDIS. The PSD system gives access to US Department of Agriculture, USDA, commodity statistics and forecasts.

These databases provide information about trade, trade regulations and market forecasts to assist the trading organisations monitor and evaluate market opportunities. They have also reduced the costs of obtaining relevant information.

This change from converting information from paper documents into electronic databases meets the aims of the Government Paperwork Elimination Act. This Act is directed at disseminating data by self-service means and thereby reducing information storage and handling costs. By these means the Office of the Secretary of the US International Trade Commission seeks to minimise storage of paper files. Other benefits are the quicker and more accurate electronic search and retrieval mechanisms available in the electronic system.

End of Attachment

Paperless Trading Demonstration Project - Electronic Transmission of the SANCRT Message

TPT 01/2001 T

Printed by:

Dialectrics Pty Ltd
Box 8042 Burwood Heights
Victoria 3151
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APEC Publication Number 203-TR-01.1

ISBN 981-04-8361-9