

## **TALKING THE SAME LANGUAGE:**

# **The Business Case for the Adoption of Open Global Data Standards in the Freight Transport and Logistics Industry**



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## **1. SUMMARY AND CONCLUSIONS**

In order for businesses to function they need to manage information internally and exchange information with trading partners. While in the past this has largely been done by telephone, fax and paper-based systems, modern business increasingly relies on information technology and computer networks. The advantages of using information technology tools are undeniable and their use is now widespread across industry. The Freight Transport and Logistics industry is no exception with all businesses using e-business to some extent.

In order to use information across internal systems, and to integrate with systems deployed by trading partners, it needs to be in a format that is recognisable and usable by all parties. This is where standards come in. 'Standards', in this context, is a term used to describe the rules that dictate the identification and communication of business information.

The Australian Logistics Council (ALC) has realised the need for industry to adopt global data standards and has recorded the following resolution:

*"The Australian Logistics Council endorses the EAN.UCC open universal global standards for communication, data collection and the exchange of information between trading partners in the supply chain."*

The case for adopting EAN.UCC global data standards is quite clear:

- It is based on internationally accepted standards
- The system is proven
- An increasing number of large organisations are using it and receiving substantial benefits
- The benefits are also available to smaller businesses
- The ability to conduct business using EAN.UCC is fast becoming a requirement for trade
- Adoption makes conducting business easier, enabling organisations to focus on other areas for improvement
- Adoption enables closer supply chain integration and collaboration and increases the whole-of-chain efficiency and competitiveness

The case for adoption becomes even clearer when you consider that there is no comparable supply chain standards framework with the proven track record within industry and with the universal coverage to ensure full interoperability with supply chain trading partners. National bodies and industries worldwide have embraced the EAN.UCC system. EAN Australia is the Australian representative body, providing assistance to businesses and ensuring initiatives in Australia are in line with global best practice.

With over one million businesses using the system, organisations are able to link into global markets and supply chains with a minimum of effort. Within Australia the EAN.UCC system is used by some 13,000 business members across 18 industry sectors such as health, steel, telecommunications, transport and logistics, textile, apparel, paper and timber manufacturing. Large commercial users include Woolworths, Coles Myer, Unilever and Nestlé.

The core principles of the EAN.UCC system are:

- Unique identifying numbering for businesses and trade units and standardised supporting information (e.g. dimension or date)
- Presentation of information in machine readable form (e.g. via barcodes or RFID)
- Standard message formats for transactions

Using common global data standards provides a number of benefits to industry, including:

- Reducing costs (e.g. increased speed and reduced errors through process improvement and automation, making better use of existing ICT investment)

- Compliance (e.g. retaining customers by meeting their requirements)
- Improving market position (e.g. strong reputation for timely and accurate delivery)
- Increasing sales (e.g. improved service such as track and trace and inventory control)

While it is difficult to obtain accurate financial benefit information, the following examples may assist in illustrating how adoption can assist business:

- It is estimated that 70% of all grocery industry transactions might currently contain errors, costing the industry an estimated \$50M annually<sup>2</sup>
- According to EAN Australia, Grocery supplier National Pak Ltd has increased pallet inventory accuracy from 60 to 97% after adopting the EAN system<sup>3</sup>
- Research shows that the automation of processes with as few as 10% of trading partners can reduce total transaction costs by up to 50%.<sup>4</sup>

Further, as the EAN.UCC system requires information to be in a consistent format, this enables businesses to take advantage of other e-business initiatives, and integrate information across internal business information systems by, for example, linking data from Goods Receivable to inventory systems, financial systems, ERP systems, Customer Relationship Management systems, Despatch and so forth. Moreover, the EAN.UCC enables businesses to link with the systems of trading partners, automating processes, providing mutual benefits and enabling collaboration based on information sharing.

For businesses that have automated back-end systems, additional advantages can be gained by integrating them with their EAN-based track and trace system. Benefits from using online applications such as accounts payable, financial management and customer relationship management systems can be enhanced through this integration.

There is a need for industry as whole to consider its position with regard to the adoption of EAN.UCC, and a need for each business to build its own individual business case. A framework for doing so is provided within this document. Businesses need to assess their processes, identify where standards can support improvements, evaluate the current and future demand for compliance from trading partners and assess the benefits and barriers in the context of individual business information (e.g. financial, skill set, strategy etc). Using this information, businesses can establish a roadmap for implementation, and, by working with EAN Australia and trading partners, realise Return-On-Investment through process improvements and increased efficiency and effectiveness.

The National Office for the Information Economy (NOIE) is working with Standards Australia to increase the degree of interoperability between the global EAN UCC system for product identification and the standards required for other e-business applications along industry supply chains, especially where logistics providers are key supply chain integrators.

## **2. CONTEXT AND BACKGROUND**

Business is about generating profit from the provision of goods and services and can be viewed as an intricate web of relationships. With a highly competitive global marketplace and the relative complexity of products and production processes, conducting business fundamentally requires interaction between, and reliance upon, multiple dispersed trading partners. It follows that supply chains, as much as businesses, compete against each other. Conducting business *profitably* is largely determined by the effectiveness and efficiency of these interactions within the supply chain.

Key to effective and efficient supply chain interaction is the exchange of timely and accurate business information. Business has long embraced the conduits and tools of technical evolution to optimise this vital flow. Currently the telephone and other electronic networks, notably the Internet, are the mainstream inter-business communication conduits, supporting tools such as software packages and information capture devices. There is no question that, when properly implemented to address specific interactions, these e-business technologies can increase profitability and competitiveness. As a result, their use is increasingly becoming a business imperative. For example, in Australia approximately 80% of the top 100 suppliers to the grocery industry are registered with EAN.<sup>5</sup>

Standards dictate rules, such as naming conventions and the structure of information exchanged, so that e-business tools within communicating organisations can understand business documents and other data. Often a standard used in an implementation addressing a specific interaction between trading partners A and B will be different to the standard used between C and D even if some of the same tools are used in both deployments and they are talking about the same thing. This becomes problematic when A and D wish to communicate and are forced to use different standards with different trading partners, and more so when we consider businesses may have hundreds of trading partners. It is simply not cost effective to support multiple standards, and worse still to have none.

As well as communicating with trading partners, businesses also have to physically exchange goods. Within Australia, the physical movement of goods from business to business is provided by the Freight Transport and Logistics industry. *Freight Transport* refers to the physical transport of goods by a carrier, while *logistics* is defined by the Council of Logistics Management as "...that part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption in order to meet the customers' requirements." The Bureau of Transport Economics estimates that the gross value-add of logistics activities in Australia was around \$57 billion in 1999-2000. This was equivalent to 9% of GDP.<sup>6</sup>

As can be seen, Australia's economic performance and international competitiveness depends on an efficient and effective Freight Transport and Logistics industry.

*"Put simply, a globally competitive and dynamic Australian logistics industry provides a huge boost to the nation's overall competitiveness and economic performance."*<sup>7</sup>

To help the industry boost its performance, and in turn lift the competitiveness of other Australian businesses, the Federal Government initiated the Freight Transport Logistics Industry Action Agenda in 2000. The Industry Steering Committee commenced in January 2001 to develop the Action Agenda. The Action Agenda establishes a framework to achieve an industry which:

- Recognises and accurately measures its importance to the Australian economy
- Has a world-wide reputation for reliability, service, innovation and competitiveness
- Is respected as a dynamic and sustainable industry with attractive career options
- Has the leadership in place to address issues of mutual concern for such a diverse industry

In July 2002, the industry's Action Agenda report and the Government's response was launched by the Deputy Prime Minister and Minister for Transport and Regional Services, the Hon John Anderson, MP, as the Australian Logistics Industry Strategy.

The Action Agenda process provided the industry and the users of its services with an invaluable opportunity to examine the factors most critical to the industry's future. It enabled the industry to be pro-active in proposing a comprehensive suite of actions to improve the competitiveness of one of the most influential parts of the economy, and establish a new basis for effective relationships across the industry and with governments.

One of the first priority areas of the Strategy, recommendation 36, was establishing the Australian Logistics Council to drive the implementation of the Strategy. The Council includes industry leaders and government representatives and is chaired by Minister John Anderson. Of the many recommendations put forward in the Strategy, the importance of data standards was recognised:

*"The freight logistics industry and users of logistics services to work with appropriate technical organisations and government agencies to achieve greater connectivity of messaging standards and related business technologies, nationally and internationally."<sup>8</sup>*

The Freight Transport and Logistics industry is highly document intensive and as the industry increasingly uses e-business tools to address this, there is a need to collectively agree upon the adoption of common standards for communicating with trading partners. The Australian Logistics Council has recognised the importance of establishing a clear position on standards, and has recorded the following resolution:

*"The Australian Logistics Council endorses the EAN.UCC open universal global standards for communication, data collection and the exchange of information between trading partners in the supply chain."<sup>9</sup>*

Given the necessary and sufficient conditions of functional e-business technology, and a need to use e-business tools to exchange business information efficiently and effectively with multiple trading partners, it is crucial that a common standard is adopted. This document provides a business case for adoption of EAN.UCC open global data standards in the Freight Transport and Logistics industry.

## 2.1. OVERVIEW OF BUSINESS CASE ANALYSIS

In order for EAN.UCC global data standards to be adopted by industry, a business case needs to be established. Investigating standards, the barriers, benefits and opportunities, and assessing the overall value of industry adoption in the context of global trends goes some way to achieving this. However, it is important that each business individually builds their own business case for the adoption of global data standards. In order to do so, the following must be considered:

- What are the data standards, what do they do and who is using them
- Where do they impact on your business
- What are the benefits of adoption, in relation to your business, and are they strong enough to act as drivers
- What are the barriers and implementation costs, in relation to your business
- What is the Return on Investment (ROI) when comparing the benefits of adoption to barriers and implementation costs

This document aims to provide core information that individual businesses can use to assess their position with regard to the adoption of global data standards. Additional business information relevant to each individual organisation must also be taken into account and is beyond the scope of this document.

### **3. INFORMATION EXCHANGE IN THE SUPPLY CHAIN**

Supply chains start at the origin of the raw material and end once the product has been consumed, discarded or recycled. A supply chain includes all the businesses involved in the product's life cycle.

*“A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products and distribution of these finished products to customers.”<sup>10</sup>*

We typically model generic supply chains in a linear fashion with logical steps, as in the figure below:



**Figure 1: Generic Supply Chain Model**

Of course, the picture is more complex than this. For example, there may be many more businesses involved, the chain may cross several borders, use several transport modes, and a business such as a manufacturer may require inputs from many suppliers before it can provide product to the next business. Importantly, each business is involved in multiple supply chains providing multiple products to the end consumer. Logically, in different supply chains each business is in fact the consumer. It is, effectively, an intricate web of relationships.

While each individual business strives to remain competitive by ensuring its own internal processes and practices are efficient and effective, the results of these activities have a flow-on effect. For example:

- Poor quality assurance of raw materials may mean the manufacturer is unable to produce a satisfactory component
- A wholesaler's inability to source product may mean a retailer cannot meet customer demand
- Inefficient practices may lead to increased internal costs, which are passed on to the next business in the chain
- Poor forecasting of manufacturing requirements based on inaccurate sales data may mean customer demand cannot be met

Hence there is a need for a cooperative approach by all supply chain participants to ensure the end-customer's needs are met and the supply chain as a whole operates as efficiently and effectively as possible. This requires Supply Chain Management (SCM).

#### **3.1.SUPPLY CHAIN MANAGEMENT**

SCM reflects a change that occurred in the mid 1990s; the way businesses produce products and deliver to market is now built on a philosophy of managing beyond the four walls of an enterprise. Customers are increasingly demanding innovation and customisation of products, and a reduction in time between order and delivery. Remaining competitive in this environment requires a collaborative, well managed supply chain, matched to customer demands. This in turn requires the ability to manage communication and the synchronisation of business processes and systems across the chain. The competitive global marketplace requires trading partners to streamline, coordinate and make visible their interactions with direct trading partners and the supply chain as a whole. The most obvious aspect of supply chain visibility is at the product level. It includes such things as product identification, location and quality control. However, product visibility in the supply chain does not ensure alignment between an individual business's objectives and the objectives of the supply chain as a whole. In order to achieve this, it is also necessary to have:

- Process visibility (e.g. planning, manufacturing, purchasing)
- Relationship visibility (e.g. contractual compliance, CRM)

Supply chain visibility is supported by common data standards and helps businesses meet customer demand by deciding which channels and configurations provide competitive advantage through:

- Exchanging accurate and timely business information
- Forecasting customer needs
- Reacting to feedback
- Controlling costs
- Increasing efficiency and effectiveness

Businesses have devised numerous methodologies using e-business tools to support supply chain coordination and visibility, including:

- Efficient Consumer Response
- Collaborative Planning, Forecasting and Replenishment
- Vendor Managed Inventory
- Co-Managed Inventory

There is one element that underpins these and other SCM models: *collaboration*.

*"Collaboration can be the differentiator that gives one supply chain the edge over another."*<sup>11</sup>

Collaboration means sharing accurate and timely information to allow all businesses in a chain to forward plan inputs and outputs, manage risk, and maximise return on supply chain opportunities. The fundamental requirement for collaboration is *communication*. Communication, exchanging business information, in today's supply chain is supported by sophisticated information technology and communication systems.

Historically, planning has been performed in isolation, or perhaps between two or three supply chain nodes. This can result in many different forecasts within the one chain. The trend is now towards involving all businesses in the chain, including customers. Collaboration through sharing relevant business information provides a single forecast for all supply chain participants. This results in more efficient supply chain operations through reduced lead times, reduced costs through better inventory control, and more efficient logistics scheduling.

Many of today's supply chain management models rely on the Internet to underpin inter-business communication and collaboration, with the interconnection of enterprise resource planning systems providing visibility through the supply chain. For example, a manufacturer who is electronically linked to a retailer is better able to forecast demand and so plan effectively; a quality assurance body can trace a product along the entire chain based on information captured at each node; a logistics provider with access to production data is better able to schedule movement.

*"Combining the best supply chain management techniques with Internet technology creates not only greater efficiencies, but also differentiated value and customer loyalty..."*<sup>12</sup>

Suitable technology to support collaboration exists and is affordable. Much of the activity in the past has led to robust and agreed best practice models for the conduct of e-business. As Richard Villars, from IDC puts it, e-business growth and adoption is continuing but in a more planned and controlled manner. "Businesses are moving from a period of creativity to one of focussing on innovation within existing business models." Villars goes on to suggest that "[t]he focus is on integration, not of technology but of existing business information."<sup>13</sup>

Integration of information is key to collaboration, which is key to SCM. However, the ability for collaboration to furnish benefits to businesses within the supply chain depends upon the adoption of

technology that allows widespread participation. Quite simply, *my* system needs to be able to exchange information with *your* system, and both systems need to understand the content of the messages exchanged, and what to do with the information received.

### 3.2. INTRODUCING STANDARDS

While businesses have long been gaining internal benefits from the use of computers, it was not until technology developments enabled inter-business electronic communication that the full benefits could be realised. Electronic Data Interchange (EDI) is a term used to describe the practice of businesses exchanging information electronically in a structured format, using agreed message standards, via inter-business computer networks. *Standards*, in this context, is a term used to describe the rules that dictate the identification and communication of business information.

On one level standards can be seen as a common language, but, more than the analogy suggests, standards go so far as to ensure everyone uses the same words in the same order every time they describe the same product, location, trade unit, and all associated business information. With language this would seem a gross inhibitor, but for global e-business it is a convenience and indeed a necessity.

The need for standards to govern EDI (and essentials such as message formats) emerged as e-business technology gained acceptance and an increasing number of proprietary solutions were developed to deal with specific individual, or groups of, business interactions. Switching costs, and the costs of running multiple systems, hindered businesses as they tried to deal with multiple trading partners. Ultimately the business case for EDI standards emerged and the international UN/EDIFACT standard was born.

#### ***Business Processes and Interoperability***

The introduction of standards provided a vital solution to business information exchange barriers. The use of standards enabled business to maximise the competitive advantage offered by e-business tools. Given the underlying standard's concept of universal information conformity, businesses are better able to utilise information throughout the organisation (i.e. linking data from Goods Receivable to inventory systems, financial systems, ERP systems, Customer Relationship Management systems, Despatch etc). By adopting e-business tools that receive information in a standardised format at the point of entry into the business, information can seamlessly be integrated with other internal systems, reducing or eliminating manual data entry, associated errors and administration costs. By doing so, a business is significantly better able to easily and accurately know the current state of inventory, production, financials and so forth, and is therefore well placed to make informed decisions regarding planning activity. Moreover, with data synchronisation across internal systems and the associated streamlining of processes and reduction of 'noise', businesses can place more resources into improvements in other areas.

Importantly, by linking internal systems using standardised data, businesses are in a position to synchronise with the systems of trading partners. The opportunity to streamline inter-business systems and processes, as well as internal systems, holds potential to provide tangible benefits across the entire supply chain.

*"The key issue facing supply chain practitioners is the integration of information and business processes with supply chain partners"<sup>14</sup>*

For this to happen, industry must first select a standard to adopt, and then individual businesses must ensure they are capable of using it, and, take advantage of the benefits this situation will furnish. However, it should be made clear that when we talk about standards and interoperability within, and across, supply chains, the core issue is not to do with technology. The use of standards really revolves around business processes, with technology being a supporting toolset.

To further illustrate this point, one business may be using global data standards and automated business information exchange throughout the organisation, including despatch activities. However, if

that business's trading partner has no formalised goods receivable process in place and uses an ad-hoc paper-based system, the advantages of automated information exchange in a standardised format are lost. While working with businesses in the development of this report, the matching of business processes between trading partners when mutually engaging in standards adoption was highlighted as a key area for attention. The actual technology to be used very much took second place.

### ***Choosing a Standard for Industry***

Industry should be aware that there are numerous standards currently in operation. Many of these solutions to electronic communication issues are proprietary, meaning in this sense that they have been developed in isolation to provide a solution to specific e-business information exchange requirements. While this may work satisfactorily in a given instance, it does not necessarily allow for interoperability across trading partners and supply chains.

The problem of supporting multiple standards and proprietary solutions increases exponentially with the growth of global trade, as supply chains intertwine. An example of this can be seen in the different types of barcodes currently in use in Australia. Different barcode standards can be seen on airline tickets, food products, stationery- the vast majority of consumer products. It is unlikely that the infrastructure required to read one barcode standard can easily be used to read another barcode standard- thus limiting the use of the same infrastructure to address multiple requirements. This example emphasises two important issues: the use of e-business and the associated data standards required to conduct electronic trade is permeating all aspects of commerce; and, industry as a whole must move towards embracing an agreed set of standards or risk considerable costs associated with adopting multiple standards, or, worse still, exclusion from supply chains through non-compliance due to incompatible systems.

Ideally, given the nature of modern supply chains and global trade, standards adopted by industry should be well established, universal across industries, and administered by a recognised and supported central body.

## **4. STANDARDS INITIATIVES**

The need for global standards has long been recognised and several bodies have been established to address the issue. It is only in recent years, with the increased use of information technology and inter-connection requirements of businesses, that the ideal of global data standards has become a pressing necessity. This has resulted in many organisations working together to achieve global adoption of common standards.

### **4.1. WORLD TRADE ORGANISATION (WTO)**

The World Trade Organisation (WTO) governs the global rules of trade between nations, and ensures that trade flows as smoothly, predictably and freely as possible.

“At the heart of the system — known as the multilateral trading system — are the WTO’s agreements, negotiated and signed by a large majority of the world’s trading nations, and ratified in their parliaments. These agreements are the legal ground-rules for international commerce.”<sup>15</sup>

Importantly, signatories to the WTO are not permitted to raise non-tariff barriers to trade under the WTO Technical Barriers to Trade (TBT) Code. The code recognises countries’ rights to adopt the standards they consider appropriate, but requires that procedures used to decide whether a product conforms to national standards are fair and equitable and do not create unnecessary obstacles:

“Technical regulations and industrial standards are important, but they vary from country to country. Having too many different standards makes life difficult for producers and exporters. If the standards are set arbitrarily, they could be used as an excuse for protectionism. Standards can become obstacles to trade.”<sup>16</sup>

The political agreements reached within the framework of WTO require underpinning by technical agreements developed in standards bodies.

### **4.2. WHY EAN.UCC**

The case for adopting EAN.UCC global data standards is quite clear:

- It is based on internationally accepted standards
- The system is proven
- An increasing number of large organisations are using it and receiving substantial benefits
- The benefits are also available to smaller businesses
- The ability to conduct business using EAN.UCC is fast becoming a requirement for trade
- Adoption makes conducting business easier, enabling organisations to focus on other areas for improvement
- Adoption enables closer supply chain integration and collaboration and increases the whole-of-chain efficiency and competitiveness

The case for adoption becomes even clearer when you consider that there is no comparable supply chain standards framework with the proven track record within industry and with the universal coverage to ensure full interoperability with supply chain trading partners. National bodies and industries worldwide have embraced the EAN.UCC system. EAN Australia is the Australian representative body, providing assistance to businesses and ensuring initiatives in Australia are in line with global best practice.

With over one million businesses using the system, organisations are able to link into global markets and supply chains with a minimum of effort. Within Australia the EAN.UCC system is used by some

13,000 business members across 18 industry sectors such as health, steel, telecommunications, transport and logistics, textile, apparel, paper and timber manufacturing. Large commercial users include Woolworths, Coles Myer, Unilever and Nestlé.

### 4.3. EUROPEAN ARTICLE NUMBERING (EAN INTERNATIONAL)

EAN International currently has 99 Member Organisations representing 128 countries, including EAN Australia. EAN International's main activity is the development of the EAN.UCC system, a series of standards designed to improve supply chain management.

The interests of EAN International and the Member Organisations are represented at meetings with official bodies (such as the United Nations and the European Commission), international associations and other institutions. Member Organisations are usually national associations who provide tools and support that enable their own memberships (member companies) to manage their supply chains and trade processes far more efficiently. Specifically, the main responsibilities of Member Organisations are:

- The allocation of unique numbers - the basis for the complete range of standards
- Providing training on numbering, barcoding and Electronic Data Interchange (EDI)
- Supplying information on the standards and the continuing evolution of the system<sup>17</sup>

EAN International maintains involvement with other bodies working in this area, including:

- The Global Commerce Initiative (GCI)- a voluntary body created in October 1999 to improve the performance of the international supply chain for consumer goods through the collaborative development and endorsement of recommended standards and key business processes<sup>18</sup>
- Uniform Code Council (UCC)- whose mission is to take a global leadership role in establishing and promoting multi-industry standards for product identification and related electronic communication. The goal is to enhance supply chain management thus contributing added value to the customer<sup>19</sup>
- Global Standards Management Process (GSMP)- created by EAN International and the UCC to support standards development activity for the EAN.UCC System<sup>20</sup>
- CEN- the European Committee for standardisation whose members are the 15 European Union and 4 EFTA countries<sup>21</sup>
- International Standards Organisation (ISO)- a network of the national standards institutes of 146 countries, on the basis of one member per country<sup>22</sup>. The current EAN.UCC system data carriers are part of ISO standards: ISO15420, ISO16390, ISO15417, ISO/IEC15418 and ISO/IEC15459
- UN/EDIFACT- an EDI standard developed with the United Nations in the mid 1980's<sup>23</sup>
- AIM- a world-wide trade association for ADC (automatic data capture) equipment and service providers<sup>24</sup>

EAN International is also currently working closely with:

- The World Customs Organisation (WCO)
- The International Federation of Freight Forwarders Associations (FIATA)
- International Air Transport Association (IATA)
- The Council of Logistics Management

### 4.4. EAN AUSTRALIA

EAN Australia is not-for-profit organisation that locally administers the global multi-industry system of identification and communication for products, services, logistics units, assets and locations - the

EAN.UCC system. Created to help Australian business enterprises to become more efficient, EAN Australia's fundamental role is to allocate EAN.UCC numbers and administer the EAN.UCC system, maintaining internationally accepted trading standards. This in turn, allows Australian organisations to adopt worlds' best practice supply chain management techniques.

EAN Australia provides the following services<sup>\*</sup>:

- Member support, education and assistance services through EANassist
- Assisting members in identifying and implementing e-commerce and supply chain management solutions via EANnet
- Maintaining a continuously updated electronic catalogue of members' products via EANnet
- Providing consultancy services to members implementing new supply chain solutions implementing e-commerce strategies and hardware via EANconsult
- Helping larger businesses gain accreditation to issue their own barcodes through EANacert<sup>25</sup>

## **5. ALC ENDORSED STANDARDS**

The ALC recognises the increasing use of e-business by industry to underpin supply chain improvements. As a corollary, the ALC also recognises the need for industry to adopt globally accepted data standards to underpin business information exchange. Should industry fail to adopt and adhere to global data standards, there is a high risk of inefficiency and additional cost through running multiple solutions with multiple trading partners, and, importantly, of losing opportunities to engage in global supply chains through an inability to comply. As such, the ALC endorses the adoption of the EAN.UCC system and the standards that operate in support of that system (see Appendix 1).

### **5.1. THE EAN.UCC SYSTEM**

The EAN.UCC System is an internationally accepted standards framework for electronically identifying and communicating business information. National bodies and industries worldwide have embraced the system, and with over one million businesses using the system, businesses are able to link into many global supply chains.

Within Australia the EAN.UCC system is used by some 13,000 business members across 18 industry sectors such as health, steel, freight transport and logistics, telecommunications, textile, apparel, paper and timber manufacturing. Large commercial users include Woolworths, Coles, Myer, Unilever and Nestlé. Alliance partners include Symbol, IBM BCS, Telstra, Australia Post and Sensis.

EAN International sees the Freight Transport and Logistics industry as a 'tier one' industry.

The core principles of the EAN.UCC system are:

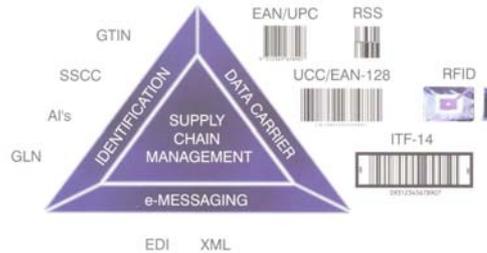
- Unique identifying numbering for businesses and trade units and standardised supporting information (e.g. dimension or date)

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<sup>\*</sup> EAN Australia can be contacted via:

- National Number 1300 366 033
- [http://www.ean.com.au/contact\\_us.asp](http://www.ean.com.au/contact_us.asp)
- Melbourne: Axxess Corporate Park  
Unit 100/45 Gilby Road  
Mt Waverley 3149  
Victoria, Australia 3166
- Sydney: Lakes Business Park  
Bldg. 4B, 2-4 Lord Street  
Locked Bag 7002, Botany DC  
Botany NSW 2019

- Presentation of information in machine readable form (e.g. via barcodes or RFID)
- Standard message formats for transactions



**Figure 2: Components of the EAN.UCC System<sup>26</sup>**

It should be noted that the public face of EAN.UCC is the barcode. Barcodes, however, can be produced by proprietary solutions that do not conform to EAN.UCC standards, and are therefore incompatible with the EAN.UCC system.

The following information describes the EAN.UCC system, with further technical detail available from EAN Australia.

### UNIQUE IDENTIFYING NUMBERS

Unique identifying numbers of the EAN.UCC system include:

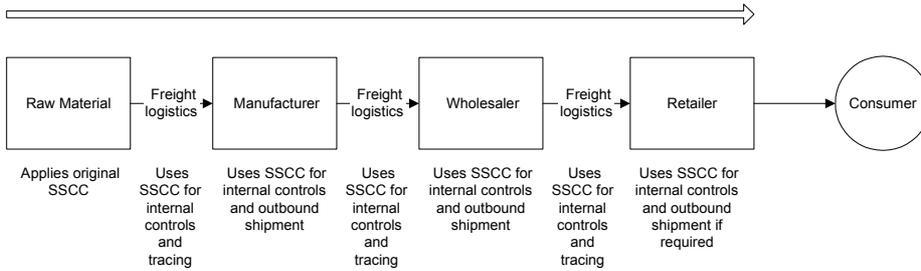
- Global Trade Item Numbers (GTIN) which identifies individual products
- Global Location Number (GLN) which identifies business and physical locations
- Serial Shipping Container Code (SSCC) which identifies logistics units
- Global Service Relation Number (GSRN) which identifies relationships between business and individuals
- Global Returnable Asset Identifier (GRAI) and Global Individual Asset Identifier (GIAI) which identify returnable and individual assets

The EAN.UCC system assigns GTIN's to different variations and pack sizes of products, i.e., a separate GTIN for consumer units, a separate GTIN for trade units, and so forth. GTIN's can be formatted in 8, 12, 13 or 14 digits dependent on the barcode used. The general structure of the GTIN consists of:

- EAN.UCC company prefix (administered by EAN countries or the UCC)
- Item number
- Check digit

### SSCC AND THE FREIGHT TRANSPORT AND LOGISTICS INDUSTRY

One of the main applications of EAN.UCC in the supply chain is the tracking and tracing of logistics units. The EAN.UCC System provides a method for uniquely identifying logistics units using a Serial Shipping Container Code (SSCC). The SSCC is an Application Identifier (AI) followed by an 18-digit number. The SSCC can be used by businesses in the supply chain to trace the contents of the logistics unit back to a purchase order line item. Figure 3 shows how the SSCC is typically used within the supply chain.



**Figure 3: The SSCC as an Entity Identifier<sup>27</sup>**

An example of an SSCC barcode is shown below:



**Figure 4: EAN.UCC SSCC Barcode<sup>28</sup>**

The numbers beneath the barcode are explained below:

Number in Fig. 4	3	7	6	1	2	3	4	5	0	0	0	0	0	0	0	0	1	6
SSCC	E	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	C

- 00 is an application identifier. This indicates the data elements and type that follow. In this case, 00 indicates a SSCC
- E is the extension digit assigned by a business according to internal needs
- N represents the EAN.UCC company prefix and serial reference number. The former is assigned by an EAN Numbering Body or the UCC<sup>29</sup>, and the latter by the business and is used to identify any one logistic unit
- C is a check digit calculated by an algorithm based on the previous digits

**How Barcodes Work**

Barcodes are just that: a code made up of bars. Combinations of wide and narrow bars are used to represent numbers. Business information can be represented as a barcode, scanned by a barcode reader and transmitted to computer system. This translates the barcode into the original numbers for use by business information systems, such as Inventory Control and Order Entry. Note that the back-end system receives the information in a usable format, so existing legacy systems are effectively 'barcode ready'. The following example illustrates the SSCC barcode in use.

**CASE STUDY: TRANZ LINK**

Tranz Link is New Zealand's leading multi-modal freight operator, operating 27 freight terminals, 3900km of track, 300 locomotives, 7,000 wagons, 3 sea ferries and 250 owner operator vehicles. Every year Tranz Link moves 11.7 million tonnes of freight that involves some 1.7 million items and 20,000 consignments per week. The key to Tranz Link's freight operation is a system called Ontrac.

Ontrac is a freight management and track and trace system that uses barcodes, scanning and mobile computing to continuously monitor freight movement from pick up to delivery.

Every freight item must carry an EAN.UCC SSCC barcode. Ontrac includes EDI components for EDI capable customers and also provides an Internet based freight status enquiry system called Ontrac Direct that gives customers online access to freight movement information.

Barcode identification is at the core of Tranz Link's freight management operation. Freight items are scanned every time they are moved; on and off trucks, in and out of a branch, and on and off wagons. This means that Ontrac knows the location of all freight at all times.

All Tranz Link vehicles, road and rail, are identified with barcodes and the road fleet (pick up and delivery vehicles) and forklifts in the branches are equipped with 'intelligent' scanners. Freight and vehicle barcodes are scanned as part of all loading and unloading processes to relate freight to vehicles and to ensure correct destinations.

The SSCCs are scanned as the freight is uplifted. Freight is delivered to the nearest Tranz Link branch where it is scanned off the truck into the branch. Consignment details are then downloaded and a line-haul manifest created. Freight is then scanned onto a rail wagon or it may have been 'cross docked', i.e., scanned directly from truck to rail wagon effectively bypassing branch storage. The freight is then line-hauled to the destination branch where it is scanned in, delivery instructions are up-loaded into the truck's scanner and the freight is then scanned onto the delivery truck. In this case, the freight may have already been scanned directly from wagon to truck.

The freight is delivered and scanned off the truck and reconciled to the delivery instructions. This provides electronic proof of delivery and also the information required for driver payment. The receiver may scan receipt of the freight using the SSCC, reconciling this with any Advance Shipping Notice (ASN) they have been sent. Consignment data is sourced in different ways, depending on the customer. The three key pieces of data are: consignment number, destination and number of freight items. Consignment numbers either keyed into the driver's scanner or scanned off the consignment note. The SSCCs scanned on individual freight items are related to the consignment number.

The Tranz Link system also provides EDI communications for consignment transactions. Customers may use their own system to generate such messages, or use the Tranz Link's Windows based application called Despatcher. Despatcher allows users to conduct UN/EDIFACT transactions for consignment data, invoices and freight status. Despatcher also provides other functionalities such as label production, faxed advanced shipping advice, etc.

The Ontrac system also includes an Internet-based enquiry facility called Ontrac Direct. This is continuously updated from scanned SSCCs and vehicles, and event data such as the tracking of wagons by transponders on the rail network. Users can access the system by consignment or equipment number. By selecting a specific SSCC record, users can monitor the movement history and current location of freight and vehicle. Ontrac Direct is an open application, but it only provides event data and does not display commercially sensitive information such as consignment details.

[Source: EAN Australia News NO. 25- February 1998 and <http://www.ean-int.org/index800.html>]

## **STANDARD MESSAGE FORMATS FOR TRANSACTIONS**

The EAN.UCC system uses EANCOM, as subset of UN/EDIFACT, for sending electronic messages across computer networks.

## **EANCOM Messaging**

EANCOM was announced in 1987 and was developed on the basis of the international UN/EDIFACT standard<sup>†</sup>. A subset of UN/EDIFACT messages, EANCOM provides clear definitions and explanations that allow trading partners to exchange commercial documents in a simple, accurate and cost effective manner. Using EANCOM allows companies to benefit from the use of UN/EDIFACT while also gaining from the detailed implementation guides that allow UN/EDIFACT to be easily understood. The EANCOM standard supports messages underpinning the entire transaction process, including:

- Messages allowing transactions to take place (e.g. price catalogue, purchase order, invoice)
- Messages for logistics (physical movement of goods)
- Messages used in settlement (financials)

EANCOM is being used to trade many different product types, including:

- Agriculture
- Agro-chemicals
- Alcohol beverages
- Automotive - non-production parts
- Automotive spare parts
- Books, magazines, serials
- Carpets
- Catering industry
- Construction
- Consumer Goods
- Do-it-yourself
- Electrical Goods
- Medical devices
- Metered Services
- Music industry
- Packaging and materials supplies
- Perishable foodstuffs
- Pharmaceuticals
- Public Procurement
- Shoes
- Sports goods
- Textiles
- Transport
- Finance<sup>30</sup>

The messages supported by EANCOM include:

- Master data messages (information which is relatively static such as product dimensions, company names and addresses)
- Commercial transaction messages (such as quotation, purchase order, transport and logistics, invoice and remittance)
- Report and planning messages (for the timely exchange of information to support decision making)
- Syntax and Service Report Message (acknowledgement or refusal of messages)
- General Messages (for any information not catered for in the above messages)

The use of the EAN.UCC system, incorporating business information exchange using the EANCOM messaging format, allows businesses to easily integrate with the systems of new and existing trading partners. This would be impractical if businesses were each using a proprietary EDI system. It is possible to use 'translation software' to 'convert' received electronic messages into a usable format but this is expensive and a potentially problematic extra, and unnecessary, step. EANCOM eliminates the need for this, and reduces barriers to international trade. Karstadt AG, a German company, states:

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<sup>†</sup> The acronym UN/EDIFACT stands for United Nations Electronic Data Interchange for Administration, Commerce and Transport. UN/EDIFACT is a set of standards and guidelines for exchanging business information across computer networks, and has features that meet international requirements.

*"EDIFACT defines the syntax rules for the transmission of messages and can be used across industries, across country boundaries and for both government and private sectors."*

Source: United Nations, <http://www.un.org>

The EAN.UCC system has been developed in collaboration with other standards initiatives, ensuring compatibility with the UN/EDIFACT framework.

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*"When first implementing EDI Karstadt AG used the SEDAS EDI standards, which were used extensively for invoicing in Germany in the 1980's. However, because Karstadt AG trades with companies all over the world, an international EDI solution was required. When EANCOM became available it was apparent that there was no future in maintaining the national SEDAS standard but to commit to using EANCOM which supported all of the modern business processes not support by SEDAS. KARSTADT AG successfully completed its migration from SEDAS to EANCOM in 1998."*<sup>31</sup>

## **XML**

EAN recognise the emergence of Extensible Markup Language (XML), released in 1998 for the exchange of structured data over the Internet. The EAN.UCC XML was created specifically for data exchange over the Internet.

Widespread use of XML led to several conflicting versions and it was not until late 2000 that a structured approach to XML became available.<sup>32</sup> An initiative called ebXML (Electronic Business XML), a project to standardise XML and develop a technical framework that allows XML to be used for exchange of electronic business, was undertaken to agree on specifications and protocols to enable business applications to exchange data. ebXML is a suite of specifications, intended to provide a standard method for exchanging business information and defining and registering business processes over the Internet. As such, ebXML messaging using EAN.UCC schemas provides an Internet-based alternative to the use of EDI protocols. For SMEs and other small volume users, there are significant cost advantages in using ebXML-based messaging systems rather than EDI, which is more suited to large volume transactions.

NOIE is working with companies in several industry sectors, Standards Australia and other international standards bodies to establish infrastructure that can support the development of internet business-to-business applications and thereby maximise the benefits of adoption of EAN.UCC and other standards. Details of this initiative are available on the Bizdex website at [www.bizdex.com.au](http://www.bizdex.com.au)

## **EANCOM, SSCC AND E-BUSINESS SYSTEMS INTEGRATION**

When businesses try to integrate business information received from trading partners with their own internal systems, the cost of 'mapping' messages to realign data formats to internal track and trace systems can be significant. If a business receives messages from multiple partners, in different formats, the problem is greatly increased.

Using the EAN.UCC system, notably barcodes and EANCOM messaging, substantially reduces this cost by enabling generic mapping with internal systems. According to Woolworths Australia:

*"Vendors and their EC [electronic commerce] providers will find they can replicate the application-integration efforts across their major trading partners through the use of EANCOM. More trading partners will be able to trade with Woolworths because EANCOM has provided a common business imperative at a lower integration cost."*<sup>33</sup>

For businesses that have automated back-end systems, additional advantages can be gained by integrating them with the EAN-based track and trace system. Benefits from using online applications such as accounts payable, financial management and customer relationship management systems can be enhanced through this integration.

These benefits include saving money and time by removing paper transactions and reduction in errors by avoiding re-keying data from hand written or faxed documents. In addition, the integration of e-business systems among supply chain partners, including logistics providers, will improve the overall functioning of the supply chain and ultimately the bottom line of participating firms.

## INTEROPERABILITY

The National Office for the Information Economy (NOIE) is working with EAN Australia and Standards Australia to increase the degree of interoperability between EAN standards and other e-business applications along industry supply chains.

The organisations have developed a portable supply chain simulator that enables individual companies to develop their own specific analysis of the costs and benefits related to the implementation of standards-based electronic business procedures and the adoption of other e-business tools within their supply chains. The simulator will also demonstrate interoperability performance through supply chains.

NOIE is also facilitating other practical projects for businesses in supply chains to achieve full interoperability between their business systems. These interoperability projects involve companies in the logistics industry and also supply-chain trading partners in other industries. They will provide case studies of effective implementation of e-business applications to achieve improved business efficiency.

**To maximise the benefits potentially achievable by firms from adopting e-business, there is a need to ensure all business systems can be fully integrated internally and are fully interoperable between businesses. Business managers therefore need to be mindful of the longer term implications of adopting systems that are not based on agreed standards and which are either expensive or impractical to make interoperable.**

The following example illustrates the how adoption of EANCOM and SSCC enables businesses to integrate EAN barcoding messages with their internal track and trace systems, reducing not only errors and effort, but also maximising investment in IT infrastructure.

### CASE STUDY: DACHSER

DACHSER is a family-owned logistic service provider annually moving 9 million tonnes of freight. DACHSER introduced the EAN.UCC System to automate and standardise its logistics and information processes across industry and branches. DACHSER offers an open data processing system with direct access to its customers. Data input is carried out with the internationally recognised EAN.UCC barcode symbology and the unique reference number SSCC (Serial Shipping Container Code).

Each movement of the logistic unit is recorded through the scanning of the SSCC. All scanned data is transmitted to the central information database. DACHSER's customers can easily access the current consignment status information online at any time via the central information database. A pen-key mobile computer with integrated barcode scanner and touch-screen is used to enable clients to sign for receipt of goods. This information is instantly transmitted to a central tracking system to provide real-time shipment status updates to clients.

DACHSER uses database control and warehouse management software. Incoming orders are electronically checked against inventory. The system independently controls the floor conveyor systems and produces a delivery note. Incoming goods are managed in strict accordance with the customer's specifications while automatic data processing, by scanning the SSCC, guarantees warehousing space assignment and the maintenance of supply stocks for the order-picking area. The quantity remaining on the pallet is reported immediately after each pick. Picking is carried out through hand-held terminals. Both the storage and the order-picking area operate online allowing employees to immediately determine the remaining quantities by checking expiration date and batch data.

By using the SSCC, DACHSER has been able to provide their customers with exact information on the flow of their transport units. Through the transmission of relevant transport data via EANCOM to customers, including the SSCC and a description of the contents, DACHSER has improved the ramp situation at its warehouse premises and at its customers' premises. The combination of the Despatch Advice message (using EANCOM) and the SSCC has led to about 50% savings in terms of automatic intake of goods. [Source: <http://www.ean-int.org/index800.html>]

## **6. DRIVERS FOR ADOPTING STANDARDS**

*Drivers* are business reasons for the adopting new ways of doing things. *Benefits* are the realisation of the advantages those changes can bring. Drivers generally fall into the following categories:

- Compliance
- Reducing costs
- Increasing revenue
- Market positioning

Benefits realised by adopting the EAN.UCC system have a direct impact on the competitiveness of individual businesses. More efficient and effective businesses have greater opportunity to be more competitive on price, which can have a ripple effect across the supply chain. Each business survives by charging for what it provides. If a business pays less for inputs, and is more efficient and effective through the realisation of the benefits below, it is able to charge less for its outputs, passing on some benefit to others businesses in the chain.

The EAN.UCC system provides benefits across industry by removing the need for each business to translate information from multiple trading partners into a usable format, whether it is going to use it or not. This reduces costs associated with translation and reduces errors, both of which have flow on benefits for the entire chain. Much of the information associated with physical goods is of no direct use to businesses within the chain. For example, no physical change to a product occurs during delivery. The Freight Transport and Logistics industry is primarily interested in information represented by the SSCC within the EAN.UCC framework, and not secondary information such as line item and consumer unit quantities. Indeed the Freight Transport and Logistics industry gains efficiency through the use of SSCC, especially when it is integrated with back-end internal freight management systems enabling, for example, by improved logistics scheduling.

*"With an industry employing 100,000 people and contributing 11% to GSP, any improvements to its efficiencies will lead to measurable gains for all supply chain partners."<sup>34</sup>*

Benefits and efficiencies are also gained by supply chain trading partners when the Freight Transport and Logistics industry uses SSCC. Through the integration with back-end systems, they have the potential to receive visibility during the delivery process. Again the ripple effect across the supply chain applies.

Errors in inventory and delivery, particularly towards the beginning of the chain, can cause production bottlenecks and result in delays for all following businesses and possibly the consumer. This may cause each business in the chain to protect against delays by carrying extra inventory, thereby increasing costs, and ultimately this is passed along to customers- other businesses in the chain.

The following section provides further detail regarding drivers and associated benefits that need to be considered when developing a business case for adoption.

### **6.1.COMPLIANCE**

Compliance in this context means adopting EAN.UCC to meet the requirements of:

- A parent company directive
- Legislation
- A trading partner demand
- Some other form of stakeholder

During the development of this document, the majority of businesses participating in data collection indicated that compliance was the strongest driver for adoption. There was broad agreement that if a

sufficiently important trading partner required EAN.UCC compliance, they would adopt the system. By adopting an internationally agreed standard, businesses receive the benefits of retaining customers, while being better positioned to service new customers with a minimum of effort.

The growing need for compliance with government regulations in the context of visibility of movement in the domestic and international supply chain is also a trend worth noting. The increasing threat of international terrorism requires the enhancement of existing supply chain controls both nationally and internationally. A new challenge has emerged for law enforcement agencies to consider the security implications of freight movements and their associated threat assessments. While understanding that only a small percentage of cargo movements pose a genuine risk to security, few would doubt the importance of task and the need for visibility. The EAN.UCC system provides excellent support for this sort of compliance.

## **6.2. REDUCING COSTS**

Cost reduction is important to all businesses as it impacts directly on the bottom line. Adopting the EAN.UCC system can help reduce costs in the following ways:

### ***Data Entry, Collection, Control and Reporting***

The EAN.UCC system reduces manual data collection and entry costs. Automation is faster and far more accurate than manual data entry. For example, it is estimated that 70% of all grocery industry transactions might currently contain errors, costing the industry an estimated \$50M annually.<sup>35</sup> The EAN.UCC framework enables information to be sent accurately and in 'real time'. This also encourages businesses to collect and use information that may have been too difficult using manual processes, thus supporting management decision-making. Reporting is also simplified and more accurate, allowing improved logistics scheduling and faster accounting reconciliation.

### ***Paperless Information Exchange***

The EAN.UCC system supports paperless information exchange by eliminating manual data entry and enabling the automation of information transfer. For example, information can be scanned in from a barcode and integrated with internal business information systems such as inventory management and invoicing, as well as automatically sending ASNs to trading partners.

### ***Inventory Control***

Accurate inventory control can result in:

- Reduced back orders
- Brand strengthening through reliable delivery
- Decreased catalogue costs
- Improved planning ability
- Reduction in safety inventory and thus less inventory handling
- The avoidance of sudden cost increases as a result of buying from a competitor to meet supply commitments and freight costs for small rushed jobs

Accurate inventory records are crucial to meet customer demand and ensure a smooth flow of goods through the supply chain while enabling reduced product lead times, and improved reporting and planning. According to EAN Australia, Grocery supplier National Pak Ltd has increased pallet inventory accuracy from 60 to 97% after adopting the EAN system.<sup>36</sup>

### ***Picking & Delivery Errors***

By reducing errors in product or quantity picked and delivered, staff spend less time with invoice disputes and conflict resolution, penalty costs are reduced, payment is more timely, inventory is more accurate, the need to re-deliver or collect to correct errors is reduced, loss through unreported over-

supply is reduced, and administration costs are minimised. It follows that customers as well as suppliers feel many of the costs of picking and shipping errors.

### ***Maximising Integration Potential of Existing Systems and Future Proofing***

A global standard accepted by trading partners worldwide enables businesses to electronically integrate processes. Many businesses already have business information systems, such as Inventory Control and Invoicing systems. As the EAN.UCC system presents information to the business information system in format usable by the legacy system, opportunities exist to reduce infrastructure redundancy and maximise the benefits of existing technology through integration, thus reducing costs. Businesses are also able to integrate their internal systems with the systems of trading partners, cost-effectively exchanging accurate and timely information. Standards also provide strong support for minimising disruption brought about by technology change, ensuring that investments are not quickly made obsolete. A key point to remember here is that while technology (e.g. data carriers such as barcodes and RFID) may change, the standards used to represent information via those carriers essentially remain the same.

## **6.3. INCREASING REVENUE**

### ***Track and Trace***

Adopting the EAN.UCC system can help increase business by enabling logistics providers to offer value added services such as track and trace. Using common global standards means information is consistent across the supply chain, so the Freight Transport and Logistics industry and its trading partners use the same location identifiers. When data is shared collaboratively, products and logistics units can easily be tracked and traced, reducing costs normally associated with the process. This can assist in meeting customer and regulatory demands for information such as product identification and tracing through the supply chain. Examples include genetically modified, halal or diseased foods, quality control and monitoring such as temperatures for perishables. The system also provides greater control and batch accuracy in the event of product recall.

### ***Service Provision***

In today's business environment there is increasing:

- Demand for supply chain efficiency
- Collaboration and the need to open systems to trading partners
- Demand for faster processes
- Demand for improved service
- Demand for a reduction in time between order and delivery

Businesses using EAN.UCC can meet these demands more swiftly, and are better positioned to attract new business.

## **6.4. MARKET POSITIONING**

Using global data standards allows businesses to commence trade in a short timeframe, and seamlessly integrate, with new trading partners. New opportunities to position your organisation in the market may arise as a direct outcome of this.

Many businesses have built brand recognition on the basis of market qualities such as:

- Quality
- Efficiency
- Innovation

- Leadership
- Being Responsive

Embracing EAN.UCC provides businesses with the opportunity to differentiate from competitors on the basis of these attractive market-based characteristics.

Trading partners recognise value. Strategic trading partner relationships are built upon the foundations of value for money. Selection of trading partners and service providers is often based upon criterion beyond prima facie price, and often incorporate selection elements such as market qualities.

## **7. BARRIERS TO ADOPTION**

It is safe to say that there are always some impediments to the adoption of new business practices. By considering the following, businesses will be better positioned to take positive action towards successful adoption.

### **7.1.CAPABILITY**

Capability relates to a business's administrative and functional ability to adopt and utilise a technology. This centres on the technologies and processes currently in place within the organisation. For example, does the business have adequate IT infrastructure and software functionality? Does the business have solid process management practices and behaviour? An IT and process audit can be useful in determining the administrative and functional capabilities within a business. However, as the object of EAN.UCC adoption is to support the exchange of business information, it is also important to have an understanding of the capabilities of key trading partners. A collaborative approach to addressing these issues provides the strongest opportunity for successful adoption.

### **7.2.COMPETENCE**

Competence relates to a business's knowledge and skills base, and whether its staff are able to understand a new technology, its potential, and successfully manage necessary applications or implement processes required to engage with e-business initiatives. Some businesses consulted during the development of this report indicated they were not aware of what the EAN.UCC system really is. Others indicated they had trouble ascertaining the costs and benefits of adoption, and what is required for implementation. Different businesses have different capabilities in terms of understanding the language commonly used to explain these issues and some indicated they do not have the time to fully investigate the possibilities. The audience is diverse and there is no 'one size fits all' solution.

One of the first steps in adoption is to access information. There are two main sources of information: EAN Australia, and other businesses. EAN Australia should be the first stop for businesses requiring assistance. They provide a wealth of information and the helpful staff have experience in dealing with businesses of all sizes across industries. Our investigation showed that businesses that approached EAN Australia found their assistance invaluable, and they were able to break down the language barriers that many businesses find when dealing with new business methods. EAN Australia has implementation guidelines for industries, and work with industry bodies to meet their requirements. In addition, EAN Australia publishes newsletters, case studies and other public documents that help demystify the system and show practical examples of the EAN.UCC system in use. Businesses can also approach trading partners currently using EAN.UCC to gain a better understanding of the system. This has the added benefit of ensuring that any implementation meets the mutual requirements of all parties- and provides mutual gains.

### **7.3.CULTURE**

Culture relates to a business's willingness to do what is required to engage with an e-business initiative. This willingness usually manifests itself as management support or the emergence of an organisational champion to progress process-change projects. Common questions to ascertain the degree of cultural impact include:

- How much value does a business place on its trading relationship?
- How well does the business accept change? Is the business change adverse?
- How well does the business adopt (and enforce) new processes?

Many businesses in the Freight Transport and Logistics industry are family businesses and have established relationships and processes that have long been functioning satisfactorily, so why change? The key point to remember here is that the way trade is being conducted globally is changing, and businesses must change with it in order to remain competitive. The adoption of the EAN.UCC system supports and simplifies existing relationships and makes establishing new ones easier. Importantly, by automating processes and increasing information access and exchange, it provides opportunities for businesses to focus resources on other ways of strengthening relationships, such as Supplier Relationship Management and Just-In-Time replenishment.

One cultural hurdle that surfaced several times in the development of this report relates to businesses guarding information and not wanting share it. The point at which they are prepared to release the information may not match the point at which another supply chain member requires it. Businesses need to see the big picture and where they fit into it. It is no longer practical to see themselves simply as individuals: rather, they need to see themselves as a crucial part of a supply chain and understand the need to work with other businesses to ensure the overall effectiveness of the chain.

Culture is the most difficult obstacle to overcome. The best way to overcome cultural shortcomings is by adopting an objective stance regarding change. This is achieved by understanding what is actually required in order to remain competitive, rather than focussing on 'what we have always done'.

## 7.4.COST

Cost relates to the return on investment equation or business case decision that needs to be calculated in relation to an e-business initiative. Typical cost issues include:

- Uncertain return on investment
- Lack of understanding of ongoing resource requirement (relates to *competence* and *commitment*)

There is a cost associated with adopting any new business practice. The task lies in understanding the costs, and comparing them to the benefits and opportunities. In some cases proprietary solutions are in use and are working well. It may be difficult to 'get off the roundabout' if using proprietary solutions, given the investment required to put those solutions in place. It was interesting to note that smaller businesses felt that implementation costs were higher, relatively, than the costs for large businesses. Conversely, large businesses felt that the costs of adopting standards were higher for them as the organisational impact was greater, given the larger staff numbers and the changes required across branches and depots.

While there is certainly a cost associated with adoption, businesses also need to assess the cost of *not* adopting, and the cost of developing or carrying one or more proprietary solutions. It is increasingly becoming a requirement of trade to be capable of using a global data standard, and the direct cost of non-compliance can be a loss of business. Costs increase through the use of proprietary solutions as these cannot easily be shared across the supply chain.

Once businesses have a better understanding of the EAN.UCC system and how it can fit within their organisation, each business should construct a business case to ascertain costs, benefits, trading partner requirements and the level of adoption required to meet ROI.

## 7.5.CRITICAL MASS

Critical mass relates to a business forecasting or calculating what volume of trade needs to be processed using the adopted technology in order to achieve a return on investment, and, importantly have it become an integral and accepted business tool. The larger the number of trading partners that request e-business participation, the greater the influence or incentive on the business to participate.

It is interesting to note that even if a single organisation has a lot of influence over a particular business, this is often not enough to encourage that business to participate. This is put down to the perceived risks of financial commitment and the necessary resource investment required for an improvement to an already-functioning relationship or process. With more EAN.UCC participants, the resource costs are reduced, and the opportunities increased. Research shows that the automation of processes with as few as 10% of trading partners can reduce total transaction costs by up to 50%.<sup>37</sup>

Communicating with trading partners in the supply chain, keeping a close eye on global trends towards standards adoption, and the activities of potential trading partners can help ascertain critical mass.

## 7.6.COMMITMENT

Commitment relates to management apprehension concerning uncertainty of the future and how a business would 'uncommit' after making initial investments, promises and expectations to its trading partners. In the past there has been a lack of commitment on the part of industry and individual businesses to adopt common standards. Issues include:

- Management being unsure as to return on investment
- Uncertainty about ability to do a 'good job'
- Existing large investment in back office processes and information technology which 'would be wasted' if other methods were promoted

Given a proven ROI, a management supported 'champion[s] of change' should be identified to drive and support implementation within the organisation. Management support is crucial in gaining organisation-wide commitment for adopting EAN.UCC, as implementation goes to the very heart of an organisation. Again, it is important to note that the focus when embracing EAN.UCC is not the technology; rather, the focus is on business processes and the business opportunities that flow from a commitment to adopt.

## 8. SEIZING THE OPPORTUNITIES

To reap the maximum benefits of introducing standards requires cooperation and collaboration with other businesses in the supply chain, which may include competitors. The key opportunity for the Freight Transport and Logistics industry is to work together, and with its customers, to appreciate the value proposition for industry adoption, and for individual businesses to develop their own business case.

It is important to realise that the greater the supply chain integration through the use of standards, the stronger the individual business case. Adopting standards is not something that necessarily provides benefits to one business in isolation. In a supply chain using standards, businesses can efficiently and effectively form partnerships as required and integrate with the systems of other businesses without the usual intensive drain on resources.

There is a global move towards the adoption of data standards within the supply chain, and the Freight Transport and Logistics industry will ultimately have no choice. Larger businesses will, sooner or later, require that trading partners and service providers are able to handle global data standards such as EAN.UCC.

A recent report by Cap Gemini Ernst & Young regarding EAN.UCC in the Manufacturing, Wholesale and Retail industry found that the large businesses involved in that investigation would not be where they are today without the adoption of EAN.UCC and the associated advantages of collaboration.<sup>38</sup>

The question is not so much 'should we adopt standards' but 'when will we do it'. However, a key question that arose during this study was 'who will drive the introduction of EAN.UCC within industry?'

There is a need for champions within industry and for industry commitment. This will enable an alignment between individual business strategy and supply chain strategy as a whole, and ultimately lead to an implementation of standards that deliver the visibility needed and underpins improved collaboration within supply chains

When isolating the Freight Transport and Logistics Industry, the issues of who is driving industry adoption can be clouded, as the industry is a service provider to supply chains. It is easy for the Freight Transport and Logistics Industry, as a service provider, to defer the assessment of introducing data standards into their business.

But what opportunities are being lost by organisations in the industry through inaction?

Many Freight Transport and Logistics organisations have discovered the opportunities: Star Track Express have embraced EAN.UCC and positioned themselves "as the express freight company focused on the future with a genuine commitment to the latest and best technology."<sup>39</sup> Star Track Express have clearly identified a business case for introducing EAN.UCC and have designed their business processes to maximise business benefits. They actively encourage their customers to embrace data standards, as greater adoption will ultimately assist their organisation achieve their business case outcomes. Some other businesses in the industry are doing the same.

There is no simple answer to the question 'who will drive the adoption of EAN.UCC within this industry?' However information gathering activities conducted for the preparation of this report overwhelmingly suggested two things:

[The full benefit of adopting EAN is derived when a whole of business approach is taken with implementation rather than just meeting the immediate need of a trading partner.](#)  
[Workshop Outcome]

[There is a need to accept that businesses must expend money to save money, but expending money to meet minimum customer compliance requirements will not necessarily furnish benefits \(ROI\).](#)  
[Workshop Outcome]

["It's pretty obvious that even if it's not a demand from customers now then pretty soon it probably will be."](#)  
[Interviewee]

["We know that we will need to embrace EAN.UCC in our business, and it will be driven by our key customer. Once we know we have to do it, we will look for opportunities to leverage the investment we make."](#)  
[Interviewee]

- Of those that have introduced EAN.UCC, a customer demand was the key driver
- Of those that are likely to implement EAN.UCC almost all will seek to identify further opportunity, beyond compliance, prior to implementing

The second point is clearly the most important. For organisations to extract the maximum benefit from the introduction of standards, they must look beyond the agenda of meeting a customer demand, and consider how benefits can be derived across their business processes. Meeting a customer demand, the notion of the value proposition being centred on compliance, may not necessarily return investment in its own right.

Whether an organisation is a leader and proactively introducing EAN.UCC into their business or a follower and responding to a customer demand, for individual enterprises to extract maximum benefit from the introduction of EAN.UCC they must build an enterprise business case to clearly identify the opportunities.

## 8.1.DEVELOPING AN ENTERPRISE BUSINESS CASE

Organisations, in developing their business case for adoption of the EAN.UCC system, need to ask themselves the following questions:

### What are the data standards and who is using them?

- Develop and maintain an awareness of the EAN.UCC standards framework
- Which of my trading partners are using them, or want to use them
- How do I use standards within my business now
- What training do I need – EAN Australia education programs
- What are my competitors up to with EAN.UCC, and what are the strengths and weaknesses of their implementation
- What will happen if we don't embrace standards, will we be competitive if we do nothing

### Where do the standards impact on my business?

- Where do the standards fit within my business processes
- What are my current process models and costs
- What advantages can I gain by using the standards
- How can I use standards to integrate my systems and the systems of my trading partners
- Where can I reduce the cost of doing business by using standards
- What new services can I introduce as a result of implementing standards
- How does introducing the EAN.UCC system complement my other e-business activities

### What are the benefits of adoption, in relation to my business, and are they strong enough to act as drivers?

Drivers	Benefits
Compliance	Customer request or demand Parent company requirement Alignment with business strategy Alignment with supply chain strategy Compliance with regulations



Increased revenue	Increase prices through improved services Sell more to existing clients Attract new customers
Reduced costs	Simplify processes Automate processes/reduce data entry Increase accuracy/reduce errors Better inventory control Better use of existing systems Future proof systems
Market Positioning	Defensive strategy in response to competitor activity Increase customer services (track and trace) Establish, or build upon, a brand known for <ul style="list-style-type: none"> <li>• Quality</li> <li>• Efficiency</li> <li>• Innovation</li> <li>• Leadership</li> <li>• Being Responsive</li> </ul>

**What are the barriers and strategies to overcome barriers?** For example:

Barrier	Why	Strategy to Overcome
Capability	No in-house technology skills	Seek outside advice from an organisation with previous implementation experience
Competence	Limited knowledge of EAN.UCC standards	EAN training courses
Cultural	No perceived need for change	Identify change agent to champion the need and gain support
Cost	Introduction is perceived as expensive	Clearly establish ROI and opportunity cost of not proceeding
Critical Mass	Unclear as to whether our trading partners are adopting EAN.UCC	Undertake audit of key customers (and key competitors).
Commitment	Concern that this is another technology project and will not benefit anyone	CEO support and clear direction on business improvement being sought

Barriers are hurdles to be overcome- they are not 'show stoppers'. Careful analysis of barriers and the development of relevant mitigating strategies can assist businesses in overcoming issues and realising the benefits of adoption.

#### **What are the implementation issues in relation to my business?**

- Do I need to buy new technology
- What changes are required to processes (business process reengineering) and culture
- How have we implemented change in the past
- How can I engage my stakeholders, staff, and trading partners in the process
- What training is required for staff
- Do I need to get outside help – EAN Australia support programs
- What are the risks associated with not adopting global standards, or with using proprietary solutions
- While there is always a cost associated with adoption, there is also a cost for not adopting (and a cost for adopting, perhaps multiple, proprietary solutions)

#### **What is the Return on Investment (ROI)?**

- Comparing the benefits of adoption to barriers and implementation costs can provide an indication of ROI.

## **8.2. BUSINESS PROCESS REDESIGN**

One of the key opportunities furnished by the adoption of the EAN.UCC system matching the implementation with the overall business strategy. Successful businesses are continually looking for process improvement. The introduction of EAN.UCC offers an ideal opportunity address Business Process Redesign (BPR- sometimes referred to as Business Process Reengineering).

Business Process Redesign is "the analysis and design of workflows and processes within and between organizations."<sup>40</sup>

On the surface, BPR is simply about making a process more efficient to achieve better business outcomes. However, it can be the key to unlocking an organisation's true potential. Davenport and Short prescribe a five-step approach for Business Process Redesign.<sup>41</sup>

#### **Step One: Develop the Business Vision and Process Objectives**

- BPR is driven by a business vision, which implies specific business objectives such as Cost Reduction, Time Reduction, Output Quality improvement, and so forth

#### **Step Two: Identify the Processes to be Redesigned**

- Most firms use the *High-Impact* approach, which focuses on the most important processes or those that conflict most with the business vision. A lesser number of firms use the *Exhaustive* approach that attempts to identify all the processes within an organisation and then prioritise them in order of redesign urgency

#### **Step Three: Understand and Measure the Existing Processes**

- For avoiding the repeating of old mistakes and for providing a baseline for future improvements

#### **Step Four: Identify IT Levers**

- Awareness of IT capabilities can and should influence process design

#### **Step Five:** Design and Build a Prototype of the New Process

- The actual design should not be viewed as the end of the BPR process. Rather, it should be viewed as a prototype, with successive iterations. The metaphor of prototype aligns the BPR approach with quick delivery of results, and the involvement and satisfaction of customers

["The biggest factors in running any successful business are the people you employ, the people you deal with, i.e. your clients, and the quality of your internal systems to deliver a service efficiently. So anything that falls into those couple of categories, that's where you need to spend your time."](#)  
[Interviewee.](#)

#### **MANAGING CHANGE**

Business Process Redesign is challenging, and the outcomes have much to do with the way people are engaged in the process. The concept of minimising resistance and gaining support for BRP is highlighted in the following five-stage approach<sup>42</sup>

##### **Step One:** Prepare for People's Reactions

- Change management is characterised by a cycle of steps designed to anticipate, surface and minimise resistance to change. Effective change management starts with effective anticipation

##### **Step Two:** Conduct Individual Feedback Sessions With Key Stakeholders

- Sessions serve as pilot tests for subsequent feedback sessions (step three). Generally, these individuals will have been invited to a future group session

##### **Step Three:** Prepare and Conduct Group Feedback Sessions

- Preparation involves returning to the team huddle and comparing notes from individual feedback sessions. The team will need to agree on new process designs and adjustments and how to proactively address stakeholder concerns at these sessions

##### **Step Four:** Work Through the Issues and Adjust the Design/Plans

- The reengineering team reconvenes to compare and agree on the people and technical issues it must work through. The team must classify and prioritise issues to focus on the most important and urgent ones

##### **Step Five:** Communicate the Revised Design/Plans

- The final step is to develop a communication plan responding or following up to all input gathered from steps two through four.

The EAN.UCC data standards are business tools. It stands to reason that reviewing existing processes to extract the most effective use of the tools makes sense. Should a decision be taken to change business processes, a Business Process Redesign methodology should underpin that change to minimise risk and maximise opportunity.

### **8.3. BUILDING YOUR BUSINESS CASE**

In order for EAN.UCC global data standards to be adopted by industry, a business case needs to be established. Investigating standards, the barriers, benefits and opportunities, and assessing the overall value of industry adoption in the context of global trends goes some way to achieving this. However, it is important that each business individually builds their own business case for the adoption of global data standards. The following template is provided as a guide to developing your Business Case:



## Business Case Template

- Situational (current state) assessment and problem statement
  - Introduction
  - Supply Chain issues
  - Best practices
  - Industry and market trends
  - Technology assessment
- Project description
  - Project description and scope
  - Project objectives
- Solution description
  - Introduction
  - Concept overview
  - Solution detail
- Barrier Analysis and Strategies to Mitigate
  - Capability
  - Competence
  - Culture
  - Cost
  - Critical Mass
  - Commitment
- Project costs
  - Cost checklist
  - Cost identification process
  - Cost identification conclusion
- Overview of benefits
  - Introduction
  - Types of benefits
  - Overview of operational savings
  - Overview of Value Proposition
    - Compliance
    - Reducing Costs
    - Increasing Revenue
    - Market Positioning
  - Overview of improvements to market share and revenue
  - Overview of improvements to employee satisfaction
- Identification of benefits
  - Step by step identification of benefits
  - Benefit questions for your project
  - Concluding benefit identification
- Quantifying the benefits
  - Reasons for quantifying benefits
  - Overview of the "business as usual" scenario
- Cost and benefit analysis
  - Benefits analysis
  - Costs analysis
  - Financial assessment summary
- Implementation timeline
  - Introduction
  - Implementation components
  - Implementation timeline
  - Major milestones
  - Major dependencies
- Critical assumptions and risk assessment
  - Introduction
  - Critical project assumptions
  - SWOT analysis

- Risk assessment
- Conclusions and recommendations

## 8.4. LEARNING FROM OTHERS

When assessing the opportunity for adopting EAN.UCC – building the associated business case – it is worthwhile assessing existing implementations amongst peer organisations. With so many organisations having implemented EAN.UCC, case studies exist to provide guidance and to assist in extracting potential opportunities.

Case studies are a popular method of engaging industry in adopting change, and are used frequently to educate and motivate people towards action.

*"Case studies have long been used by business and industry to cultivate and nurture critical leadership skills in key management personnel. Similarly, other professions - in both public and private sectors of the workforce - have recognised the value of case studies and begun using them to facilitate the transfer of conceptual knowledge and understanding to situational applications."<sup>43</sup>*

The use of case studies as an input into planning is an effective way to reduce the risk of repeating mistakes, increase the value of information being used for decision making, and providing a tangible insight into what the outcomes may look like. The following examples will assist in ascertaining how the EAN.UCC system can fit with organisational objectives and improve business efficiency and effectiveness.

### CASE STUDIES

#### **Case Study: Australian Beef Industry**

Australia's meat and livestock industry began in 1788 when the First Fleet landed on the shores of Sydney Harbour. Today, the beef industry exports approximately \$4.4 billion per annum, with over 2 million tonnes of product produced. Australia exports over 65% of total beef production to over 100 countries. While it can be clearly demonstrated that Australian producers have maintained the edge, continued improvements are being made in the sector to maintain Australia's competitive position.



A partnership project between the Queensland Government Department State Development and Meat & Livestock Australia Ltd was formed to evaluate the environmental aspects of applying e-business tools to the management of the Beef Supply Chain.

The nature of meat products is very different to many products of other industries. Meat products are biological, meaning that there is a high degree of variability from one animal to another as well as one portion of meat to another. This biological variability of cattle and meat as well as the physical size of cattle translates at an operational level to each traded unit of livestock or meat (carcase, carcase portion, carton, etc) needing to be identified and traded individually. There is both a need at a quality attribute level of the traded item (age, live weight, Average Daily Gain, PIC history, grade, type, weight, packed date, kill date, processing date, etc) and traceability level of the traded item (PIC history, market eligibility, source entity reference, batch number, date/time, etc). As the traded unit, e.g. livestock, carcase, carton and others throughout the industry can often also be considered the transportable unit, then all data will need to accompany the traded unit, now considered a transport unit for the purpose of logistics, through the meat and livestock supply chain.

This has traditionally resulted in each traded unit (livestock, carcase, carcase portion, carton and others) being given a unique number by the producer (via ear tag/ tail tag and/or NLIS) and the processing plant (e.g. carton number, carcase body number and others). This has worked reasonably well. However, where there are large numbers of trade units being traded, shipped, handled, stored and picked this manual numbering system (and proprietary barcode systems) starts to become too

difficult to administer and errors start to occur. In short it becomes inefficient to operate. This becomes more obvious when traded units also become transport units and Advance Notification of Shipment details need to occur.

The solution to this problem is the adoption of a universal standard of codification/numbering (including machine-readable barcodes and/or RFIDs) of traded units (livestock, shipments, carcasses, carton, containers, etc), including transportable units. The universal standard for codification/numbering/ electronic messaging of traded units is the EAN.UCC system. These standards allow for the unique numbering and machine-readable marking of livestock/products from traded units, which are consolidated to truckloads, pallets, shipping containers and shipments down to retail units without loss of uniqueness.

Once the EAN.UCC system for codification/numbering/machine readable marking is adopted for all levels of traded units then the efficiency of e-business can start to be realised. Each traded unit (animal, carton, carcase, etc) is to be treated uniquely so a system for electronically passing the information regarding each of these unique traded units needed to be implemented. The EAN.UCC system has a means to codify this information and passing it electronically through the whole meat supply chain. The method used for this electronic transfer of information is called EANCOM. EANCOM has a suite of commercial messages suitable for the meat industry, which could be exchanged electronically. These include the Despatch Advice message for advance shipping notification and the Quality Test Report for attribute information such as feedback.

The vital key used in EANCOM Despatch Advice and Quality Test Report for identification of each transport unit (e.g. traded unit) is the SSCC (Serial Shipping Container Code). The company applying the label generates this 18-digit SSCC number for each traded unit (livestock, carton, carcase, pallet, shipment, etc), where it is also treated as a unique transportable unit.

The specific attribute information about the traded unit, now the transportable unit, (such as PIC history, live weight, Average Daily Gain, production date, use by date, source entity reference, batch, processing plant etc) is all linked to each respective SSCC. When an electronic ASN is sent from a supplier to a customer (or the next link in the supply chain) the SSCC numbers of the traded units within the shipment have all the important attributes about each carton, carcase, pallet, shipment, etc. The performance or feedback information can be sent to the supplier via the Quality Test Report Message which can have an almost limitless number of attributes.

The use of the EAN.UCC system needed to support any part of the meat and livestock supply chain from breeding through to retail. In terms of messaging, cattle on trucks going from one property to another are no different to a carton in a shipping container going from one country to another. Livestock can be codified using the EAN.UCC system to identify specific traits such as breed, age, sex, weight range, market category as well as many others. The reason for codifying livestock via the EAN.UCC system is to facilitate efficient trading and information management up and down the supply chain. The use of the EAN.UCC system allows for unambiguous understanding of livestock and their respective traits.

The benefits to individual organisations in the supply chain include:

- Reduction in amount of information required to be entered (and thus cost) related to orders, deliveries, invoices and feedback as information is received electronically
- Massive reduction in data entry error normally created by re-entry of data as no re-entry is required
- Reduction in operational costs by improving compliance to specification for livestock, carcase and carton product. (e.g. producer penalties for non-compliance to processor grids)



Example SSCC for Meatmeal and Tallow

- Identification and reduction in error costs related to incorrect supply as order data, despatch data and physical shipments can be reconciled
- Inventory reduction by creating 'Demand Generated Supply' principles instead of the current 'Supply Push' principles
- Minimum cost and minimum complexity to implement

The benefits to the whole beef industry supply chain include:

- Transparency in supply chain activities to identify errors or fraud
- Greatly improved traceability (both track forward and trace back) through the whole supply chain from retail product to producers, thus giving better food safety to consumers
- Overall reduction in production, processing and logistics costs through the supply chain by reduction in information collection, entry and error correction costs
- Enhanced export opportunities created by lower cost of production, high product compliance to specification and product source verification (traceability)
- Improved product security and thus bio-security of the meat supply chain
- Compatibility of product codification and messaging with international trading partners by use of the international EAN standards for trade and commerce

[Source: [http://www.sd.qld.gov.au/dsdweb/docs-bin/industry/meat\\_business\\_models.pdf](http://www.sd.qld.gov.au/dsdweb/docs-bin/industry/meat_business_models.pdf)]

### **Case Study: Norway Post**

Norway Post, Parcel Division (Posten Lettgoods) offers transport and distribution solutions for parcels up to 35 kg to the Norwegian market. Posten Lettgoods has a sales turnover of approximately 1.5 billion NOK (US\$ 195 million) and 200,000 business customers, located mainly in Norway. The company is the market leader, holding 50% of the market share.

Posten Lettgoods operates in a market that experiences strong competitive pressure with thin profit margins. As the Norwegian market is changing rapidly, the demands for product development are increasing, particularly within the area of new IT and customer solutions. Posten Lettgoods is re-engineering its business to:

- Maximise its drive towards customer-focused visions
- Simplify the business processes
- Use technology in a business oriented way

Additionally, the company is redesigning its supply chain in order to:

- Increase return on net assets
- Increase revenue through sales and program efficiency
- Reduce working capital via inventory management
- Reduce the overall lead-time from supplier to consumer
- Increase the deliverables' frequency from one process in the supply chain to another
- Ensure accuracy
- Reduce cost and non-value-added work

Barcoded logistics labels are widely used throughout the European industry. However, their use is limited by the fact that carriers generally impose their own proprietary transport labels and identification numbers. To eliminate this obstacle in its supply chain management, Posten Lettgoods has adopted the open and multi-industry EAN.UCC System which simplifies parcels' handling and distribution and results in better customer service and quality, in terms of predictability, stability, and control of the distribution system and economy.

By using locally installed software, the sender allocates the SSCC reference number, prints out logistics labels and sends a "pre-message" to Norway Post's EDI-centre. This message may be in

different formats and can be transmitted to different types of network systems. However, the recommended format is the international UN/EDIFACT-message IFTMIN Transport Instruction Message. The EDI-centre receives, prepares and transmits the information (EDI message) to Norway Post's database (SIS-database) for dispatches. In this way, all messages from different customers are structured in the same format for the SIS database. Norway Post then picks up the parcels and delivers them to the terminal. On arrival at the terminal, the SSCC barcode on the parcel's logistics label is scanned and weight and volume information is added to the message in the SIS-database.

If the customer wants a receipt, this can be done through a "receipt message"(IFTMCS - Instruction Contract Status Message). This message is sent to the customer after registration at the terminal and includes information such as the parcel's weight and price obtained from the SIS-database. When the SSCC on the parcels is scanned at the destination point, a signal is sent to a module that prints a pick-up-message to the parcel recipient. Customers can track parcels directly from their desktops via Internet.

By implementing the EAN.UCC logistics label and the SSCC, Norway Post adds value to its customers, allowing them to choose from a variety of carriers using different systems. Currently, different carriers have developed their own proprietary solution for address information and identification of items/shipments. On the other hand, customers tend to use different carriers because of the different services and service levels that are provided (including prices) in the market. For instance, some customers prefer to use Posten Lettgoods for goods under 35 kg, a second carrier for heavier shipments, a third for local distribution and a fourth for international services. Therefore, the customer is forced to use either several systems, which do not necessarily fit with their own IT-structure, or to stay "loyal" to a single provider. Implementing the EAN.UCC standards will re-direct the power within the supply chain towards the customer. In the past, carriers have set the requirements for the customers; whereas in the future, the customer will be able to choose its partners regardless of the carriers' identification systems, barcodes and EDI-platforms.

[Source: <http://www.ean-int.org/norwaypost.html> ]

#### **Case Study: Frigoscandia**

As the leading provider of logistics services in the temperature-controlled food chain, Frigoscandia is constantly strengthening its position in Europe. It currently operates 91 cold stores with a total capacity of 5.3 million cubic meters in Sweden, Denmark, Norway, UK, Germany, France, Spain, Austria and Italy. Furthermore, Frigoscandia uses some 700 temperature controlled vehicles in Europe and is owned by ProLogis (formerly Security Capital Industrial Trust), which also owns CSI, a leading temperature controlled supply chain logistics company in North America.

"Temperature-controlled logistics" means that Frigoscandia moves, stores, handles and reloads goods at a constant temperature – whether frozen, chilled or ambient as the customer specifies. The entire supply chain is designed to achieve the highest quality of temperature control, hygiene and delivery times. Since 1950, Frigoscandia has been committed to temperature-controlled logistics and it continually develops its logistics technology and competence, through close cooperation with its customers.

In this implementation, the supplier (the customer) sends a despatch advice to Frigoscandia's Administrative Systems (FAS), containing all the information necessary for Frigoscandia and the parties down streams in the supply chain. When arriving at Frigoscandia's terminal, goods pass a checkpoint where all the barcoded information is captured from the EAN.UCC logistics label. At this stage, labels are checked automatically for barcode quality, barcode contents and label locations to avoid any problem in the following forklift handling operations. The information captured is sent to FAS and matched with the information in the despatch advice. If the despatch advice does not previously exist, the FAS system can generate it, on the basis of the information captured through the scanning of the barcodes on the EAN.UCC logistics labels.

When taking the pallet from the conveyers at the checkpoint, the forklift automatically scans the SSCC and then moves the pallet to the right location in the store. At this location a barcode is scanned and connected with the SSCC and all the information is sent via the truck terminals to FAS via radio

frequency. Normally the forklift driver does not type anything; even the "enter" and "send" functions are done automatically.

The only manual typing into FAS takes place when the status is changed from advice to receipt confirmation. This status change automatically initiates a receipt advice addressed to the customer, based on the scanned information, and updates the FAS stock book.

When the supplier receives a purchase order from a retailer, a copy of this order is sent to FAS by EANCOM including purchase order number, EAN.UCC article numbers. If Frigoscandia is responsible for forwarding the goods to the consignee, a transport booking EDI-message is generated internally and sent from FAS to Frigoscandia's Transport Information Planning System (TIPS). The forklift then collects the pallets and moves them to the transport label marking station, where the EAN.UCC logistics label is scanned and an EAN.UCC logistics label is applied, of course without changing the SSCC. The pallet goes into the outloading area for despatch. The order is now ready to be updated to confirm status to the customer and to the consignee. This automatically generates an EANCOM despatch advice as well as a transport instruction to TIPS.

When arriving at the consignee's premises, the EAN.UCC labels are scanned again and the whole supply chain process can start again. In this way, the information becomes fully transparent through the entire supply chain, since sharing information is as critical as distributing the physical goods. The new FAS systems rolled out with the first installation in Helsingborg, Sweden, in May 1995 and has been a success ever since. Frigoscandia's FAS supported by the EAN.UCC has met all of the company's expectations and is a core part of its logistics systems.



This is an example of the EAN.UCC logistics labels produced by Frigoscandia, where the shipment license plate is expressed with the Serial Shipping Container Code, SSCC (AI 00).

[Source: <http://www.ean-int.org/frigoscandia.html>]

#### **Case Study: 24plus GmbH & Co**

24plus Systemverkehre GmbH & Co., headquartered in Frankfurt am Main, is a co-operative formed by 34 regional carriers. The group can provide shipment services all over Germany using a two-stage shipment transport system. Most shipments are handled by a daily direct shipment flow between individual partners, channelled through about 350 direct lines. The remaining shipments, which cannot be handled directly, are processed via the hub-and-spoke system. Using the two-stage system with a central hub in the geographical traffic centre of Germany, 24plus can offer transit times of 24 or 48 hours and additional logistics value-added services.

Over the last few years, competition has significantly intensified in the German transportation marketplace resulting in regional carriers working together in co-operatives. These co-operatives focus on creating groupage networks that allow partners to provide services all over Germany, while maximising their companies' investments.

The internationally standardised SSCC (based on the secure EAN.UCC-128 barcode system) is the basis for clear and unmistakable identification and communication in the 24plus Systemverkehre network. Larger customers generally identify their own shipments with EAN.UCC-128 barcoding. Shipments from smaller customers, without electronic data processing (EDP) handling, are labelled at the carrier's shipping station during the unloading process.

In the 24plus network, each individual transport unit is labelled with the EAN.UCC logistics label. If several transport units are shipped together as one shipment, the SSCCs are linked in the database with the number of the first package. Compared with shipment-based labelling, package-based processing provides more detailed status information. Additionally, if packages are damaged, their value can be determined more precisely.

The labelled packages are then "linked" to the respective shipment order through the order management system. Each package label also bears two smaller labels containing the same SSCC as the main label. They are placed on the original and on a copy of the shipment order. The order is then registered and prepared for hub or direct routes when the SSCC will be scanned at every interface in the flow process.

The package routing is a paperless process based on the data generated by scanning the SSCC barcode at each interface along the supply chain. Each scanning point registers a status message. If a shipping error occurs or a package is damaged, the system sends a warning. Otherwise, the data from the scanning is only recorded. Upon delivery of the goods, the data and product flows are matched.

During deliveries, drivers scan each package's SSCC or receipt. In the event of a problem, they manually enter an error status message for the package and the recipient's name via the mobile device's keyboard. This data is read when drivers return to the shipping station or is transmitted on-line via wireless mobile services. As a result, information about the package's status is readily available throughout the system, without any communication break between electronic database filing and paper receipt.

To improve the shipment tracking and tracing process and to increase the transparency of the logistical process, electronically archived delivery acknowledgements will soon be available to carriers via remote data transmission. The SSCC acts as the access key for the database request.

If, in addition to the SSCC reference number, the customer provides a fax number when making a request, then within a few seconds, the customer will receive a fax copy of the original voucher, showing recipient's signature, date, delivery time and shipment status. At a later stage, customers will be directly connected to the database via the Internet.

In the past, shipments were processed through paper-supported systems. Today, customers want their shipments delivered faster and at lower prices. These new customer demands can only be met by paperless electronic processing systems. Multi-phased, paper-supported transport systems, with connected hub transit, require up to 12 manual operating steps. Paperless processing via interface scanning considerably reduces this workload.

24plus is an open co-operative, allowing partners to ship items outside the system network. Thanks to the EAN.UCC System, 24plus partners do not have to invest twice in technology or duplicate tasks. Based on the SSCC, the scanner software recognises 24plus shipments, and switches to package level for identification. This means that partners can continue using partially heterogeneous hardware and software platforms.

The hub-and-spoke system requires the precise planning of main flows and very rapid transit. Several thousand shipments each night and often several thousand tons of transit volume can no longer be

manually routed. The EAN.UCC-128 standard is the solution, acting as a "router" for each package in the hub.

All partners of the 24plus Systemverkehre group, including the hub, are independent enterprises. Thus, clear documentation of interface data is very significant, particularly relating to legal liabilities, if shipments are damaged.

The EAN.UCC logistics label allows shipments to be easily tracked. All participants in the logistics chain (customers, carriers and recipients) benefit from the continuous shipment updates, which are often not directly visible to customers and can quickly react to delays and damaged shipments, as well as flexibly adjust their plans according to the just-in-time principle.

[Source: <http://www.ean-int.org/plus.html>]

#### **Case Study: BHP Steel**

BHP Steel implemented EAN.UCC numbering, barcoding and EDI in six pilot projects over a two-year period. "The most significant gains have been in areas of product despatch, materials receipt and inventory management" said Karl Rommel, BHP Steel's manager of electronic commerce. "We are seeing great improvements in time and cost efficiencies in moving product from one site to another and in our inventory management practices. As a result we are serving our customers better."

Activity across the pilots includes:

- Automation of despatch and receipting
- Product tracking from raw materials to finish product is facilitated
- Use of barcoding and EDI for export to the US and Japan

Benefits include:

- More efficient despatch and receipting
- Improved delivery performance
- More accurate inventory management and reduced inventory levels
- Real-time information for sales staff and management
- Reduced product lead times
- Improved materials tracking capabilities

[Source: Barcodes save BHP \$2 million in two years: Case study provided by EAN Australia]

#### **Case Study: Capelle**

Capelle supplies handbags, wallets and purses to major retail outlets using a system from Advanced Barcode Solutions (ABS) to facilitate these aspects of its business. Retailer's sales data from the prior week is sent to Capelle's EDI mailbox, outlining sales by product and by outlet. The data is picked up by the ABS system and marketing reports are updated. Markdowns are arranged, or stock is taken back, to ensure slow moving items are removed from the shelves. Forward orders for these items are cancelled. Orders for fast moving items are increased plus any trends are noted and factored into other product decisions. The ABS system maintains the stock levels required for each of the retail stores.

Marketing staff members adjust the ABS system's computer generated stock recommendation after they have reviewed the ABS reports. Desired inventory levels are maintained by the ABS system and from the marketing and inventory data, recommended purchase orders are transmitted to the retailer. The concept is known as an RPO (reverse purchase order) system (that is, supplier generated purchase orders) and is also called Vendor Managed Inventory (VMI). The ABS system is updated with picking data, indicating what products are packed into each container. An EAN.UCC SSCC (Supplier Shipping Container Code) label is produced for each carton. During receipt at the retailer distribution centre, the SSCC label is scanned and the data from each label is used to update the retailer's computer with details of product contained in the carton.

In Capelle's case, it operates its own warehousing services. In these cases, the ABS system sends the picking slips to the contract warehouse via REDI-Net. On completion of picking, the contract warehouse system would advise Capelle of the items that have been picked and shipped. The ABS system also generates a transaction advising the retailer of the appropriate shipping details. The ABS system communicates using an EDI mailbox. It can process a mix of EDI and non-EDI orders. Leon Pendergast of Capelle said inventory control has moved from being a stock control system to being the hub of its business. Electronic sales data allows the company to react quickly to consumer trends, and provides valuable supplier information, ensuring correct stock levels to maximise sales. Capelle has had a 20% - 30% decrease in operating costs in the area of supply chain management, whilst achieving above average growth in sales and profit.

[Source:[http://www.ean.com.au/media/FILES/web\\_site/download\\_centre/Newsletters/2003\\_February\\_newsletter.pdf](http://www.ean.com.au/media/FILES/web_site/download_centre/Newsletters/2003_February_newsletter.pdf)]

#### **Case Study: Entertainment Distribution Corporation**

Up until recently, the Entertainment Distribution Corporation (EDC), which is the distribution arm for a number of companies such as Warner Bros, Buena Vista, Sony, and EMI was not gaining maximum efficiency from its internal and external business systems. On closer examination of its situation, EDC discovered that, over the course of several months, a significant number of orders had not been filled, leaving customers waiting for products while others were receiving product they hadn't ordered.

While EDC incorporates EAN.UCC barcodes in its day-to-day operations, its operations executives recognised that there was something missing in the way they were managing their distribution system as a whole. In search of a solution to their problem, EDC approached the Retail Logistics Group (RLG) and asked them to help devise a program that would guarantee their capacity to fulfil orders reliably, with the right product, making it to the right destination, at the right time. Furthermore, EDC specified that it wanted its 'new' system to be electronically functional, so that it could verify what product had been sent to each of its distribution centres and that the retailers actually received what they had ordered.

Utilising EDC's commitment to the EAN.UCC System, RLG's express parcel division Retail Freight Management provides 100% carton level tracking of all despatches for EDC's Huntingford warehouse. This year, RLG will assist EDC in transporting some 100 million CDs, films and computer games from its Huntingford, NSW 'pick by light' storage and distribution facility to its retailers throughout Australia.

The Retail Logistics Group's Director, Gavan Stewart, commented, "The EAN.UCC System has the strength and the capacity to manage every facet of the supply chain process. We have invested the time to incorporate the EAN.UCC System, in its fullest capacity into everything we do ourselves and in turn for companies like EDC to incorporate into their entire operating process."

EDC now operates an effective and efficient system that uses EAN.UCC technology and the DOMEDI (Domestic EDI in transport) process to maintain accurate supply to retailer's orders. EDC has also incorporated RLG's freight and transport services into its distribution system, thereby enabling it to supply to its client base across Australia. Orders flow into EDC's Huntingford facility electronically and are automatically introduced into the warehouse picking system with the EAN.UCC logistics labels, which then direct cartons to stock locations. EDC then despatches an advanced shipping notice to RLG's Head Office, notifying the shipper of the numbers of cartons and the type of product being shipped. Upon arrival, the stock is scanned in, using the EAN.UCC logistics labels and the information is run through software to verify that each carton that has arrived matches both the order and invoice details and contains the relevant product. From this point, consignment notes are created for all verified stock.

By partnering with an EAN.UCC user such as RLG, EDC is equipped with the security of knowing that its stock is thoroughly processed throughout its arm of the supply chain. Stock is scan-checked and cross-referenced against the supplier's Advanced Shipping Notice (ASN) at each stage of the process - upon collection, at the sortation dock when the stock is unloaded, again when the stock is loaded onto the one shipment truck and finally upon receipt of goods at the retailer's end of the chain.

RLG also takes full financial responsibility for products entrusted in its care "We can do this because of the scans we perform electronically at the point of pickup and the fact that we track them through each stage of the supply chain." Mr. Stewart remarked.

The initial check provides EDC with immediate verification that its shipment is correct and will be accepted at the retailer's end of the supply chain. When an ASN is sent to the retailer and a copy is forwarded electronically to the Retail Logistics Group, RLG then knows that EDC needs a collection and delivery of stock. The information also enables RLG to ascertain what size truck to send out to collect the shipment.

"With our continual check points using the EAN.UCC bar-coded information, we know that the stock is correct and accounted for at all times" said Rob Harrison, RLG General Manager - Group Sales. "EDC is thrilled with the fact that by correctly using its EAN.UCC numbering and bar-coding system, its shipments are guaranteed to match the initial order and what's more, they no longer go missing at the retailer's end because stock has arrived in an 'unrecognisable' form, with no identification as to what it is and why it has been ordered" he said.

Before a shipment of stock leaves EDC's warehouse, the driver uses a portable scanner into which the order information has been downloaded, to scan check the shipment while the stock is being loaded onto the truck. This 'psuedo scan' check is the same as what is done at the retailer's end of the supply chain. EDC now knows straight away if their stock is going to be accepted upon delivery as being the correct order for number of cartons, type of stock and quantity. If there is a problem at this point, EDC has the opportunity to rectify the situation rather than having incorrectly supplied product at the retailer's end.

Mr. Gavan Stewart, Director, Retail Logistics Group, says "Incorporating EAN.UCC numbering, bar-coding and electronic commerce into all facets of the supply chain process, regardless of where you are within the process is the big picture behind the whole EAN.UCC System. Using the EAN.UCC System as it should be used, has enabled us to bring new age technology to the business of transport."

[Source: Entertainment Distribution Corporation's Supply Chain System: <http://www.ean-int.org/index800.html>]

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- Victorian Sea Freight Industry Council (VSFIC)
- Victorian TDL Industry Round Table (IRT)
- Woolworths Ltd.



**10. APPENDIX 1: MEDIA RELEASE**

**MEDIA RELEASE**

**THE HON JOHN ANDERSON MP**

*Deputy Prime Minister  
Minister for Transport and Regional Services  
Leader of the National Party*



01 April 2003  
A31/2003

**BARCODING THE LOGISTICS INDUSTRY**

The Deputy Prime Minister and Minister for Transport and Regional Services, John Anderson, has urged the logistics industry to adopt global information standards that will speed up the delivery of goods and reduce the number of handling and shipping errors.

The decision by the Australian Logistics Council to endorse the EAN.UCC system of electronic data transfer places the Australian logistics industry among the first in the world to endorse standard ways of transferring data about freight.

"The system is recognised in 128 countries and I urge all Australian logistics businesses to work with us to explore the potential of the EAN.UCC system," Mr Anderson said.

"It is administered by EAN Australia and includes the familiar product barcodes that are already used by many Australian industries. The barcodes can hold detailed information about the product, its destination, its price, its purchaser, and its delivery.

"The adoption of uniform information standards will mean that barcodes would be compatible along the supply chain. It will be easier to share information between manufacturers, distributors, warehouse operators, transport companies and retailers.

"It will result in the faster delivery of goods, fewer handling and shipping errors, better inventory management and a reduction of ordering and replenishing times.

"Uniform standards will also make it easier for Australian exporters to meet the tightened security requirements that are being introduced around the world. For example, the US Customs Service has already introduced the 24-hour manifest rule, which requires shipping companies to document the cargo on board a vessel 24 hours before it leaves a foreign port for the United States," Mr Anderson said.

The Australian Logistics Council consists of high-level industry leaders and government representatives. The Deputy Prime Minister chairs the council.

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Source: [http://www.ministers.dotars.gov.au/ja/releases/2003/april/a31\\_2003.htm](http://www.ministers.dotars.gov.au/ja/releases/2003/april/a31_2003.htm)

## **11. ABOUT THE AUSTRALIAN LOGISTICS COUNCIL**

The Australian Logistics Council (ALC):

- Provides leadership within the freight logistics industry by encouraging industry collaboration on issues of mutual interest;
- Provides advice to all governments on logistics matters that relate to the mutual interests of the freight logistics industry;
- Improves the image and profile of the freight logistics industry to encourage greater acceptance by governments and the community of the important role the industry plays in our economy; and
- Drives the implementation of the Australian Logistics Industry Strategy.

The Australian Logistics Council comprises:

- The Chair, the Hon John Anderson, MP;
- Eminent and respected business leaders from the freight logistics industry and users of freight logistics services;
- Senior officials from Commonwealth and State/Territory government agencies; and
- Leading experts in specialist fields as deemed necessary by the Council.

The Australian Logistics Council:

- Has developed an implementation plan for the Australian Logistics Industry Strategy, setting priorities and milestones to measure progress;
- Is developing linkages with related initiatives at Commonwealth, State, Territory, regional and local levels;
- Will report progress annually through a stakeholder forum and a public written report; and
- Draws on the resources of the freight logistics industry to organise and conduct itself as necessary to achieve its mission.
- The Australian Logistics Council is supported by a Secretariat provided by the Department of Transport and Regional Services and the New South Wales Transport Co-ordination Authority<sup>44</sup>.

## 12. ABOUT NOIE

The National Office for the Information Economy is the Australian Government's agency to develop an economy that is supported by a strong capability in applying information and communications technology (ICT).

Established in September 1997, NOIE is helping Australians to create a world-class online economy and society through its work in developing, overseeing, and coordinating Commonwealth Government policy on electronic commerce, online services and the Internet.

Part of NOIE's role is to promote the effective use of information and communications technology to support productivity growth, structural adjustment and innovation in the Australian economy. One of the major opportunities for businesses to improve efficiency is to use the Internet for electronic business applications.

### ***Transport and Logistics Industry***

The freight transport and logistics industry is a key provider of services to many other sectors of the economy. Companies managing the logistics needs of major product distributors are key links for driving efficiency improvements along entire supply chains in many industries. As such, accelerated uptake of electronic business systems in this industry will have significant transformation effects for the whole economy.

The current implementation of an Action Agenda strategic restructuring of the industry includes a focus on innovation and the use of electronic business systems to generate efficiencies in industry operations.

NOIE is working with the Australian Logistics Council, the Department of Transport and Regional Services and with other key stakeholders to boost e-business adoption and improve systems connectivity, especially through the take-up of globally accepted information standards. This will help businesses to work cooperatively online to cut costs and improve service along supply chains.

NOIE has developed tools to demonstrate to companies the business case for adopting open global information standards and is supporting demonstration implementation projects through the Information Technology Online (ITOL) funding program.

### **ECEnable**

The document was developed by ECEnable Limited ([www.ecenable.com.au](http://www.ecenable.com.au)) an e-business services and solution company, under contract to NOIE.





## 13. BIBLIOGRAPHY

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- <sup>1</sup> Australian Logistics Council, February 2003
- <sup>2</sup> [http://www.ean.com.au/media/FILES/web\\_site/download\\_centre/Newsletters/2003\\_February\\_newsletter.pdf](http://www.ean.com.au/media/FILES/web_site/download_centre/Newsletters/2003_February_newsletter.pdf)
- <sup>3</sup> EAN Australia News NO. 26- June 1998 p3.
- <sup>4</sup> The Case for Inter-Business Process Automation: The business impact of lowering cost, accelerating business and scaling infrastructures. Peter Brockman, b-Trade, [www.btrade.com](http://www.btrade.com)
- <sup>5</sup> [http://www.ean.com.au/media/FILES/web\\_site/download\\_centre/Newsletters/2003\\_February\\_newsletter.pdf](http://www.ean.com.au/media/FILES/web_site/download_centre/Newsletters/2003_February_newsletter.pdf)
- <sup>6</sup> Commonwealth of Australia, May 2002, ISBN 0-642-99718-7
- <sup>7</sup> Remarks by the Deputy Prime Minister and Minister for Transport and Regional Services, Hon John Anderson in the Government's response to the report 'Freight Logistics in Australia: An Agenda for Action'
- <sup>8</sup> <http://www.dotars.gov.au/transinfra/aftliaa/actionagenda/boosting.htm#4.5.3>
- <sup>9</sup> Australian Logistics Council, February 2003
- <sup>10</sup> Wikipedia, <http://www.wikipedia.org/>
- <sup>11</sup> Gary Forger, Executive Editor, Modern Materials Handling, <http://www.mmh.com>
- <sup>12</sup> The Foundation is in Place - It's Time to Transform, Ralph Drayer, Supply Chain Insights
- <sup>13</sup> Howart, B. Integrate or Perish. Business Online. December 2001 p18
- <sup>14</sup> Alan Dabbieri, Chairman of Manhattan Associates. SupplyChain Review, December 2002, p13
- <sup>15</sup> World Trade Organisation, [www.wto.org](http://www.wto.org)
- <sup>16</sup> World Trade Organisation, [www.wto.org](http://www.wto.org), Trading Into the Future
- <sup>17</sup> <http://www.ean-int.org/index800.html>
- <sup>18</sup> <http://www.globalcommerceinitiative.org/oas/gci>
- <sup>19</sup> [http://www.uc-council.org/about\\_ucc/uc\\_key\\_industries\\_served\\_by\\_th.html](http://www.uc-council.org/about_ucc/uc_key_industries_served_by_th.html)
- <sup>20</sup> [http://www.ean-ucc.org/global\\_smp/gsmg\\_smp.htm](http://www.ean-ucc.org/global_smp/gsmg_smp.htm)
- <sup>21</sup> [http://www.ean.com.au/about\\_ean/International\\_Experience.asp](http://www.ean.com.au/about_ean/International_Experience.asp)
- <sup>22</sup> <http://www.iso.ch/iso/en/aboutiso/introduction/index.html#two>
- <sup>23</sup> [http://www.ean.com.au/about\\_ean/International\\_Experience.asp](http://www.ean.com.au/about_ean/International_Experience.asp)
- <sup>24</sup> [http://www.ean.com.au/about\\_ean/International\\_Experience.asp](http://www.ean.com.au/about_ean/International_Experience.asp)
- <sup>25</sup> [http://www.ean.com.au/about\\_ean/About\\_EAN\\_Sub.asp](http://www.ean.com.au/about_ean/About_EAN_Sub.asp)
- <sup>26</sup> The EAN.UCC System: The Global Language of Business, [http://www.ean.com.au/media/FILES/web\\_site/download\\_centre/Brochures/Four\\_In\\_One\\_Brochure.pdf](http://www.ean.com.au/media/FILES/web_site/download_centre/Brochures/Four_In_One_Brochure.pdf)
- <sup>27</sup> <http://www.ean-int.org/data/sscc.pdf>
- <sup>28</sup> <http://www.ean-int.org/index800.html>
- <sup>29</sup> See: <http://www.ean-int.org/members.html> or <http://www.uc-council.org>



- <sup>30</sup> <http://www.ean-int.org/index800.html>
- <sup>31</sup> <http://www.ean-int.org/index800.html>
- <sup>32</sup> [http://www.ean.com.au/quick\\_start/Latest\\_Standards.asp](http://www.ean.com.au/quick_start/Latest_Standards.asp)
- <sup>33</sup> <http://www.ean-int.org/index800.html>
- <sup>34</sup> The Minister for Ports, Candy Broad  
<http://www.iird.vic.gov.au/CA256C530000A4BF/all/C86FD9F1D65CD1D9CA256C61007E5BD4?open>
- <sup>35</sup> [http://www.ean.com.au/media/FILES/web\\_site/download\\_centre/Newsletters/2003\\_February\\_newsletter.pdf](http://www.ean.com.au/media/FILES/web_site/download_centre/Newsletters/2003_February_newsletter.pdf)
- <sup>36</sup> EAN Australia News NO. 26- June 1998 p3.
- <sup>37</sup> The Case for Inter-Business Process Automation: The business impact of lowering cost, accelerating business and scaling infrastructures. Peter Brockman, b-Trade, [www.btrade.com](http://www.btrade.com)
- <sup>38</sup> [http://us.cgey.com/ind\\_serv/industry/cprd/GCIBCModel/default.asp](http://us.cgey.com/ind_serv/industry/cprd/GCIBCModel/default.asp)
- <sup>39</sup> <http://www.star-track.com.au/>
- <sup>40</sup> Davenport, T.H. & Short, J.E. "The New Industrial Engineering: Information Technology and Business Process Redesign," *Sloan Management Review*, pp. 11-27.) 1990
- <sup>41</sup> Davenport, T.H. & Short, J.E. "The New Industrial Engineering: Information Technology and Business Process Redesign," *Sloan Management Review*, pp. 11-27.) 1990
- <sup>42</sup> Bill Rogers, Enterprise Reengineering, September, 1995,  
<http://www.defenselink.mil/c3i/bpr/bprcd/5291.htm>
- <sup>43</sup> Finch, C.R., Reneau, C.E., Faulkner, S.L. Gregson, J.A., Hernandez- Gantes, V.M., & Linkous, G.A. (1992). *Case studies in vocational education administration: Leadership in action*. Berkeley, CA: National Center for Research in Vocational Education.
- <sup>44</sup> <http://www.ozlogistics.org/>