National Freight Data Hub Options Discussion Paper

September 2020

NATIONAL FREIGHT DATA HUB OPTIONS DISCUSSION PAPER

Introduction

The Australian Logistics Council (**ALC**) is the peak national body representing major companies participating in the freight logistics industry. ALC's policy focus is on delivering enhanced supply chain efficiency and safety.

It welcomes the opportunity to comment on the *National Freight Hub Options discussion paper* (**the discussion paper**).

ALC has been leading the debate on use of technology to enhance the productivity of the freight and logistics sector since 2010.

In that year, it published the pivotal document *Using Information and Communications Technology to Increase Productivity in the Australian Transport and Logistics Industry*.[1]

Even in 2010, it was recognised that:

The case for investment at all levels from single sub-contractors to major corporations is clear - without it, Australia will slowly decline in international competiveness. Inevitably, the industry must collaborate on agreeing to open global standards for information gathering and dissemination, and both State and Federal Governments must play their part in avoiding regulation that would reduce the economic value of the available enhancements. [2]

This is the Transport and Logistics Operating Model envisaged by ALC in 2010:

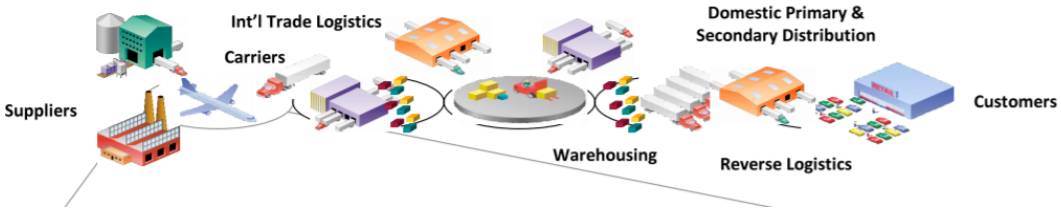

Figure 1 – Transport and Logistics – ICT Operating Model contained in *Using Information and Communications Technology to Increase Productivity in the Australian Transport and Logistics Industry*, p.7

Done well, the Freight Hub should give effect to this outcome, as well as the more modern ALC vision for technology use in the freight and supply sector set out in the 2018 paper *A Common Data standard for Our Supply Chain*[3], set out in **Attachment 1.**

The current ALC vision is specifically set out on page 4 of the 2018 paper contained in Attachment 1.

[1] http://www.austlogistics.com.au/wp-content/pdf/policy/Using-information-and-Communications-Technology-to-Increase-Productivity-in-the-Australian-Transport-and-Logistics-Industry-July-2010.pdf
[2] Page 4
[3] http://www.austlogistics.com.au/wp-content/uploads/2018/10/A-Common-Data-Set-for-our-Supply-Chain.pdf

Giving effect to the ALC vision – the development of a single freight data standard for the national digital framework

ALC has been a consistent leader in the development of standards and guidelines for the freight and logistics industry, producing resources including the:

- Australian Freight Labelling Guideline;
- Logistics Labelling Guideline;
- XML User Guidelines; and
- Australian Freight and Logistics Glossary.

It continues this vital work with the development of a single freight data standard for the national digital framework.

As the International Standards Organisation has said:

The 'Supply Chain' is a multi-level concept that covers all aspects of taking a product from raw materials to a final product including shipping to a final place of sale, use and maintenance and potentially disposal. Each of these levels covers many aspects of dealing with products, and the business process for each level is both unique and overlapping with other levels. [4]

GS1 ISO compliant identification standards encoded in relevant data carriers such as barcodes or Gen 2 HF/UHF RFID tags will provide the digital link between the physical object and the data associated to it.

The GS1 EPC Information Services Standard (**EPCIS**)[5] (and the associated Core Business Directory) standard allows the sharing of information about the 'what', 'where', 'when, and 'why' dimensions of the physical movement and the status of products/shipments as they travel the supply chain.

When designed correctly, relevant "Identification", "Data Capture" and "Data Sharing" standards will facilitate effective end to end freight visibility.

The National Telematic Framework by the Transport and Infrastructure Council of COAG is aligned with ISO 15638 which establishes the Framework for Collaborative Telematics Applications for regulated Commercial Freight Vehicles which will enable data to be used for safety, compliance and planning purposes.

The possible combination of the data captured through the use of these standards would appear to have the advantage of bringing together under one regime both heavy vehicle and freight movements, which would:

1. greatly assist the collection of statistics for purposes such as the ABS transport satellite account, through the presentation of information in a uniform format;

[4] From description of ISO 17364 *supply chain applications of RFID – returnable transport items (RTIs) and returnable packaging items (RPIs):* https://www.iso.org/obp/ui/#iso:std:iso:17364:ed-2:v1:en

[5] https://www.gs1.org/sites/default/files/docs/epc/EPCIS-Standard-1.2-r-2016-09-29.pdf. This has been endorsed by the ISO as Standard 19987:2017 – *Information Technology – EPC Information Services (EPCIS) Standard* - https://www.iso.org/standard/72926.html

2. provide a uniform format of information for those wishing to enhance the visibility of freight in which they have an interest;

3. present information to road managers in a way that would facilitate decisions relating to access to routes by heavy vehicles;

4. facilitate compliance with legislation; and

5. facilitate planning for both industry and governments.

ALC, together with GS1 and Transport Certification Australia (**TCA**) has developed a *Single Freight Data Standard for the National Digital Framework* that brings together these two data standards.

It is set out in **Attachment 2**.

For the time being, the current data standard is designed to capture the movement of freight and heavy vehicles.

Other datasets may be published by other entities that may be relevant to other freight modalities. These may be incorporated as the concept is further developed.

As the document says, its purpose:

…….. (i)s to provide industry with guidance to the data standards and protocols that are available to support interoperable implementations of digital capabilities in the Australian Freight & Logistics sector.

Common, agreed data standards and a framework for sharing data can reduce the cost and complexity of data exchange, and allow the adding of value to the Australian economy through improved analysis, better information about supply chains, and improved customer service.

The document then goes on to say that it draws on material, standards and guidelines already approved and in common use across Australia which align with international standards and provide a common framework for data interoperability across domestic and international supply chains.

Thus, the standards can be used by vendors to develop the data exchange languages so products can be developed that would permit the full interoperability that would facilitate the provision of information.

Use of the standards would also permit the answer of the foundation freight data enduring questions that guide the design of the hub contained on page 7 of the discussion paper as will satisfy the majority of the data priorities set out on page 12 of the paper.

ALC recommends that this industry supported data standard be used as the basis for capturing information provided by the Freight Hub.

In the context of the discussion paper, this would constitute a ‘medium change’.

For completeness, the issues discussed in ‘enduring question’ 4 can be answered in part through a project industry is also working with BITRE (amongst others) to develop a location registry designed to provide information on issues including:

- the effective management of trading or operating hours for peak periods;
- providing access to information about any safety constraints at a site;
- if any driver amenities are available;
- weight/height restrictions;
- details regarding dedicated truck entry points; and
- other random site requirements such as whether drivers must where hard hats.

Industry position on the provision of data generally

There is general support for the development of a common data standard for the Australian freight and logistics industry.

This has been made clear at Technology summits that have been conducted by ALC in the previous two years together with their last two Inland Rail conferences jointly conducted by ALC and the Australasian Railways Association.

However, unfortunately the intercession of COVID-19 has meant that ALC has not been able to conduct the gatherings of industry that it was hoping to do during 2020 to further advance the issue of how a common data standard could be used to the advantage of both government and industry.

The following matters require further discussion by industry participants:

1. Identifying the type of entity that could act as a custodian of data provided by industry and stored in a data hub;

2. the standards (including security standards) under which the stored data would be kept;

3. how to manage the various permissions granted by particular industry participants – that is, those who are prepared to allow access to more granular information stored in a freight hub because they wish to use the system for freight visibility or regulatory compliance purposes as opposed to those only prepared to permit data to be used (particularly by government) if provided in an aggregated, de-identified form for policy and planning purposes;

4. identifying who may extract information from a freight hub and why;

5. the privacy standards governing use of the freight hub;

6. whether there are any competition law issues that may arise if there is a desirability to transfer between parties non-proprietary information to encourage efficiency in the supply chain (for example, using information to identify some form of blockage at a particular piece of infrastructure and then take an action (like aggregating freight on one carrier) to avoid the blockage);

7. the instruments governing the operation of any freight hub – for instance, will it be:

   (a) a set of interlocking contracts, perhaps backed by some form of code of conduct; or

   (b) an Act of Parliament – the way in which the trade and commerce, census and statistics and corporations powers of the Commonwealth have been used, and approved by the High Court, would suggest that such an Act could be developed to underwrite the manner by which a freight hub would operate;[6] and

8. where such information is stored and who would be the custodian.

Current industry preferences

Having said that, to the extent that industry discussions have been able to be undertaken, there appears there is a consensus about the following things:

1. **Any Information provided to the Freight Hub remains at all times the property of the party providing the information.**

2. **The provision of information to the Data Hub will be voluntary.**

3. **The highest levels of privacy protection are expected. It would be anticipated that in the preparation of the business case, a privacy impact assessment of the type expected by the Office of the Australian Information Commissioner would be prepared.**

4. **It is for the provider of information to identify the purposes for which information provided to the Data Hub may be used. This is because there are some industry participants who would be happy to provide data that would be aggregated and deidentified for planning and other similar purposes, whilst over the long-term other participants may wish to use the Data Hub for the purposes of tracing freight.**

Some of these matters are of course identified in the discussion paper. However, noting the compressed timeline the business case is working to, the following tentative views are advanced, expressed against the 'elements' set out on pages 11ff. of the discussion paper:

Element One: Data

As discussed earlier, the 'enduring questions' and the data priorities identified in the discussion paper are answered if the common data standard out in Attachment 2 is adopted, with the ultimate goal the provision of real time data.

This would also advance the goal of interoperability and to enhance the comparability of data.

[6] Pl.51(i),(xi) and (xx) of the Australian *Constitution*

Industry take up would be enhanced if governments undertook to receive information contained in the proposed industry data standard when requesting data.

Element two: Technology

Given the current prevailing views set out in the 'current industry preferences' component of this submission, it would appear the utilisation of the existing technology of government and industry participants and what is described as being a' federated architecture model' would be the way to establish the Freight Hub.

Given the compressed timeline for delivering a business case for the Hub, it may be appropriate for the Department to ensure that any specialist work undertaken to flesh out how the proposal set out above would work is properly tested with industry. ALC stands ready to assist.

Element Three: Governance

So industry has confidence in providing information to the Data Hub, some form of independent body should be generally charged with responsibility for administering it.

It would be presumed that only those who provide information to be shared would have access to any information contained to be contained on the Data Hub, which would give effect to the 'give info and get info' concept set out on page 8 of the Discussion Paper.

More generally, the sophistication of the governance structure is much influenced by the granularity of the information provided.

For example, referring back to the layers of logistics units graphic set out earlier, the lower the level of information to be provided (so that, for example, the Hub can be used for tracing freight) then a sophisticated governance structure may be required.

Given the compressed timeline for delivering a business case for the Hub it may be appropriate for the Department to ensure that any work undertaken to develop the optimal governance structure for a Hub that has access based on a 'give info and get info' basis and an appropriate privacy structure is properly tested with industry. ALC stands ready to assist.

Element Four: Funding

From discussions with government it would appear that (at least initially) the information that will be available would be aggregated, deidentified information typically drawn from existing databases, with much of the information currently available on www.data.gov.au.

As iMove has observed:

There is a plethora of freight related datasets in Australia, collected by all levels of government in the Australian federation, as well as private firms (particularly larger firms) and industry bodies. However, we also find significant gaps in the datasets, most notably in relation to how data with common characteristics (say, by commodity or mode) is not comparable across supply-chains, regions or states because it is not standardised and concorded to the same levels of aggregation or granularity or collection frequency.

…….

This study also indicated several other problems with government data release. For instance, because the government doesn't generally release the underlying raw data, it must necessarily make a call on the level of data aggregation, which will clearly not suit every data user.

Another common criticism is that data are often released with significant delay. This criticism is relatively recent and is driven by the fact that modern information and communications technology means that information in other aspects of life are released in real-time.

Comparing this to the delays in publishing ABS surveys such as SMVU and FMS, for example, which in some instances occur two years after collection (and in a highly aggregated form that prevents modelling and forecasting precision), reflects poorly on modern government approaches to data dissemination.[7]

If it is the case that at the commencement of the life of the Hub the information on it is largely designed to support planning purposes from information already available, then it is probably appropriate for the Hub to be fully government funded.

Over time, it would be hoped that the Data Hub could be used by participants to acquit statutory obligations or to trace the movement of goods down the freight chain.

However, for the reasons discussed above, ALC would recommend that the business case be drafted on the assumption the Hub would be government funded, until there is confidence that the data on it is close to real time and genuinely comparable.

Ultimately, much will turn on the acceptance of a standardised data standard along the lines proposed by ALC.

ALC congratulates the Department on the way it has been developing this concept and stands ready to continue its close working relationship to bring it to conclusion.

Australian Logistics Council

September 2020

[7] *iMove Freight Data Requirements Study – Data Gap Analysis Final Report* (2019): 11 https://www.infrastructure.gov.au/transport/freight/files/Appendix_C_Gap_Analysis_Report_FINAL.pdf

ATTACHMENT 1

AUSTRALIAN LOGISTICS COUNCIL
SUPPLY CHAIN EFFICIENCY AND SAFETY

A COMMON DATA SET FOR OUR SUPPLY CHAIN

DEVELOPING AND IMPLEMENTING THE NATIONAL FREIGHT AND SUPPLY CHAIN STRATEGY

DISCUSSION PAPER 2

OCTOBER 2018

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Peter Gunn AM, February 2011
Ivan Backman AM, May 2010
David Williams OAM, May 2010

Last updated October 2018

ABOUT THIS DISCUSSION PAPER

This Discussion Paper is the second in a series that ALC is releasing to provide insight into industry's thinking around the implementation of the National Freight and Supply Chain Strategy, and policy areas that should be prioritised for action.

The material contained in this Discussion Paper draws on the outcomes of ALC's inaugural Supply Chain Technology Summit, which was held in Melbourne in May 2018, as well as ALC's continuing conversations with industry participants.

The Discussion Paper has been developed with the assistance of the ALC Technology Committee.

It is evident that technology and data will play an increasingly important role in the future operation of Australia's supply chains – allowing Australia to meet its growing freight task more safely and efficiently.

In order to secure that outcome, there is a significant amount of work to be done to improve both the quality and quantity of data available to policy makers and industry participants regarding the operation of Australia's supply chains.

This Discussion Paper sets out a practical pathway for achieving this outcome, allowing Australia to more effectively monitor and measure supply chain performance.

This will help promote more efficient deliveries and lower prices for Australian consumers, and will also help make certain Australia's export-dependent economy can remain internationally competitive.

THE ALC VISION

1. The ALC Board has endorsed a policy position that **"ALC and its members work towards the adoption of GDS by all participants in the Australian logistics industry."**

   Global Data Standards (GDS) will deliver enormous economic benefits through enhanced freight visibility and should be adopted by the freight logistics industry.

   The Australian Competition and Consumer Commission (ACCC) should be involved in the development of any common data set, so that any competition law issues can be addressed.

2. The Australian Bureau of Statistics (ABS) should ensure that the Transport Satellite Account is fully operational by the end of 2019.

3. ALC encourages continued industry participation and government commitment to the Road Freight Telematics Data Collection Project to ensure that this important data can be used by industry to enhance efficiency and safety.

4. To allow industry and Australian governments to make informed policy and infrastructure decisions, a Freight Observatory should be created. The Freight Observatory should:

   a. measure outcomes in the Australian supply chain;

   b. develop performance indicators relating to the Australian supply chain;

   c. collect & catalogue the data in a manner that is compatible with appropriate Global Data Standards (GDS) to facilitate interoperability;

   d. provide information about the performance of the Australian supply chain to public and private decision makers;

   e. Liaise with 'like' international bodies & monitor international trends in order to provide informed advice to public and private decision makers; and

   f. The data collected and managed by the Freight Observatory (although owned by the party providing the data) would also inform the *National Infrastructure Data Collection and Dissemination Plan* (**the Data Collection Plan**) developed by the Bureau of Infrastructure, Transport and Regional Economics (**BITRE**) and the Transport Satellite Account.

5. To provide confidence in the management of confidential business data, the collection and use of information provided by industry should be governed by an enforceable code of conduct. The Australian Privacy Principles should otherwise inform how data should be collected, handled and used.

6. Government and industry should establish a mechanism to develop a common data set. This common data set can then be used to facilitate efficiency and safety.

7. Due to the international nature of trade, the Australian Government should encourage the development of a multilateral agreement (either through the development of a joint ISO/IEC standard or refinement of model laws facilitating the use of electronic communications managed by the United Nations body UNCITRAL) to identify a common data set that could be developed for global trade.

INTRODUCTION

The constant evolution and improving affordability of technology, together with the use of open data standards, offers tremendous scope to improve the efficiency of Australia's supply chains.

The development of the Australian Transport Standards for Freight Labelling is just one example of the benefits that could be realised.

Case Study: ALC/GS1 Australia Supply Chain Visibility Study

ALC, through its Technology Committee, and in collaboration with businesses, Austroads, GS1 Australia and the (then) Department of Infrastructure and Regional Development, have investigated the benefits to Australian businesses and their supply chains from the use of global data standards (GDS) to create and transmit information on the events occurring during the physical movement of goods between suppliers and their customers, across multiple transport modes and custody of the freight.

The report – *Austroads Research Report AP-R538-17 – Investigating the Potential Benefits of Enhanced End to End Supply Chain Visibility* was released at ALC Forum 2017.

The use of GDS has been proven to improve the visibility and traceability of freight. Standards allow a common language to identify the freight, the transport assets and the events during supply chain execution. It enables all parties to gain real-time information and to be able to control and manage the freight more effectively. It has also resulted in benefits such as improved planning, efficient operations, improved compliance, product integrity and supply chain analytics.

Public value can also be derived from increased visibility in Australia's supply chains through capacity optimisation and scheduling (terminals and network infrastructure), planning for investment (demand, network utilisation by freight and private sector data), linking real-time compliance monitoring (container weights and transport security), and emergency management (real-time response data).

It has been found however that logistics service providers are not taking advantage of adoption of GDS to provide improved visibility, as they perceive cost outweighs benefit. This is due to the prevalence of incompatible bespoke IT systems, non-standard data formats and a lack of collaborative mindset.

The penalty for not adopting open GDS, which will largely fall on small business, is significant. This avoidable industry cost has been estimated at AUD 1.63 billion, which ALC believes will impact the productivity of the sector.

GLOBAL DATA STANDARDS

In May 2018, ALC held its first Supply Chain Technology Summit (**the Technology Summit**) to discuss how industry can use technology to improve productivity and safety outcomes.

A clear consensus reached at the Technology Summit was the need for data to promote visibility and interoperability.

Visibility is important as it allows improved predictability, efficiency, productivity and sustainability, reduced need to keep inventory, the identification of bottlenecks and a reduction in fatigue and errors.

It was further noted that data quality is vitally important. New technologies rely on data feeds. If poor information goes in poor data will come out.

Therefore every company must take responsibility for the information contained in their systems. This is because end to end supply chains have multiple stakeholders that all rely on each other.

At present, the quality of data passed through the supply chain can be quite poor, especially when participants record freight movements using different data systems that cannot 'talk' to each other.

Errors can frequently occur as the same information is entered on numerous occasions on different systems. Indeed, it is possible for a single container number to be fed into computer systems up to 30 times as the container moves through the supply chain. This is to satisfy the various requirements of customers, port operators, quarantine, customs operations and other parties involved in a shipment.

This situation could be greatly improved, and supply chain efficiency greatly enhanced, through the adoption of GDS in Australia's freight logistics industry. This view was given added impetus by the ALC Board meeting of 27 June 2018, which endorsed a policy position that *"ALC and its members work towards the adoption of GDS by all participants in the Australian logistics industry."*

Recommendation 1: Global Data Standards (**GDS**) will deliver enormous economic benefits through enhanced freight visibility and should be adopted by the freight logistics industry.

The Australian Competition and Consumer Commission (**ACCC**) should be involved in the development of any common data set, so that any competition law issues can be addressed.

It is possible for a single container number to be fed into computer systems 30 times as the container moves through the supply chain.

THE NATIONAL FREIGHT AND SUPPLY CHAIN STRATEGY

On 18 May 2018 the Council of Australian Government's Transport and Infrastructure Council (**TIC**) agreed to a framework for developing a 20 year National Freight and Supply Chain Strategy (**the National Strategy**).

The National Strategy will build on the recommendations from the *Inquiry into National Freight and Supply Chain Priorities*. These recommendations included a number of priority action areas identified by an Industry Expert Panel.

Priorities relating to data and technology identified by the Industry Expert Panel include:

2.1 Establish a data gathering and performance review mechanism focused on travel times and reliability on key freight routes and the efficiency of the interfaces at freight terminals with routine public reporting of performance over time.

2.2 Benchmark key export supply chain performance against international competitors.

2.3 Ensure the National Digital Economy Strategy, set up by the Australian Government in September 2017 to focus on ways governments, businesses and the community can seize the benefits of digital transformation, incorporates recommendations on freight priorities to create efficiencies. As an example, port community systems mentioned in priority 1.3 could be expanded.

2.4 Fund the Australian Bureau of Statistics to establish a transport satellite account to its national accounts that separately reports the value of freight transport for the economy as a whole (e.g. GDP, employment, etc.).

2.5 Fund a freight observatory to collect, analyse and publish freight performance data for all freight modes and supply chains to better inform decision making and investment, with appropriate governance arrangements and the potential for this function to be held by an independent body that has industry confidence.[1]

The outcomes of the Technology Summit, and the observations contained in the Inquiry Report, support the more effective use of data in the supply chain.

The initiatives discussed in this paper are drawn from the Technology Summit and the Inquiry Report. The initiatives are intended to deliver the following key objectives:

1. improved supply chain efficiency and safety;
2. consistency and/or interoperability between infrastructure networks;
3. avoidance of duplication of hardware and software requirements; and
4. reduced operational costs.

1 Australian Government Inquiry Into National Freight and Supply Chain Priorities – Report (2018): 11 - https://infrastructure.gov.au/transport/freight/freight-supply-chain-priorities/files/Inquiry_Report.pdf

COLLECTION AND USE OF DATA AT THE PLANNING LEVEL

The *National Infrastructure Data Collection and Dissemination Plan* has been developed by the Bureau of Infrastructure, Transport and Regional Economics (BITRE) and the Australian Bureau of Statistics (ABS) with the goal to:

» fill key data gaps; and

» develop performance data relevant to infrastructure operators and customers.[2]

On 18 June 2018, the then Minister for Urban Infrastructure and Cities, Hon. Paul Fletcher MP, released the Final Data Collection Plan.[3]

The Final Data Collection Plan provides a list of 16 priority projects to help achieve its purpose. These projects include:

» Heavy Vehicle Infrastructure Asset Register;

» Infrastructure Performance Dashboard;

» Freight Performance Indicators;

» Network Optimisation Frameworks;

» Measuring Transport's Contribution to the Economy – Transport Satellite Account;

» Non-Fatal Road Injury Data;

» Customs Freight Data Analysis Project;

» Road Freight Telematics Data Collection; and

» Road Operator Data to Support Connected and Automated Driving

Two of these projects are of particular interest to ALC – development of a Transport Satellite Account and Road Freight Telematics Data Collection.

DEVELOPMENT OF A TRANSPORT SATELLITE ACCOUNT

ALC is pleased work is progressing on the development of a Transport Satellite Account by the Australian Bureau of Statistics (ABS). The need for such an account was identified in ALC's 2014 publication *The Economic Significance of the Australian Logistics Industry.*[4]

ABS Satellite Accounts present specific details on a particular topic in a manner which is separate from, but linked to, the core national accounts. Put simply, they allow an understanding of the significance of a particular industry within the broader national economy.

The linking of national accounts data with other forms of data collected (such as own account transport by non-transport industries), and the reorganisation in the way in which data is presented, will:

» make analysis of the size and efficiency of the Australian logistics industry easier;

» assist in identifying the impact the logistics industry has on the economy; and

» improve investment and planning decisions by industry and governments.

Recommendation 2: The Australian Bureau of Statistics (**ABS**) should ensure that the Transport Satellite Account is fully operational by the end of 2019.

2 Terms of reference may be found at https://bitre.gov.au/data_dissemination/tor.aspx

3 https://bitre.gov.au/data_dissemination/files/National_Infrastructure_Data_Collection_and_Dissemination_Plan.pdf

4 http://austlogistics.com.au/wp-content/uploads/2014/07/Economic-Significance-of-the-Australian-Logistics-Indsutry-FINAL.pdf

ROAD FREIGHT TELEMATICS DATA COLLECTION

ALC members have been cooperating with BITRE and the ABS since 2016 to develop experimental indicators for:

- congested freight-significant network locations;
- average travel speed of freight vehicles;
- routes taken by freight vehicles;
- origin and destination of freight vehicle movements; and
- freight vehicle stop locations and durations.

The intention is to identify congested networks, key freight routes and average travel speed and travel times on key freight routes. Other outputs developed would include where, when and for how long freight vehicles are stopping and the amount of road freight activity.

Government agencies are now looking at increasing the number of freight service providers involved in developing this project.

Recommendation 3: ALC encourages continued industry participation and government commitment to the Road Freight Telematics Data Collection Project to ensure that this important data can be used by industry to enhance efficiency and safety.

THE FREIGHT OBSERVATORY

There is an increasing consensus that Australia should develop a **Freight Observatory**.

The Freight Observatory would be charged with measuring outcomes, developing performance indicators and providing information to public and private decision makers to allow them to make policy and investment decisions.

Infrastructure Partnerships Australia has suggested that a body, named Freight Performance Australia, could be created for this task.[5]

ALC has previously suggested that an independent body, which we named Freight Australia, could provide objective analysis of freight demand so that key freight routes can be identified and protected as well as allowing the development of long term plans to improve supply chain performance.[6]

The development by TIC of a body like Freight Performance Australia should be regarded as the first step towards the Freight Australia concept anticipated by ALC.

Involving TIC in the development of these bodies is important so that state government data can be efficiently collected and analysed. It is also appropriate given TIC's central role coordinating interjurisdictional cooperation in the development of the National Freight and Supply Chain Strategy.[7]

5 Infrastructure Partnerships Australia Fixing Freight: Establishing Freight Performance Australia (2018): http://infrastructure.org.au/wp-content/uploads/2018/04/Fixing-Freight-Establishing-Freight-Performance-Australia-1.pdf

6 See discussion in ALC (2015) Draft Discussion Paper Australian Government's Freight Rail Policy Objectives: http://www.austlogistics.com.au/wp-content/uploads/2015/12/ALC-Submission-Draft-Discussion-Paper-on-Australian-Government-Rail-Policy-Objectives-December-2015.pdf

7 As a preliminary step, the ABS could establish a specific branch within the organisation to perform the freight observatory function. The ABS' traditional commitment to maintaining the confidentiality of commercial data could provide industry with the confidence to provide data to a 'freight observatory' administered by it

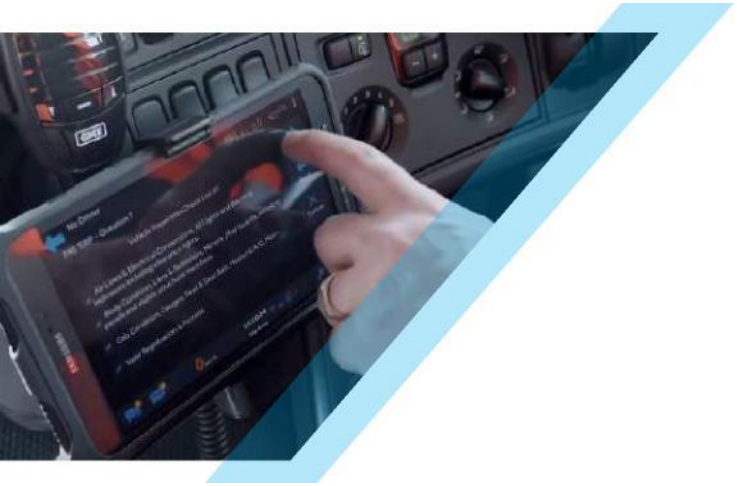
PRIVACY AND OWNERSHIP OF DATA

Industry participants place an understandably high premium on privacy. They seek assurance that data collected is only used for statistical purposes.

Confidence in how data is handled is vital if it is to be willingly and voluntarily supplied. This is why some argue a Freight Observatory should be independent of government.

It is clear that a statement of privacy principles drawn from the Australian Privacy Principles is needed to give industry confidence that data will be used appropriately. This will be particularly relevant if the proposed agency cannot be established under federal legislation.

To provide a further layer of protection, the provision or use of information provided to (or by) the Freight Observatory should be governed by an enforceable code of conduct. This would be similar to the way the recently enacted *European Union General Data Protection Regulation* protects the use and exchange of data in Europe.[8]



The party providing any data would remain its owner.

Recommendation 4: To permit industry and Australian governments to make informed policy and infrastructure decisions, a Freight Observatory should be created. The Freight Observatory should:

- measure outcomes in the Australian supply chain;
- develop performance indicators relating to the Australian supply chain;
- collect & catalogue the data in a manner that is compatible with appropriate Global Data Standards (GDS) to facilitate interoperability;
- provide information about the performance of the Australian supply chain to public and private decision makers; and
- Liaise with “like” international bodies & monitor international trends - provide informed advice to public and private decision makers.

The data collected and managed by the Freight Observatory (although owned by the party providing the data) would also inform the *National Infrastructure Data Collection and Dissemination Plan* (**the Data Collection Plan**) developed by the Bureau of Infrastructure, Transport and Regional Economics (**BITRE**) and the Transport Satellite Account.

Recommendation 5: To provide confidence in the management of confidential business data, the collection and use of information provided by industry should be governed by an enforceable code of conduct. The Australian Privacy Principles should otherwise inform how data should be collected, handled and used.

8 https://gdpr-info.eu/ See particularly Articles 40 and 41 of the Regulation.

THE FIRST STEP – DEVELOPING A COMMON DATA SET FORM

In May 2018, ALC held a Supply Chain Technology Summit to discuss how industry can use technology to improve productivity and safety outcomes.

The Summit highlighted clear demand for the development of a common set of open data standards. These data standards would be used to collect information in a standardised fashion so the information can be used throughout the supply chain. It would also enhance the development of the analytical capabilities of freight and supply chain participants.

Development of such a data set would also provide usable information that can enhance the analytical capabilities of supply chain participants.

Governments have also recognised the benefits of receiving data in a consistent manner for use in statutory and planning purposes.

Australian governments have made a tentative beginning in this area through the adoption of a *National Framework for Land Transport Technology,* which has amongst its intentions:

> **Improve the availability of open data in the transport sector.**
>
> Governments can assist industry, researchers and the public to develop innovative solutions to transport problems by providing open access to transport data. Australian governments are committed to an open-by default approach to transport data and through this action will improve the availability of open access transport data.[9]

The next step is for government and industry to establish a mechanism to develop a common data set form.

At the ALC Technology Summit, it was suggested that the Telematics Data Dictionary maintained by Transport Certification Australia already contains common data set forms to ensure inter-connectivity and interoperability for technology designed to assist compliance with heavy vehicle legislation. This could be used as the **starting point** for the development of a common data set with broader application.[10]

It is envisaged the mechanism referred to would take into account:

- the Data Dictionary;
- the outcomes of *Austroads Research Report AP-R538-17 – Investigating the Potential Benefits of Enhanced End to End Supply Chain Visibility*; and
- the continuing work of the iMove Co-operative Research Centre.

Finally, it has been suggested that in some circumstances the provision and use of some forms of data could lead to the substantial lessening of competition in a particular market.

Accordingly, the ACCC should be involved in the development of a common data set. This ensures that competition law considerations are taken into account at the commencement of the data set design process.

ALC suggests that the Transport and Infrastructure Council (TIC) could manage the overall development of this project.

Recommendation 6: Government and industry should establish a mechanism to develop a common data set. This common data set can then be used in functions that will facilitate efficiency and safety.

9 http://transportinfrastructurecouncil.gov.au/publications/files/National_Policy_Framework_for_Land_Transport_Technology.pdf - 23

10 https://tca.gov.au/ntf/tdd

INTERNATIONAL ALIGNMENT OF DATA STANDARDS

International alignment of data standards is an important point given the international nature of trade.

The international nature of the GS1 global data standards is noted; as is the fact the Telematics Data Dictionary is aligned with *ISO 15638* which establishes the Framework for Collaborative Telematics Applications for Regulated Commercial Freight Vehicles (also known as **TARV**).[11]

ALC believes that although undesirable for governments to own or fund information transfer mechanisms, they can facilitate uptake by shaping consistent regulatory standards.

Given the global nature of today's marketplace, a multilateral agreement to determine information standards under a global coordinating body is highly desirable in the longer term.

Within this context the Commonwealth Government can display international leadership by seeking to develop a common data set at an international level by:

» the development of a standard via some form of joint technical Committee of the ISO[12] and the IEC[13], a mechanism used to develop, maintain or promote information technology standards[14]; or

» the further refinement of model laws facilitating the use of electronic communications in international commerce, managed by the United Nations Commission on International Trade Law (UNCITRAL).[15]

It follows that if this initiative was adopted, individual Australian regulators should not develop their own data sets or data standards for their own statutory purposes.

Recommendation 7: Due to the international nature of trade, the Australian Government should encourage the development of a multilateral agreement (either through the development of a joint ISO/IEC standard or refinement of model laws facilitating the use of electronic communications managed by the United Nations body UNCITRAL) to identify a common data set that could be developed for global trade.

11 www.iso.org/standard/59184.html

12 International Organisation for Standardisation

13 International Electrotechnical Commission

14 www.iso.org/isoiec-jtc-1.html

15 See: http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce.html

CONCLUSION

Australia has the opportunity to be an international leader in the way in which data is collected and used to facilitate supply chain efficiency, and to promote better planning and infrastructure investment decisions.

By promoting interoperability and the adoption of GDS, Australia can further drive the development of low-cost applications and technologies that will enable the automatic capture & sharing of transport data.

More widespread use of such technologies will ultimately assist all operators in the supply chain, including small and medium businesses.

By facilitating wider use of data – including real time data – in our supply chains, we will help make sure that Australian exports remain internationally competitive, and that domestic consumers can experience fewer delays and lower costs when it comes to deliveries.

This is an opportunity that policy makers should enthusiastically grasp.

Australian Logistics Council October 2018

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ATTACHMENT 2

AUSTRALIAN LOGISTICS COUNCIL

SUPPLY CHAIN EFFICIENCY AND SAFETY

A Single Freight Data Standard for the National Digital Framework

November 2020

Table of Contents

Introduction

It is evident that technology and data will play an increasingly important role in the future operation of Australia's supply chains – allowing Australia to meet its growing freight task more safely and efficiently.

To secure that outcome, there is a significant amount of work to be done to improve both the quality and quantity of data available to policy makers and industry participants regarding the operation of Australia's supply chains.

This Paper sets out the key data elements and standards for achieving this outcome, allowing Australia to more effectively monitor and measure supply chain performance.

It will help promote more efficient deliveries and lower prices for Australian consumers and will also help make certain Australia's export-dependent economy can remain internationally competitive.

The scope of this paper is limited to the movement of freight and heavy vehicles.

Other data elements may be published by other entities that are relevant to other freight modalities. These may be incorporated into this standard as the concept is further developed.

Finally, data aggregators and telematic service providers may also subsequently exchange processes to facilitate the movement of information. This is however out of the scope of this paper.

Further relevant information can be found in the links contained in the **appendix.**

Background & Policy Setting

In May 2018, ALC held its first Supply Chain Technology Summit (the Technology Summit) to discuss how industry can use technology to improve productivity and safety outcomes.

A clear consensus reached at the Technology Summit was the need for data to promote visibility and interoperability.

Visibility is important as it allows improved predictability, efficiency, productivity, and sustainability, reduced need to keep inventory, the identification of bottlenecks and a reduction in fatigue and errors.

It was further noted that data quality is vitally important. New technologies rely on data feeds. If poor data goes in poor information will come out.

Therefore, every company must take responsibility for the information contained in their systems. This is because end to end supply chains have multiple stakeholders that all rely on each other.

At present, the quality of data able to be passed through the supply chain can be quite poor, especially when participants record freight movements using different data systems that cannot 'talk' to each other, or worse still, where freight movements are recorded on manual paper records or not at all.

Errors can frequently occur as the same information is entered on numerous occasions on different systems. Indeed, it is possible for a single container number to be fed into computer systems up to 30 times as the container moves through the supply chain. This is to satisfy the various requirements of customers, port operators, quarantine, customs operations, and other parties involved in a shipment.

This situation could be greatly improved, and supply chain efficiency greatly enhanced, through the adoption of a single data standard in Australia's freight logistics industry.

ALC has a policy requiring heavy vehicles to be fitted with telematics devices for safety and other purposes since 2010. In 2018, the ALC Board subsequently endorsed a policy committing ALC and its membership to working towards the adoption of global data standards by all participants in the Australian Logistics Industry.

GS1 global data standards offer the ISO/IEC 19987 Electronic Product Code Information Services (**EPCIS**) standard and the associated ISO/IEC 19988 Core Business Vocabulary (CBV) that provides the framework for the interoperable sharing of information about the physical movement and the status of objects including products, materials, shipments etc as they travel the supply chain.

In addition, the ability for industry to physically capture data effectively and automatically about shipments and activities is essential to sharing information about them. Typically, either barcodes or Gen 2 UHF RFID tags should be used to link the physical object to the digital information about the 'what' the 'where' the 'when' and the 'why' dimensions so important in ensuring freight visibility. As technologies evolve, other mechanisms such as sensors or IoT devices could be used to automatically capture data.

The National Telematics Framework, which is administered by Transport Certification Australia (TCA) on behalf of government transport authorities, is aligned with ISO 15638 which establishes the Framework for Collaborative Telematics Applications for Regulated Commercial Freight Vehicles which will enable data to be used for safety, compliance and planning purposes.

The possible combination of the data captured using these standards would appear to have the advantage of bringing together under one regime both heavy vehicle and freight movements, which would:

1. assist in the collection of statistics for purposes such as the ABS Transport Satellite Account, through the presentation of information in a uniform format;

2. provide a uniform data format that can be used for those wishing to enhance the visibility of freight in which they have an interest;

3. present information to road managers in a way that would facilitate decisions relating to access to routes by heavy vehicles;

4. assist compliance with legislation; and

5. facilitate planning by both industry and governments.

How to use this document

This document is designed to be used in a modular fashion, selecting the data elements, and the data layers that are applicable to the relevant application. This document aims to create a single set of 'standards' for Australian industry and government to use, and to support safe and efficient data sharing between commercial entities, government entities, data aggregators and technology providers.

The data elements are separated into data 'layers' (see later further details), which may be used independently or collectively, depending upon the needs of the user. For example, a freight forwarder may be primarily interested in data relating to the goods being transported, while another might seek to combine this with data relating to the vehicle as well. Conversely, many data systems collect information

about the identification, characteristics, and movement of a vehicle without any reference to the freight being carried.

We anticipate there will be different users of this document, including:

- Telematics service providers
- Data aggregators
- Transport operators
- Logistics managers
- Freight customers
- Road managers and public purpose analytics users
- Those developing the National Freight Data Hub.[1]

This document aims to provide sufficient information to support interoperability between entities in the freight data chain.

Freight customers may use this document as a reference or requirement for contractors and telematics service providers to comply with in provision of services and data/analytics.

Logistics managers may elect to use this document as a reference to ensure interoperability with other entities such as telematics providers of transport operators, transport operator consignment tracking systems, customer reporting systems etc.

Transport operators may be asked to comply with this document, and either ensure their own commercial systems, or the data services they procure from third parties comply with the standards underpinning this document.

Data aggregators, and **telematics service providers** may be asked to comply with the standards referenced in this document when constructing data schemas, exchange systems and analytics.

Data can be of high public value for **road managers, other government agencies** and research purposes. The ability to access, compare, aggregate, and analyse data efficiently for regulatory, planning, policy or transport operational purposes depends on a level of standardisation in data recording, storage, transmission. Government may elect to reference this document in relation to data sharing arrangements for entities in the freight supply chain sharing data for public purposes.

Potential future areas for development

While out of scope for this document at this time, in the future some of the following areas may be considered for inclusion:

- vehicle movements and characteristics beyond movement (harsh braking, fuel use, vehicle combination details etc)
- real time data transfer to support parcel tracking
- driver identity and behaviour (identity, blood alcohol)
- geographic details such as distribution centre characteristics, rest areas etc. and;
- policy setting with business-to-business connections for real-time freight and parcel tracking etc.

[1] https://www.infrastructure.gov.au/transport/freight/national-freight-data-hub/index.aspx

Where to go for more information:

- For further policy background: http://www.austlogistics.com.au/wp-content/uploads/2018/10/A-Common-Data-Set-for-our-Supply-Chain.pdf
- For further assistance with implementation of GS1 global data standards: email freight.logistics@gs1au.org
- For additional information about the National Telematics Framework please see the TCA.gov.au, or contact us: https://tca.gov.au/contact/

Mapping of current data standards

The constant evolution and improving affordability of technology, together with the use of open data standards, offers tremendous scope to improve the efficiency of Australia's supply chains.

The current model of interoperable data standards includes a suite of inter-related standards, formats, and data definitions for a typical "transport hierarchy" as illustrated below.

Ensuring consistent identification at each layer of the transport hierarchy is of critical importance to lay the correct digital foundations upon which relevant additional data can be captured (and potentially shared) across the supply chain. It is the cornerstone of achieving efficient supply chain visibility. Using the same digital language enables the simplification of integration between parties that use different systems; the absence of which either requires multiple entry and translation of the same data element, paving the very real risk of data errors in the process, while also adding unnecessary costs.

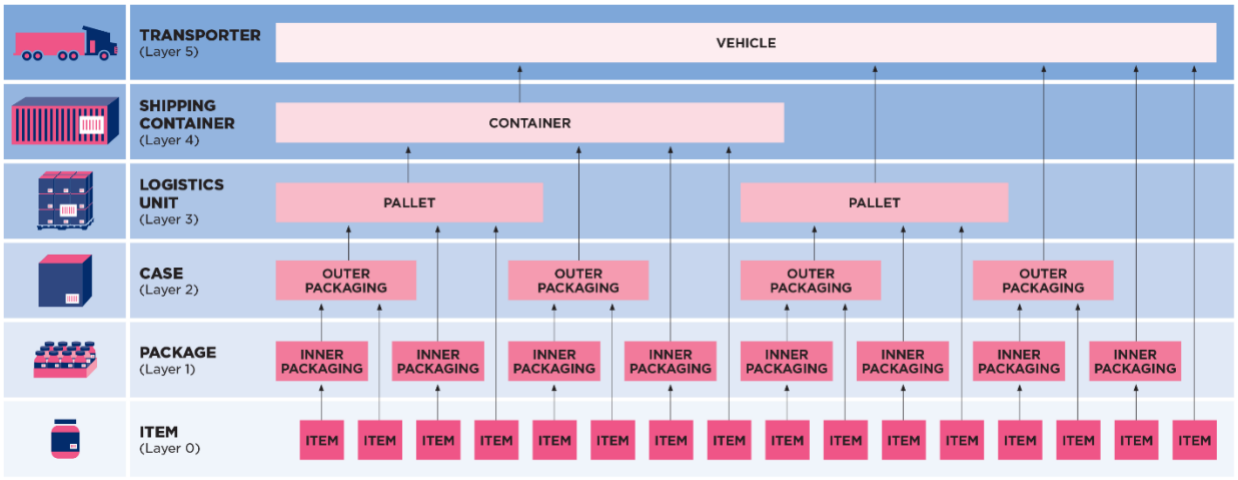


Figure 1: Typical Transport Hierarchy – example of cargo layers

Core data elements

Data elements that are considered common to all supply chains and companies are referred to as being "core" – that is they are used in all like business process types. Core data elements lend themselves to be standardised as there is no value to the process in having different expressions of these data elements. Key transport data requirements relate to:

- Where are transport events taking place – Location Identification
- What is doing the transport – Transport Asset Identification
- What is being transported – Logistic Unit Identification
- Capture and recording of physical transport Events – "What, where, when, why*" (e.g. Container A was at location B at x time/date and it was being "loaded" onto transport asset C)*

The data elements below, relate back to a series of core standards that are referenced in the appendices. These include the:

- **GS1 General Specifications –** are the foundational GS1 global data standards that define how identification keys, data attributes and barcodes must be used in business applications. The primary audience are technically oriented staff members of companies, solution providers and GS1 Member Organisations. They are used as a foundation for other GS1 standards and services to facilitate data exchange processes and access to local and global digital registries such as:
  - GEPIR (Global Electronic Party Information Registry)
  - GS1 Registry Platform
  - GDSN (Global Data Synchronisation Network)
  - GS1 EDI (Electronic Data Interchange), including the GS1 EANCOM and GS1 XML standards
  - GS1 EPCIS (Electronic Product Code Information Service) & associated GS1 CBV (Core Business Vocabulary)
  - National Location Registry
- **National Telematics Framework (NTF) Data Dictionary –** contains a range of potential data elements that are drawn from the National Telematics Framework Data Dictionary, which relates back to the ISO 15638 Intelligent transport systems — Framework for collaborative telematics applications for regulated commercial freight vehicles (TARV). The NTF seeks to improve telematics data interoperability by defining data elements, levels of assurance and business rules for the use of regulatory telematics, but which can also be applicable to the sharing of data for other purposes.

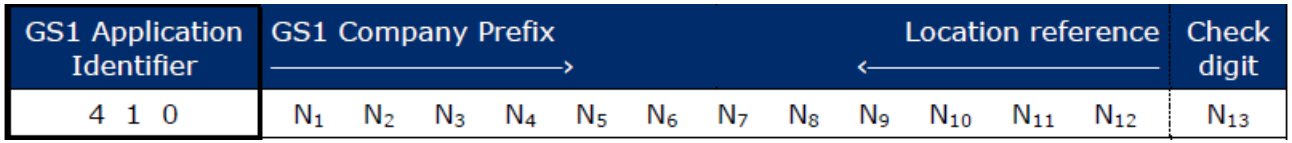
Location data

Location data is fundamental to the physical transport process. The task of efficient pickup and delivery of goods is the cornerstone of the freight sector's operations. The GS1 GLN (Global Location Number) is the key used to identify specific physical locations and to link to additional attributes about that location.

Accurate and timely location master data will be increasingly important to achieving transport task efficiencies and supply chain visibility. Master data can be shared via access to the National Location Registry[2]

Data Element Name	Description	Standards Reference	Required Data Element Format	Mandatory / Optional	Data origin/source
GS1 Global Location Number (GLN)	Globally unique identification code used to identify physical locations, digital locations, and parties in the supply chain. Appended master data can be accessed via the National Location Registry.	ISO/IEC 6523	Numeric 12 digit plus check digit preceded with Application Identifier[3] (410)	Mandatory if applicable	Allocated by the party who owns or has custody of the location

Figure 2: Format of element string GLN



[2] *National Location Registry is the central repository of trusted source data for locations in Australian supply chains.*

[3] *Application Identifiers (AI) provide the meaning, structure, and function of the GS1 system element string so they can be correctly processed in users' application programs. (see GS1 General Specifications for complete list of AIs)*

Layers 0/1/2 – Trade Item data layers

Individual trade items are typically packaged in one or more layers; they can be transported in any one of these layers depending on the requirements of the buyer or the business process being adopted. For all intents and purposes, the transport unit is usually made up of multiple trade items grouped together to create a logistics unit. Most transport companies will track freight at this grouped level depicted in Layer 3 below. For transport companies that do wish to track at the item level, this is made possible by leveraging the item level identification code (GTIN) assigned by the product's brand owner. Trade item data is typically only exchanged between the seller and buyer of the goods; the transport company is often not required to know product details about the trade item except in the case where they are hazardous goods.

Data Element Name	**Description**	**Standards Reference**	**Required Data Element Format**	**Mandatory / Optional**	**Data origin/source**
GS1 Global Trade Item Number	Globally unique identification for individual tradeable items and their respective Units of Measure, eg. Inner pack or outer case.	ISO/IEC 15459-1	Numeric 8,12,13 or 14 digit including check digit preceded by Application Identifier[4] (01)	Optional for transport processes.	Allocated and applied by the brand owner of the trade item.

Figure 3: Format of the Element String GTINs

GS1 Application Identifier	Global Trade Item Number (GTIN)													
	GS1-8 Prefix or GS1 Company Prefix →								← Item reference					Check digit
0 1	0	0	0	0	0	0	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8
0 1	0	0	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	N_{11}	N_{12}
0 1	0	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	N_{11}	N_{12}	N_{13}
0 1	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	N_{11}	N_{12}	N_{13}	N_{14}

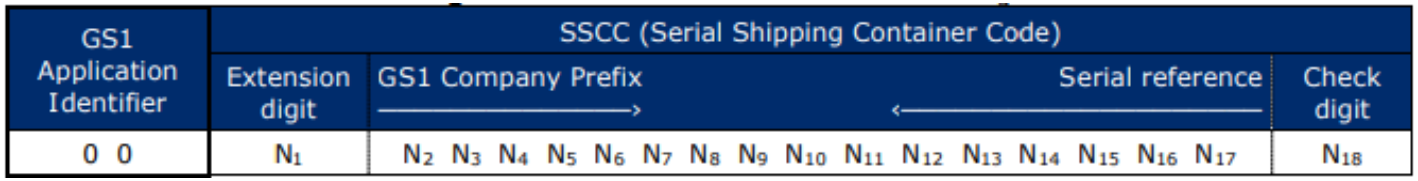
[4] *Application Identifiers (AI) provide the meaning, structure, and function of the GS1 system element string so they can be correctly processed in users' application programs. (see GS1 General Specifications for complete list of AIs)*

Layer 3 – Logistics/Transport unit data layer

In executing a transport task, physical and digital identification of the transport unit is the most critical application of the process to enable streamlined exchange of data about the unit. To avoid re-identification at each point in the chain, the globally unique, Serial Shipping Container Code (SSCC) provides a "license plate" if you will for each distinct transport unit, and is the foundation to allow for end to end tracking, visibility, and supply chain connectivity. This identification key is globally certified for both domestic and international identification of freight units the world over. All transport units should be identified with an SSCC encoded in a compliant barcode, printed on a freight label[5] and affixed to the transport unit so automatic data capture can take place during the physical handling processes at each point in the chain, without need for re-labelling. Data captured electronically can be exchanged with relevant parties. A transport unit may be associated with a consignment which can be identified with a "Global Identification Number for Consignments" (GINC).

Data Element Name	Description	Standards Reference	Required Data Element Format	Mandatory / Optional	Data origin/source
GS1 *Serial Shipping Container Code* (SSCC)	Serialised identification code used to uniquely identify the transport/logistics unit and should be used as the primary and only end to end tracking identifier. *NB: Linked to a transaction reference, the SSCC unpacks the contents of the logistics unit.*	ISO/IEC 15459-1	Numeric 18 digit including an extension digit and a check digit preceded by Application Identifier[6] (00) see figure 2	Mandatory	Applied by the party creating the logistics unit. The mandatory barcode symbology for SSCC is the GS1-128 with options for additional 2D GS1 DataMatrix or GS1 QR code symbologies

Figure 4: Format of the Element String SSCC

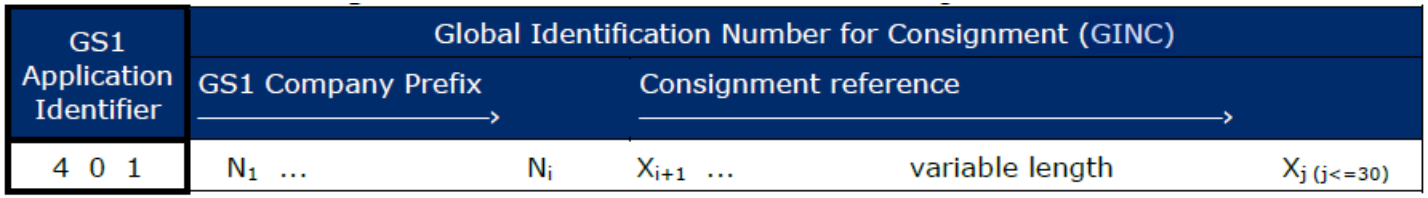


[5] *Freight Labelling guideline can be downloaded from here https://www.gs1au.org/download/gs1au-guideline-australian-freight-labelling.pdf/file*

[6] *Application Identifiers (AI) provide the meaning, structure, and function of the GS1 system element string so they can be correctly processed in users' application programs. (see GS1 General Specifications for complete list of AIs)*

GS1 Global Identification for Consignment (GINC)	Identifies a logical grouping of goods that have been consigned to a freight forwarder and is intended to be transported	ISO/IEC 15418	AN30 character – variable length with preceding AI (401)	Optional	Allocated by a freight forward or carrier acting as a Freight Forwarder.

Figure 3: Format of Element String GINC

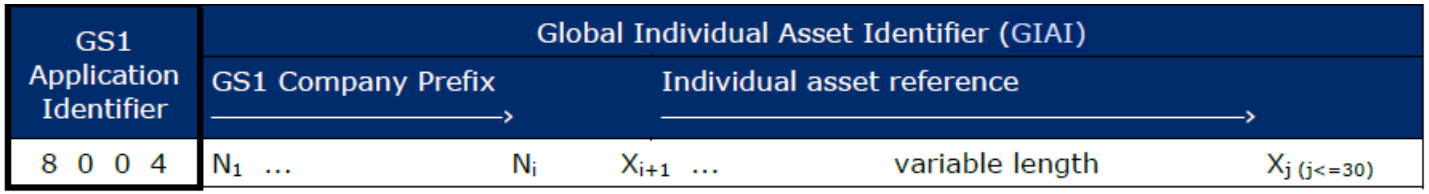


Layer 4 – Container data layer

The container layer can be a shipping container or a ULD in the case of air freight; used for transporting multiple units of freight. The container (or ULD) can be identified with a fixed asset identifier to enable tracking of freight as it is aggregated and disaggregated into and out of these containers.

GS1 Global Individual Asset Identifier (GIAI)	Serialised code used to identify a fixed asset. Eg. Truck or shipping container [could also include BIC code in reference field]	ISO/IEC 15459-4 & 5	AN30 character – variable length with preceding AI (8004)	Optional	Applied by the party who owns the asset

Figure 5: Format of element string GIAI



Layer 5 – Vehicle data layer

Layer 5 relates to data elements that identifies the freight vehicle and relates to its movement and location at any point in time. It should be noted that the NTF Data Dictionary contains a number of fields that are unique to Australia (such as vehicle combination codes), or that have not yet been codified in an International Standard (such as many of the mass-related fields).

A number of the data elements are optional and relate to preferred format should the data be included in a data set.

Data element	Description	Standards Reference	Required Data Element Format	Mandatory /Optional	Data origin/source
Axle Count	Total number of axles present within an axle group or vehicle (as per context)	ISO 15638	Numeric, 1 to 99, count of axles	Optional	On-Board Mass (OBM) and Telematics device or manual entry for static vehicle configurations
Axle Group Count	Total number of axle groups present within a vehicle	ISO 15638	Numeric, 1 to 99, count of axle groups in vehicle combination	Optional	OBM and Telematics device or manual entry for static vehicle configurations
Axle Group Mass	Mass of an individual axle group	NTF Data Dictionary	Numeric, 1 to 999999, measurement in kilograms	Optional	OBM and Telematics device
Gross Vehicle mass	Total mass of vehicle combination	ISO 15638	Numeric, 1 to 999999, measurement in kilograms	Optional	Telematics device
Latitude	Angular distance on a meridian north or south of the equator	ISO 15638	Location at point in time: Decimal from -90.00000 to +90.00000, Relative to the datum GDA94, Decimals: 5.	Mandatory	Telematics device
Load Status	Indication of whether a vehicle is loaded or not	ISO 15638	Numerated, N = No load; L = Load	Optional	Telematics device or manual entry
Longitude	Angular distance east or west from Greenwich meridian	ISO 15638	Location at point in time: Decimal from–180.00000 to +180.00000, Relative to the datum GDA94, Decimals: 5.	Mandatory	Telematics device
Satellite count	Number of satellites used to establish a measurement made by a GNSS receiver	ISO 15638	Numeric, 0-99, (example of a measurement of GNSS precision)	Optional	Telematics device
Self-Declared Mass	Self-declared gross vehicle mass	NTF Data Dictionary	Numeric, 0.0 to 999.9, measurement in metric tonnes, Decimals: 1	Optional	Manual entry

Vehicle Category Name	Human-readable representation of a predefined Vehicle Category	NTF Data Dictionary	Vehicle Category Name is specific to the National Telematics Framework.	Mandatory	Telematics device or manual entry,
Vehicle Identification Number	Unique code, including a serial number, used by the automotive industry to identify a vehicle	Australian vehicle identification processes	String, 17 digits, (eg: [A-HJ-NPR-Z0-9]{17})	Optional	Recorded manually from Vehicle Identification plate
Vehicle Registration Jurisdiction	Unique identifier for the Jurisdiction where a Vehicle Registration was issued by the relevant authority	Australian vehicle identification processes	Enumerated, Values: VIC; NSW; QLD; SA; WA; NT; TAS; ACT; FIRS	Mandatory	Recorded manually for each vehicle
Vehicle Registration Number	Formal identification of a Vehicle Registration issued by the relevant authority for a Jurisdiction to a distinct vehicle	Australian vehicle identification processes	Alphanumeric string, 6-10 digits in length. Combination of Vehicle Registration Number and Vehicle Registration Jurisdiction is a unique identifier for a registered vehicle	Optional	Telematics IVU

This data may be recorded and stored in a wide variety of formats to meet the needs of specific use cases. An example of a data record using some of these fields is illustrated below.

Vehicle registr'n	Registr'n jurisd'n	Vehicle cat (code)	Vehicle cat	Record Date Time	Position Latitude	Position Longitude	Satellite Count	Hdop Value	Spd	Self-declared mass
ABC123	NSW	17	PBS Quad Dog	2018-08-13 05:31:08	-33.85228	151.21067	4	18.5	50.4	40.1
ABC678	NSW	4	Semi Trailer (Quad Axle Trailer)	2018-08-14 05:31:38	-33.85022	151.21192	3	21.3	49.3	40.1

Conclusion

A data standard like that presented in this document could be potentially used as the basis of any Freight Hub developed under the Freight and Supply Chain Strategy endorsed by the former COAG Transport and Infrastructure Council.

Should there be interest in a form of common database like that presented in this paper, several subsequent issues will require consideration.

They include;

1. identifying the type of entity that could act as a custodian of data provided by industry and stored in a data hub;

2. the standards (including security standards) under which the stored data would be kept;

3. how to manage the various permissions granted by particular industry participants – for example, identifying those who are prepared to allow access to more granular information stored in freight hub because they wish to use the system for freight visibility or regulatory compliance purposes as opposed to those only prepared to permit data to be used (particularly by government) in an aggregated, de-identified form as well as ensuring that data is presented in the same format;

4. ensuring that any data provided is done so on a voluntary basis;

5. Privacy - Identifying who may extract information from a freight hub and why;

6. Whether there are any competition law issues that may arise if there is a desirability to transfer between party's non-proprietary information to encourage efficiency in the supply chain;

7. Identifying how intellectual property rights to data held by parties (or rights conferred on third parties by data owners to exclusively use identified data) can be respected;

8. The instruments governing the operation of any freight hub – these could include;

    a. A set of interlocking contracts potentially backed by a form of code of conduct; or

    b. An Act of the Federal Parliament,[7] and;

9. The development of data exchange processes to facilitate the transfer of information between industry participants and others.

[7] *Through the use of the trade and commerce, census and statistics and corporations power contained in s.51 of the Constitution*

However, the establishment of a foundation dataset is clearly the first step in developing the National Freight Data Hub forming part of the Freight and Supply Chain Strategy.

Governance

Responsibility for the continued development and publication of this document vests in the Technology Committee of the Australian Logistics Council.

Appendix

COMPANY INFORMATION

GS1 Australia in Rail

GS1 is a neutral, not-for-profit organisation that develops and maintains the most widely used global standards for identification and efficient business communication.

We are best known for the barcode, named by the BBC as one of “the 50 things that made the world economy”. GS1 standards and services support lifecycle management through effective maintenance, repair, overhaul (MRO) processes of assets and components across physical and digital value chains in the rail sector.

With local Member Organisations in 114 countries, 1.5 million user companies and 6 billion transactions every day, GS1 standards create a common language that supports systems and processes in 25 sectors across the globe.

For more information visit the GS1 Australia website or follow us on LinkedIn and our YouTube channel.

Transport Certification Australia (TCA)

Transport Certification Australia (TCA) is a national organisation that provides assurance services relating to transport technologies and data to enable improved public purpose outcomes from road transport.

Priority outcome areas enabled by our services include improved road safety, transport efficiency, freight productivity, asset management and sustainability.

Key aspects of TCA include:

- An independent not-for-profit entity, with government oversight
- Administration of the National Telematics Framework, including its rules, specifications, agreements, digital infrastructure and other supporting services
- Assurance services that support but are appropriately separated from regulators, policy makers and enforcement activities, and underpin telematics applications and associated information and data services
- Advice that is based on evidence and a deep subject matter knowledge
- Trusted partner to both government and industry stakeholders, enabling a nationally consistent open market, with services covering all road vehicle types and associated digital infrastructure.

List of Referenced Standards

GS1 Global Location Number https://www.gs1.org/standards/id-keys/gln

GS1 Global Trade Item Number https://www.gs1.org/standards/id-keys/gtin

GS1 Serial Shipping Container Code https://www.gs1.org/standards/id-keys/sscc

GS1 Global Identification Number for Consignment https://www.gs1.org/standards/id-keys/ginc

GS1 Global Individual Asset Identifier https://www.gs1.org/standards/id-keys/global-individual-asset-identifier-giai

GS1 EPCIS and Core Business Vocabulary https://www.gs1.org/standards/epcis

GS1 Standards Page https://www.gs1.org/standards

Links to National Freight Strategy

https://www.freightaustralia.gov.au/

Link to ALC Discussion paper

A Common Dataset for our Supply Chain http://www.austlogistics.com.au/wp-content/uploads/2018/10/A-Common-Data-Set-for-our-Supply-Chain.pdf

Links to GS1 Standards and technical documents

GS1 General Specifications https://www.gs1.org/standards/barcodes-epcrfid-id-keys/gs1-general-specifications

Freight Labelling Guideline https://www.gs1au.org/download/gs1au-guideline-australian-freight-labelling.pdf/file

Links to TCA National Telematics Framework documents

TCA National Telematics Framework https://tca.gov.au/national-telematics-framework/

Data Dictionary https://tca.gov.au/national-telematics-framework/

List of Vehicle Category Names (and codes) https://tca.gov.au/publications/?filter=functional-technical-specification

Links to case studies and example ‘videos’

Catch Group Case Study https://www.youtube.com/watch?v=AL5xmJ5DECc