CBFCA Industry White Paper: Blockchain based awareness and potential use in the international supply chain for Australia.

March 2020

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About Us

The Customs Brokers and Forwarders Council of Australia Ltd (CBFCA") is Australia's leading peak national association that represents members interests in international trade logistics and supply chain management service provision. We are committed to be a leading industry voice for Licenced Customs Brokers (LCB), International Freight Forwarders (IFF) and other associated groups concerned with international trade, representing and supporting our members in a difficult regulatory environment.

Our main objective is to promote the professional development of our members through training and professional development, in addition to being the leading RTO provider (RTO 30772) of the TLI50816 Diploma of Customs Broking and the only provider of the TLI50316 Diploma of International Freight Forwarding courses.

Having served the industry since 1904, our success for the last 115 years is built on consistently providing leadership, information, representation and networking opportunities for members and our students nationally & internationally.

We meet the professional demands of members and represent member's interests in dealings with:

- Department of Home Affairs including the Australian Border Force (ABF)
- Department of Agriculture, Water and Environment
- Department of Infrastructure and Regional Development - Office of Transport Security Working Group.
- Other Federal and State Government Regulatory Authorities
- Other key National Industry Associations and service providers in the trade logistics supply chain
- International Federation of Freight Forwarders Associations (FIATA)
- International Air Transport Association (IATA)
- International Federation of Licenced Customs Brokers Associations (IFCBA)

1.0 Executive Summary

Over time, the advent of Blockchain based technology and related digitalisation of trade is likely to have a significant impact on this industry sector, in terms of:

- Opportunities to enhance the international supply chain
- Threats to enhance the international supply chain
- Disruption in process and technology (Automation)
- Initial lack of knowledge
- Cybersecurity & Data Security

The impact will be to all members of the supply chain, both government and its agencies as well as those parties in the private supply chain.

This Industry White Paper project aims to increase industry knowledge on the existing and potential future use of Blockchain technology, for the impartial benefit of industry and Government and to help drive the trade and economic benefits for all Australians.

The Australian International Trade and Transport Industry Development Fund Ltd has partially funded this project.

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2.0 Objectives

This paper represents Australia's first Industry Blockchain whitepaper and vision from the CBFCA, the peak industry body representing Licenced Customs Brokers (LCB) and Australia's International Freight Forwarders (IFF).

CBFCA members work at the front line of trade facilitation handling imports and exports for domestic and international businesses and depend on an equitable and efficient digital trading platforms that could be improved and enhanced by the by the benefits and features offered by Blockchain technologies.

This CBFCA whitepaper explores Blockchain solutions specifically from the CBFCA industry and members' perspective, identifying and seeking improvements to the current digital and workflow processing challenges for the specific benefit of all stakeholders operating in Australia proposing a partnership approach to drive Industry transformation.

In order to enable simpler, lower cost and trusted trade, Blockchain represents a technology that can enable improved and secure digital platforms for the benefit of all stakeholders. Combined with other emerging digital technologies such as Artificial Intelligence (AI), Machine Learning and Data Analytics, Blockchain also can improve Cybersecurity, Data Security and Identity management creating a significantly more comprehensive ecosystem that can support Australian and International trade.

This will, in turn, lead to a more compliant supply–chain reducing Australia's risks to revenue and security.

This paper's primary goal is to ensure that industry has an active and clear voice in any Blockchain digital platform design, regulation and development in Australia and that licenced custom brokers and international freight forwarders of all sizes can participate, contribute and benefit from any improvements resulting from emerging and future Blockchain trading platforms becoming available in Australia.

CBFCA foresees the potential of Blockchain technology integrated through a 'single window' covering all the interested Australian border agencies thus strengthening the necessary transactional and security relationships between all Australian Border Agencies and Industry stakeholders.

3.0 Understanding Customs and Freight forwarding in Australia.

Licenced Customs Brokers and Freight Forwarders represent a significant component to the economic and trade success that drives the Australian economy. Whilst current and emerging global Blockchain digital platforms and partnerships have become established over the last few years, few if any take into account the specific end to end working process needs of Australian CBFCA members, their daily workload, multiple documentation, liability, regulatory, security and financial responsibilities in a business efficient manner.

Currently multiple systems, vendors and government compliance requirements (operating together and independently) make up a large part of Industry & CBFCA member day to day workloads. Blockchain presents an opportunity to use technology in a highly secure, transparent, immutable and efficient way that can potentially bring all parties and all data, validation and identity management into a single secure ecosystem with the opportunity to contribute and grow Australia's economic prosperity.

Any truly digital international trade platform, should at its core break down barriers, reduce manual data entry, increase efficiency and enable faster imports and exports whilst ensuring security, identity, compliance and regulation almost instantaneously throughout the transaction process.

A secure Blockchain digital platform for CBFCA members should at a minimum be transformative and from an Australian perspective and include:

- Faster simpler and more secure processes with one-touch data entry
- Be secure for stakeholders, regulators and customers to access easily from any device
- Enable sharing of information and documentation across each transaction
- Enhance identification and validation & access record history for compliance
- Reduce Inefficiencies domestically and internationally
- Drive innovation and disruption end to end throughout the trade chain
- Must include & seek members feedback and input regularly
- Develop a collaborative and inclusive ecosystem designed for continuous improvement that meets Industry needs driving Australia's competitive advantage

Historically the growth of the Internet has shown that if industry does not lead and contribute to development of the ecosystem and digital platforms then problems and inefficiencies quickly evolve and drive technology led solutions specified by parties outside of ecosystem.

Now is the time for CBFCA, its members, government and stakeholders to work together in ensuring that any Blockchain enabled digital platform meets the commercial, financial, security and regulatory needs Australian businesses require to succeed. This could be a positive way to ensure that consumers, businesses and government can benefit from global opportunities in the rapidly evolving systems of international trade.

4.0 CFBCA Members – Current Industry Inefficiencies & Challenges

In Australia Licenced Customs Brokers and Freight Forwarders are legal and commercial custodians for capturing, storing, recording and in some cases verification of data supplied by local and international parties, all of whom contribute to the full import declaration and other reports to the ABF. Until cargo is cleared, CBFCA members operate at the centre of ALL trade into and out of Australia, representing a very important and critical role in International Trade facilitation and supply chain efficiencies.

The licenced customs broker is then required to retain evidence and documentation under multiple audit regimes from multiple government agencies causing increasing inefficiencies and workloads.

CBFCA has identified significant inefficiencies and business drawbacks that include:

- Maintaining multiple financial & login accounts with multiple government agencies including delays between agencies on single clearance transactions
- Significant data entry & rekeying (repetitive) into existing online platforms

- Increasing Email communications & retaining Emails as evidence (inefficient data storage)
- Unreliable domestic and international data that is legally reliable for CBFCA members to create and verify reports to the ABF and other government agencies to whom those reports are submitted.
- Possible evidence & documentation manipulation opportunities during audits
- Identity and profiling challenges due to lack of trust, validation and transparency

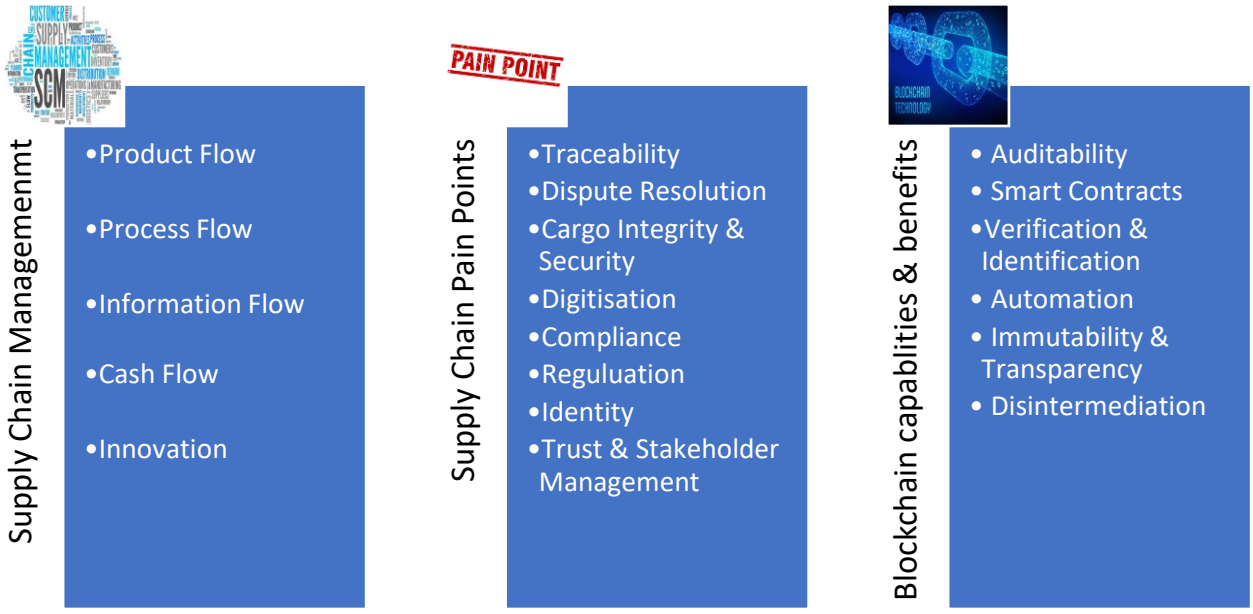


Figure 1 Supply Chain pain points & capabilities of Blockchain, end to end visibility, source arvix

Whilst many current global Blockchain trade platforms and systems are beginning to appear, few of these systems are attempting to resolve these industry issues fully and Australia has its own unique needs and nuances relating to regulatory, security and commercial drivers that should form part of any Blockchain ecosystem capable of fully supporting Australian domestic and international trade on a global scale.

Increasingly these must occur concurrently with Australian federal and domestic agencies responsible for certain stages of each transaction process but currently remain unconnected by existing Blockchain trade systems or by reporting software or by the agencies themselves. Few of the current & emerging Blockchain pilot platforms solve all of the major processing issues and may lead to additional confusion for CBFCA members if less than comprehensive and complete in handling trade facilitation actual workflows.

Figure 2 - Current example Pilot activities and focus for Supply Chains attempting to use Blockchain, source arvix

	Domain	Traceability	Dispute Resolution	Cargo Integrity & Security	Digitisation	Compliance	Trust & Stakeholder management
Antwerp, Middle East, Singapore, China	Ports	Yes	No	Yes	Yes	No	No
Maersk & IBM	Container Shipping	Yes	Yes	Yes	Yes	No	Yes
Accenture	Freight & Logistics consortium	Yes	No	Yes	Yes	Yes	No
BiTA	Transport & Logistics consortium	No	No	No	NO	Yes	Yes
UPS	Logistics	Yes	Yes	No	Yes	Yes	No
Walmart & IBM	Food	Yes	No	No	Yes	Yes	Yes
Carrefour	Food	Yes	No	No	Yes	Yes	No
Mediledger	Pharmaceuticals	Yes	No	No	Yes	Yes	Yes

5.0 Australia's Opportunity – Introducing a stronger 'Single Window'

'Single Window', which is also officially known as 'International Trade Data System' (ITDS), aims at streamlining the border clearance process by providing a single platform through which all shipment data and documentation are entered and managed.

'Single Window' has been promoted by several worldwide organizations associated with trade such as UNECE, World Trade Organisation (WTO), World Customs Organization (WCO), and the Association of Southeast Asian Nations (ASEAN). Many countries agreed that the initiative had the potential in enhancing the implementation of standards and techniques for simplifying and facilitating information flows and information sharing between traders and governments.

In practice, the systems created are often an additional layer on top of the existing customs and other governmental agency systems, and 'Single Window' actually does little to address the underlying fragmentation and complexity issues of global trade.

There are two main obstacles for the adoption of 'Single Window' systems:

- **Technology**: information and communication technology for truly delivering a single window had not been previously available;
- **Collaboration reluctance**: it is rare to find a 'Single Window' system covering all the relevant governmental authorities, agencies, and trading communities.

Coordinating these various agencies and organizations (and their procedural and data requirements) into a coherent and simplified automation system has proven challenging and causes inefficiencies for front-line CBFCA members and Industry stakeholders.

Blockchain along with, AI, Data Security, IoT and Cloud computing have the capability to collectively overcome these challenges.

In Australia “Single Window’ solutions have been on the Agenda for several years but are yet to be fully developed, trialled and adopted.

The Department of Home Affairs and Australian Border Force have flagged the benefits of a “single window” to gain fast and integrated access to all of their trade-based departments at the border. The CBFCA believes this could be facilitated by a dedicated Blockchain platform ecosystem for all of Australia’s international trade flow information with everything required in the one place as a version of that single window.

CBFCA recommends enhancing these solutions so they could be augmented with access to a single portal for regulation to allow for “cross referencing” of documents to regulatory requirements. They could also be further developed to allow government and its agencies access to documents and transaction documents as the basis for rulings/advisory opinions and collaborations that produce these necessary results will drive significant outcomes for ABF and Industry as the trade volumes continue to grow exponentially.

6.0 Implications for Customs Regulation & Compliance

Blockchain is poised to radically disrupt global trade. The digital ledger technology could help to reduce the huge volumes of paperwork and bureaucratic interventions necessary for legitimate trade. The implications of Blockchain for customs are in the following aspects (World Customs Organization 2018):

- Data-driven and well-informed customs. Customs supported by Blockchain would be able to see the necessary and accurate data associated with the cargo to be declared and keep clear track of the location and status of the cargo in **real time**. Complete visibility and transparency will enable data-driven decision-making processes in the daily operations of customs and other border agencies for security, risk analysis and targeting.

- Customs immersed in the trade process. Blockchain technology could embed customs into a common platform linking all trade-related commercial entities and further enable information sharing among all involved stakeholders. Customs can cement its position as a critical security node of the global trade network and could expeditiously clear cargo that has been pre-screened on its ledger without withholding them at the time of declaration using less administration resources

- Improved revenue compliance and cooperation between tax and customs. A major problem for Tax authorities is to reduce the gap between expected tax & duty revenues and those actually collected. Due to the enhanced transparency and traceability, Blockchain would make fraud and errors far easier to detect and thus reduce the gap. The same is true for Australian customs & co-dependent agencies currently collecting payments from CBFCA members.

  The reliable and real-time exchange of information between customs, exporters, importers, and other related parties enhance customs’ capabilities to identify fraudulent practices.

- Combating financial crimes. Criminals usually disguise their illicit proceeds by exploiting legitimate trade processes including the overvaluation or undervaluation of the goods concerned and the use of unusual shipping routes or transhipment points. Blockchain technology could be utilized to develop a network community where customs agencies and other related governmental authorities’ record and share information on taxpayer’s trade

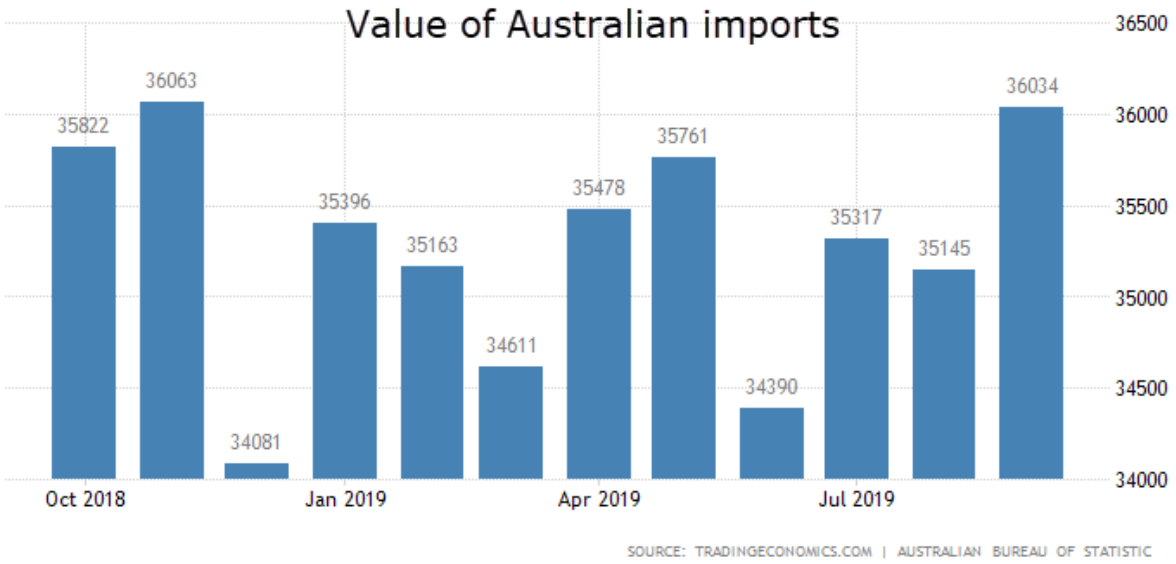
practices and relative activities for financial transactions. This would enable relevant authorities to streamline trade finance, track events within the banking system that could be easily misused to conceal illicit financial flows, and make necessary actions in a timely, prompt and coordinated manner.

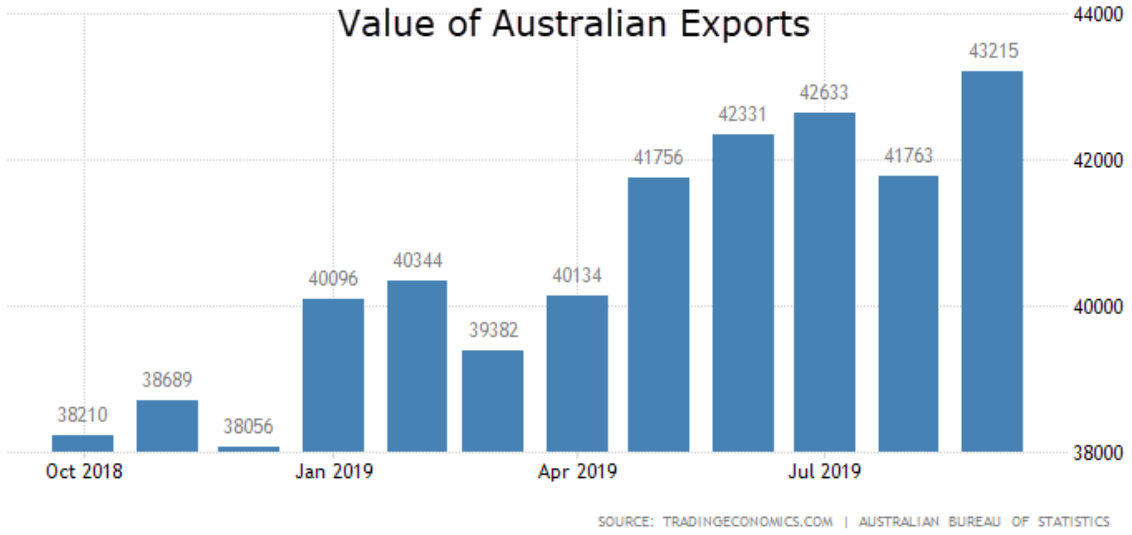
Participation can improve compliance, improve adoptions of best practices, and reduce risks by adopting the Blockchain technology. Summarised are the potential benefits:-

	Without Blockchain	With Blockchain
Supply Chain Transparency and Information accessibility	Fragmented environment for stakeholders involved in cross border supply chains and cargo shipping to collaborate on sharing cargo security information.	Shared Blockchain database for frequent and timely communications among shippers, carriers, brokers and forwarders – leveraging Blockchain as an information sharing/exchange and consensus platform.
Secure Information of Transaction data	Lack of global visibility and transparency.	Chain of custody and who touches and possesses the cargo.
Carrier security protocols and communications	Isolated and fragmented system.	Over shared Blockchain database, carrier provides in advance driver name and photo, and unique appointment or cargo release numbers.
Carrier Validation	Isolated and fragmented system, vulnerable to cyber exploits and insider risks.	Carrier identity and verification based on consensus - know who is carrying your cargo (multiple carrier anchors).
Driver Validation	Isolated and fragmented system, vulnerable to cyber exploits and insider risks.	Driver vetting based on consensus – multiple driver identity anchors (whitelist, employee database).
Secure Cargo Release Process	Vulnerability to fraud, tampering, and uniform standards on best practices	Bring your own device and secure cargo release based on consensus.
Cyber Risks	Single point of failure, prone to attacks (e.g., terminal operations, IT portal, centralised database).	Improved resilience to cyber-attacks.
Insider Threats	Vulnerability to insider risks.	Consensus based, immutable records, much reduced insider risks.
Documentation of Compliance	Lack of documentation of compliance.	Documentation of compliance. Transactions are stored on the immutable Blockchain database.

7.0 Blockchains will drive economic potential for Australia's economy

During 2018-2019 the Australian economy imported $423 Billion dollars of goods in the period Oct-18 to Sept-19 and exported $487 Billion dollars of goods for the same period (Oct-18 to Sep-19) according to Bureau of Statistics





This equates to import values of $1.2B per day and export values $1.3B per day, constituting $2.5B of trade per day. This activity drives Australia's economic benefits and represents a significant contributor to multiple industries and employment for everyday Australians.

When an importer is determining how much product to order and expected delivery timelines, they must consider the following factors:

1. How long will the supplier take to dispatch the order?
2. How long will the product take to reach the outbound port?

3. How long will the product take to clear outbound customs and other port activities required to see the container loaded onto the ship?
4. What Ship schedules are available?
5. How long will the shipping take?
6. How long will it take to clear the port, including customs clearance?
7. How long will the container take to be forwarded to the final destination?

Due to the variable lead-times above, the end to end shipping (Steps 2 to 7 above) are commonly considered in whole months (E.g. 1 month to ship from Thailand to Melbourne or 2 months to ship from Germany to Brisbane). Current best practice is to consider the lead time in whole weeks. E.g. 5 weeks to ship from Thailand to delivery in NSW.

Australian businesses apply these coarse lead times to their purchasing and supply decisions specifically to cater for the unknown lead times of the entire dispatch to delivery across the supply chain. These specific examples were cited from interviews in 2019 with major retailers, transport and distribution businesses dependent on supply chain efficiency as part of researching current obstacles and challenges.

Modern shipping is proving to be both reliable in terms of estimating shipping times between ports to the nearest day and also to be able to predict in advance if there are going to be disruptions to the delivery schedule.

Blockchain offers opportunities to significantly reduce the amount of working capital in the supply chain of Australian businesses and their overseas customers.

Specifically Blockchain delivers economic benefits through:

- Concise information about end to end delivery times allows for accurate modelling of lead times distribution. This will result in reduced working capital.
    - *Note that 1-week reduction in planned lead time for all imports and exports = $17B reduction in working capital.*

- Reducing the time to clear customs

- Pre-emptive documentation clearance
    - Prior to arrival at the docks an appropriately designed workflow system will enable all documents to be pre-cleared and that would allow high confidence that the only lead times incurred in delivering goods, are based on the physical transit times.

8.0 Challenges in adopting Blockchain for CBFCA members

Although the Blockchain pilot tests initiated by leading global industry technology vendors & stakeholders have demonstrated the great potential of Blockchain technology, most on-going initiatives are operating with rather limited scopes or attempting to showcase technology led rather than industry led solutions.

For the CBFCA, Industry & members, significantly more comprehensive efforts realising the full potential of Blockchain require visionary cultural, political and technical changes and the improved coordination among shippers, carriers, service providers and all governmental agencies.

Accordingly, there are several challenges that need to be overcome in order to harness Blockchain's full capabilities across the Customs ecosystems.

- **Technology Challenges.** Scalability is required for Blockchain to obtain widespread approval across industry sectors and users and to tackle global supply chain and trade challenges.

- **Interoperability.** Interoperability is the ability to easily share information, operate, and transact across various different Blockchain systems. Unfortunately, so far, interoperability has proven elusive. In a fully interoperable environment, a user from one Blockchain should be able to read, comprehend, and interact with another Blockchain with little effort

- **Standards.** While it is critical to maintain the freedom for Blockchain developers to be innovative, standards are required in establishing market confidence to support the roll out of Blockchain technology. The more the Blockchain is used, the more transactions and interactions among involved parties should be standardised. Standardisation can further advance the development of Blockchain by providing internationally agreed ways of working, stimulating greater interoperability, and the speedier acceptance and enhanced innovation.

  Many global carriers including Maersk, APL, Kuehne+Nagel have emphasized that the future success of the shipping industry hinges upon the standardisation of Blockchain.

  Many national and international organizations are working on establishing generally accepted technical rules and standards. In April 2016, Australia proposed to the International Organisation for Standardisation (ISO) setting up a technical committee (TC) on standardisation of Blockchain technology. As a result, a TC on Blockchain and electronic distributed ledger technologies was established (TC 307) in September 2016, and international standardisation efforts began in the areas of Blockchain and electronic distributed ledger systems and applications, interoperability, and data exchange. By the end of 2017, 27 member countries have joined the TC to formalise the formation of working groups around terminology, reference architecture, taxonomy and ontology, use cases, security, privacy, and smart contracts (CISION 2017). GS1, the global business communications standards organisation, has also been collaborating with IBM and Microsoft to bring barcode-like standards to Blockchain-enabled systems for supply chain clients

- **Connected Physical & Digital worlds that enables complete trust.** The effectiveness and efficiency of a Blockchain-based trade systems rely on the assumption that information stored on Blockchain correctly reflects reality. Usually, parties involved in global trade and transportation are not anonymous and are relatively stable. While an entity joining the network will be granted a private key to manage transactions, serial numbers can be easily copied and transferred, and the Blockchain itself would be unaware. Truly binding the physical to the digital and creating immutable trust requires an approach that can guarantee information stored in the system can accurately reflects the status of the cargo.

The CBFCA, Industry and members see the Australian Blockchain ecosystem presenting its own unique multi-stakeholder challenges managing paperwork, regulation, disparate agency platforms and technology vendor systems as obstacles to overcome in the adoption of Blockchain enabled trade.

However, despite the size of the challenges, the size of the opportunity and the economic prosperity & benefits for Australia represent a significant Industry transformation that can be both disruptive and positive to all those that drive it forward.

9.0 Government, Legal, Regulatory and Compliance challenges

Significant regulatory and legal challenges exist for the wide adoption of Blockchain in global SCs. The main challenges as classified by the World Economic Forum (2018) are discussed below.

- Distributed jurisdiction and laws: As each node of a Blockchain ledger is potentially located in a different part of the world, Blockchain ledgers do not have a clearly identified location for each transaction. Consequently, it is not clear under which jurisdiction a Blockchain will fall. Deciding which law(s) should be followed and which courts have the right to decide on what matters could be a complex and even conflicting task.

- Legal framework to ensure legal validity and protect against liability: For the successful deployment of smart contracts and transactions, the legal framework on contract formation and recognition should be adaptive to reflect technological developments. The Blockchain should be recognised as legally enforceable and beyond challenge by law. Also, the legal basis for contract formation should evolve so no doubt will arise when an agreement is deemed to be valid and enforceable. For current purposes, the documents and information in the Blockchain should be considered as a reliable basis for LCBs and FFs to report to government agencies and to deal with customers. That would mean that reliance on the Blockchain would operate as a defence to prosecution, penalty, Infringement Notice or other adverse compliance action against the service provider who has relied on the documents and information in making reports to those agencies. It should also prevent action by customers or others in the supply chain (stevedores, airlines and shipping lines) alleging breach of contract or negligence. This may need additional legislative amendments and “working rules” binding those relying on the Blockchain

- Responsibility and accountability: By the nature of Blockchain, there is no single owner of a Blockchain system. Thus, knowing who should be held accountable is often unclear and attributing responsibility for Blockchain technology is challenging. Legal and regulatory frameworks should clarify accountability and attribute responsibility for their actions in a sensible and timely manner.

- Data privacy: The immutability of Blockchain raises the question of data privacy, especially for personal data. Cross-border Blockchain platforms are examples of public networks that will handle personal data. How to balance an individual’s right to privacy in an open network is a

challenging task. Many Blockchain networks today have little control over where data is transferred to and who has access to it.

10.0 Benefits for Australian Government, Regulators and International Compliance bodies

Blockchain undoubtedly has the potential to cause a sea change in the landscape of international trade. First and foremost, trade related applications driven by the digital ledger technology would help to reduce the huge volumes of paperwork and multiple bureaucratic interventions which are considered necessary in pursuit of legitimate trade.

Furthermore, Blockchain case studies rooted in financial services have expanded to the domains of transport or the 'physical' flows of goods, while digitising not only financial instruments but traditional trade and shipping documents.

The CBFCA believes that education of its members and having a genuine voice in any Blockchain platform development is essential to understanding the technology first and foremost and then when armed with that knowledge, be able to impartially explain to Australia's international trade participants where the opportunities and threats may exist as this new technology gains further momentum in terms of applications. Improving the operations of LCBs will also advance the interests of all parties in the supply chain.

The Australian governments also face challenges that arise from:

- Invoice fraud,
- False declarations of origin,
- Special arrangements for customs unions and free trade agreements,
- Authenticating documents.
- The cross-border movement of goods also carries risks for environmental protection, public health, animal health, intellectual property rights, fighting global terrorism and organised crime.

Increasingly, customs authorities have to enforce complex trade measures, imposed to protect local markets from countries with comparative advantages.

Enforcement to meet these challenges often results in net loss of revenue in tax & duty for governments.

The needs of businesses and governments require a solution that offers a single source of truth for information about trade flows.

Blockchain technology offers a transparent, secure, immutable and user-friendly data platform that provides end-to-end visibility for international customs information and document chains.

One additional tool that Blockchain offers, which does not yet seem to have been explored extensively in the customs arena, that may be particularly beneficial in the field is the "smart contract".

When Blockchain programmers began creating blocks on some of the first Blockchain systems, they discovered that, along with transaction information, the blocks could also hold lines of instructions. These instructions could be used to trigger some pre-agreed event once the triggering information enters the chain. For example, certain instructions to release payment once information appeared in the Blockchain that a shipment had reached a certain point. These automatically executing instructions became known as "smart contracts," and build on the Blockchain benefit of eliminating or reducing the need for a middleman to verify that an event has occurred and then take some action.

11.0 The Australian Government's role by participating in solving current challenges & possible integration of government, industry, security and regulatory processes.

Australian Federal Government and its agencies require the information to be comprehensive, complete and timely as part of its obligations to preserve security, collect information and recover revenues as required.

However, the obligations on the reporting parties (including LCB) are often compromised by their limited access to documentation required to verify the nature of the goods, their origin, their value and the means by which they are transported. Limitations also arise when that information is provided by clients who may not be in a position to provide that information or provide incorrect information (deliberately or inadvertently).

Government, those providing services in the supply chain (including reporting parties) and their clients, as well as their financiers and insurers would be best served by the availability of secure, comprehensive original documentation relating to the goods and their carriage as well as other information required regarding weight, scanning and packing, insurance and payment. That information and related original documentation can be provided, so far as relevant, before the goods have left the point of export, then through the supply chain to the point of import and delivery to the ultimate recipient of the goods, being updated as each stage is completed.

Those stages can trigger the actions of various parties, so that once the parties reporting the export and import of the goods are satisfied with the information provided they can then complete those reports which allows review by the agencies at the port of export (SOLAS/security scanning), the carriage and transport of goods to take place and triggers payment and insurance of the goods to take place at the relevant times depending on the terms of sale (for example the Incoterm). This would be a version of a "smart contract" developed for this purpose. Government would also have access to the documentation and reports in "real time" enabling its agencies to check on its contents and lodge any concerns. Details of loading and packing can be provided to cover off COR obligations. This would enable reporting to and access by, all relevant agencies with interests in the goods. Those undertaking the carriage and reporting for the goods would have access to original documentation in a secure and transparent manner allowing correct decisions and reporting.

The movement through the Blockchain environment requires all agencies' requirements to be satisfied (once they have all been mapped depending on the goods) and all obligations also mapped depending on the agencies.

While some of this information would be provided by third parties (shipping lines, airlines and ports) this has the advantage of including original documentation from the contracting parties with verification by others as needed, including CoOs (Certificate of Origins), approvals and permits and would be "owned" by those in the supply chain paying a third party Not For Profit (NFP) for access (membership) to the Blockchain. The NFP would be in a position to then work on commercialisation of the information and the Blockchain beyond members to others who would seek these benefits as well.

Australian Customs transactions and ABF Border control becomes more data driven

Information on any shipment – whether it be a proof of purchase, a clearance form, a bill of lading, insurance – can be made part of a block, a transparent chain of custody, and be accessible to suppliers, transporters, buyers, regulators and auditors. Therefore, Customs would be able to see the necessary and accurate data (seller, buyer, price, quantity, carrier, finance, insurance etc.) that have been tied with the goods to be declared and also keep track of the location and status of such goods in real time. Such a complete visibility, if built into the sphere of regulatory oversite would ensure a better-informed and more data-driven Customs function in terms of its day to-day operations.

Customs could automatically extract information from the primary sources for declaration purposes, thereby enhancing the accuracy and quality of their data and immutability thereof as well. Reducing the burden of manual verification and the resources required to validate declarations would lead to faster Customs declaration processing and reduced end-to-end lead time.

Sharing the relevant data through Permissioned Blockchains can help Customs and other border agencies realise the envisaged end-to-end "data pipeline". Utilising such Blockchains that can be operated by supply-chain consortia, and continuously accessed and updated by all participants, these regulatory authorities would be able to ensure they have accurate and reliable data at hand and obtain such data from the right sources. By using a common distributed technical platform, they could leverage the power of Blockchain technology to open up new possibilities to share information and resources, particularly in a Single Window environment and for cross-border data exchange purposes

Australian Customs transactions and ABF Border regulation would become more embedded within the trade process

Blockchain technology could be embedded into Customs' practices through a common platform which would embrace trade-related commercial entities (e.g. banks, shipping lines, freight forwarders, Licenced customs brokers) as they are regularly engaged in trading business, and thus would enable the sharing of information among them.

The participation of numerous (or at least a great number of) shippers (exporters) and consignees (importers), whether corporate or individual, is NOT necessarily a key to the success of such an initiative so long as the information on related documents by consignment, as recorded by aforementioned business entities on a common and distributed ledger, has been made accessible to Customs.

Such information, once incorporated into the chain of blocks, cannot be erased or tampered with by anyone, therefore, regular Customs procedures would be limited to checking the submitted data against their own database.

Customs could automatically clear goods that have been 'pre-screened' by Customs on its ledger at an earlier stage, even without withholding them at the time of declaration. In other words, Customs would be able to direct their limited resources to the handling of a category of trade which involves operators and financiers as being 'outside' of the given framework of public-private partnership.

Blockchain improves revenue compliance and cooperation between ATO (Tax) and Customs (DoHA)

Blockchain technology could provide ATO & Australian Border Force with sufficient ammunition to narrow the gap between expected fees and tax revenues and those actually collected;

A Blockchain enabled ecosystem makes fraud and errors far easier to detect because the system provides clear and transparent information about transactions and items in the network.

The same is true of trade-related applications that could be developed for the sake of Customs particularly in revenue compliance.

Once the data on certain transactions as exporter (seller) and an importer (buyer) are recorded on the Blockchain and thus made accessible to Customs, importing country's Customs, for example, will collate the importer's declaration with the relevant data that can be retrieved from the network involving the two parties.

If these transactions are taken over by smart contracts (a Blockchain feature) which self-execute, the importer's purchase of goods, which is never completed without the remittance of the equivalent value of funds (money transfer) to the exporter, can be automatically followed by the duty payment at the time of goods clearance.

Finally, applications of common and distributed ledgers could transform the existing or planned mechanism for reliable and real time exchange of information (EOI) between Customs and other relevant authorities, thereby enhancing Customs' capabilities to identify fraudulent practices.

Blockchain can help to combat financial, drug related and people smuggling crimes as well as recent Covid-19 virus impacts on people, trade and travel.

Criminals exploit legitimate trade (including banking systems related to trade finance) to disguise their illicit proceeds (billions of dollars annually). Such crimes, often referred to as trade-based money laundering (TBML), involve several schemes that have been worked out to complicate the documentation of legitimate trade transactions. Red flag indicators for potential TBML, which may allow Customs officers to detect the fraud in real time, include false reporting such as overvaluation or undervaluation of the goods concerned, and unusual shipping routes or trans-shipment points.

In this regard, the Financial Action Task Force (FATF) has occasionally issued stand-alone reports that 47 WU GTPC (2017), 7. 20 address TBML and best practices. One of these documents specifically calls on countries to allow the investigative authorities access, directly or indirectly, and on a timely basis, to trade data and relevant financial information.

The recent 2019 – 2020 Coronavirus global impact has affected trade and travel in ways Industry is unprepared for and Blockchain represents a potential method to help track origin and source of issues along with better validation and security than current methods.

In particular, Customs would be able to enrich their red flag indicators while utilising their conventional technique of unit price analysis or trade statistics of two trading partners; the iterative comparison between their trade data submitted by operators and a series of capital transfer recorded by financial institutions would lead to a greater probability of finding the clues of possible financial crimes.

The Blockchain technology represents a step forward for Customs and Trade, both of which desire greater efficiency in their business operations. More specifically, it will help to assure Customs of the security of a category of (legitimate) trade, thereby encouraging Customs and Trade to streamline their tasks (often called 'red tape') that have been required for compliance thus far. In the meantime, Customs will be able to concentrate their effort and attention on the rest of trade – beyond the reach of the Blockchain-driven 'trusted trade'. Blockchain is a huge opportunity and technology capability to enhance Customs operations in the digital online world of international trade.

As recently as Feb 2020, the Australian government has released its National Blockchain Roadmap representing a desire to explore and implement Blockchain in specific use cases and indicative of the growing importance for CBFCA to become involved on behalf of industry and for the benefit of multiple dependant stakeholders in International Supply Chain.

12.0 Licenced customs broker benefits of using Blockchain technology with single window integrated with Australian border protection agencies

The role of an Australian customs broker and freight forwarder has become increasingly important as digital global trade, online ordering and cloud-based technology systems have exploded over the last 10 years.

Today's broker and forwarder deals with multiple transactions, multiple customs and other border agencies and multiple transport lines for any given transaction being processed into or out of Australia.

Accuracy of data has always been a critical and essential role but with volumes increasing exponentially along with email and web online systems reaching their limits for data exchange, several key challenges could be addressed by Blockchain and provide benefits for brokers in these areas:

- Ability to update business and contact details once which would transfer across multiple border agencies instead of having to amend with all parties
- Having one financial gateway to pay all the various government departments creating an ease of financial reconciliation
- Ability to transfer financial data at a transactional or general ledger level into business private operational software when required as the businesses needs it
    - Rather than when the government decides to do it.
- Having one registration and one set of identification to operate as a licensed entity
- Plugged into a chain where the information is building on the way rather than requesting it for the customs declaration
- Creates a real time update of cargo location benefiting both the customs broker and the international trader.

- Certainty that the customs broker is reporting correct data to which they can require further evidence and know that it will be unaltered particularly in high risk areas
- Gaining instant processing from government departments who have an interest in a border transaction
- Having access to readily available contact details of a particular government department without having to store and locate them
- Eliminates the possibility of losing communication with government officials which may be relied on at a later date
- Eliminates the use of email, a bad source of communication and also segregates private communication to government communication
- Allows compliant business to flourish and not get bogged down in red tape and time-wasting enquiries
- Stops double and triple entering data (a complete waste of time)
- Encourages compliant behaviour with the thought of real time auditing which will have a butterfly effect through the international trading sector

Currently none of the multiple system used by brokers and forwarders adequately solves these challenges and yet they are important benefits that Blockchain enabled solutions can address if the ecosystem and platforms needed are designed with industry input and capabilities that drive efficiencies from improvements over today's practices.

13.0 Overcoming Constraints limiting Blockchain adoption and acceptance in Australia.

The major constraints to a successful Blockchain project outcomes are the wide ranging levels of understanding and misunderstanding of Blockchain based technology across industry and Government and the potential of large third party interests using their commercial size and influence to utilise Blockchain based technology for proprietary and/or exclusive use, thereby ultimately resulting in potentially less competition to service Australia's international trade.

The CBFCA aims to meet this challenge through the research and development/evolution of planned methodology recognising that the concept needs to be broadly accepted and that also seeking to address concerns that this may "slow" the process by including LCB certification as part of the Blockchain by:

a) ensuring that this Project will conclude as an industry White Paper, that will, by design, lead to increasing awareness of this technology and its potential benefits for industry, as against providing specific solutions down to a micro level of detail, with such detailed solutions aimed at "take up" by industry and Government, who would be able to utilise the White Paper's findings as reference starting points.

b) The appointment of what it understands to be a panel of highly skilled, impartial and independent experts to the Project working group, who the CBFCA believes do not and would

not, seek to secure exclusive business advantage through the use of this technology but contribute significant expertise to expedite results.

c) ensuring that LCB and other skilled service providers in the supply chain engage in the development of the concept to ensure it is widely endorsed and benefits from their expertise in Australia and overseas

d) Engagement with the ABF, DoHA, DAWE and other relevant government agencies here and overseas to ensure that there is government support and endorsement. This would include work with DFAT so that it becomes a key concept in the "Trade Facilitation" Chapters in current and future FTAs

e) Future engagement with the WTO, WCO, ITC and other relevant bodies (ASEAN, APEC) so that the concept could be supported and endorsed in the international agenda. The support and endorsement through government and agencies in Australia and overseas in international for assists broad adoption and ownership beyond private company exploitation.

To deal with this challenge, it is intended that the working group will be assigned specific and separate tasks to start and complete, with reporting/feedback/consultation/reporting processes featuring with the working group's Project methodology, noting that information relating to the Project's progression is planned to be circulated in a commercial/in-confidence and transparent manner to each member of the working group.

This could be "owned" by an industry collective through a Not for Profit structure.

14.0 Review of global Technology platforms and technologies emerging

A number of emerging international supply chain based Blockchain initiatives have been developed in recent years, two examples being:

- GSBN/CargoSmart (www.cargosmart.com)
- Maersk/IBM/Tradelens (www.tradelens.com)

The Tradelens website contains a video which provides a visual overview of how the supply chain process would look under a full scope Blockchain process.

The CargoSmart website contains images of what would change under such developments.

These initiatives provide solid awareness of where the use of Blockchain technology would benefit the international supply chain processes, ideally by:

- Eliminating documents
- Forcing secure, encrypted data processes
- Instant timeline mapping
- Enforcing product and cargo identification, tracking down to the lowest unit breakdown level, within the full length of the international and domestic supply chain
- Allowing authorised users access to all relevant data, to which they are commercially and lawfully entitled to access

- Ensuring accurate classification of cargo and freight identification and types
- Providing accurate date for replenishment planning
- Providing new/additional sources of data within the supply chain process for analysis purposes
- Providing full and accurate data to government agencies through trusted and secure information gateways

The challenges for these systems and others is that for them to work to their fullest capability and produce maximum benefits, the following international business environments need to exist:

- All international trade-based information being provided in data format only (as an example, this is not the case with commercial invoices, packing lists, etc)
- All industry and government agencies involved with country to country shipments, must be fully Blockchain active, particularly at regulatory information gateways
- All parties in the supply chain, down through to LCL/FAK level, need to be active participants, not just down to FCL level

These two example Block chain based initiatives have developed initially from core shipping line collaborations and now state that they have evolved to now include a number of shipping lines within their respective “stables”, so as to provide industry with confidence that they operate independently in terms of commercial interest.

15.0 Blockchain Knowledge Gaps – need for Industry based Training

CBFCA offers two industry-based Diploma courses through its Registered Training Organisation (RTO) the International Trade and Logistics College (RTO 30772). The Nationally Recognised Diplomas are:

- TLI50816 Diploma of Customs Broking
- TLI50316 Diploma of International Freight Forwarding

As this stage the Diplomas do not contain coverage of Blockchain technology at any level. Given the rapid development of Blockchain and more specifically those involved in International Supply Chain, the inclusion of Industry based Blockchain training is paramount.

Currently, the VET sector has two Nationally Recognised Blockchain courses available:

- 10849NAT - Diploma of Applied Blockchain
- 10747NAT - Advanced Diploma of Applied Blockchain

Of the four registered providers that offer these courses, only two currently offer an online course and two providers “no longer run this course”. The units of competency within these Diplomas, whilst

being of value in terms of introductory education in Blockchain technology, are generic in nature and do not provide specific coverage of Blockchain within the International Supply Chain.

The CBFCA intends to review the course content for its leading Australian industry-based Diploma courses, with a view to blending into those, Blockchain based content and resulting innovation in terms of usage and effects within the International Supply Chain.

Additionally and given the speed of technology and procedural change multi modal forms of education, training and learning need to be continually kept up to date to support and encourage adoption of Blockchain by CBFCA members and Industry.

16.0 Proposed future collaboration activities by CBFCA

Despite growing investment from private sectors on Blockchain, few efforts have focused on the integration of the needs and requirements from governmental agencies.

There is a lack of understanding of how governmental agencies across the world should be involved and how to level these initiatives led by the private sector. In addition, there is a potential tension between business operators and technology/solution providers.

While developing new technologies and business models based on Blockchain, research universities and companies that work closely with governmental agencies for further facilitating global trade and ensuring compliance with trade law and regulations MUST be oversighted by an industry body such as CBFCA that represents members at the forefront of Australia's trade and economic prosperity whose expertise should not be ignored.

Specifically, future research directions for joint efforts among government, industry and academia should include:

- Assessing from technology, business, policy, as well as operational aspects, where Blockchain and smart contracts can be applied to the current flow of information and documents for governmental agencies. Identification of places where Blockchain can be integrated for automation, data harmonization, and information exchange is a critical step for the governmental agencies to understand the business flow, benefits, and potential use cases of Blockchain to improve and secure trade.

- Developing models and knowledge for governmental agencies in forms of architecture specification, analysis, and recommendations. Models can include open architecture designs as well as visual representation and specifications of business flows and Blockchain architecture. The analysis and recommendations should provide guidance on how government could be involved in the ecosystem. While government may not be the owner of the Blockchain infrastructure, this effort may help to integrate governmental agencies as a critical participant in the SC network to facilitate trade and secure transactions. The value proposition in collaboration with CBFCA for governmental agencies and involved parties regarding the use of Blockchain in global trade should be clearly articulated and conveyed.

- Identifying both technical and non-technical challenges regarding feasibility and viability of integrating Blockchain into global trade from a governmental perspective. Such issues may include confidentiality assurance, access control, interoperability, open architecture specification, and integration with standardization.

- Exploring paths forward and solutions where interoperability can be achieved. Accessing CBFCA Industry and Member expertise could provide an initial target and priority list for improvements that act as enablers for future Blockchain add-on solutions driving continuous improvement.

17.0 Proposed Next Steps - co-development between Australian Governments and CBFCA

As recently as February 2020, the Australian Federal government has been exploring and evaluating the benefits of Blockchain and released its National Blockchain roadmap.

In its current state, the roadmap does not showcase any businesses applying Blockchain from CBFCA members or the Industry and this presents both the Australian Government and CBFCA a unique opportunity and timing to potentially pilot, improve and address the challenges and opportunities presented in this paper collaboratively.

The CBFCA is prepared and ready to define, develop and collaborate on, an Industry led scope and architecture that will address the issues raised in this Whitepaper and ensure the benefits and outcomes achievable through Blockchain are realised.

Resulting from this White Paper process, the following projects, are considered by the authors as being essential next steps for industry and government agencies:

- Summary of the strategic advantages that Blockchain based technology would provide industry stakeholders and Government bodies in specific agencies and cross-agency secure information and data transfer with improved security and visibility.
- On behalf of industry, directly assist DoHA and other relevant agencies in developing and “industry owned” single window for international trade facilitation in Australia
- Definition of Blockchain in terms of its application for Australia’s international trade and Industry sectors supported by standards
- Examples of current Blockchain use in servicing international trade (including reference to the innovation benefits for each example) that can be used to educate, promote and apply practical uses of Blockchain in everyday transactions.
- Reference at a macro level as to how Blockchain can assist importers, exporters, Licenced Customs Brokers and International Freight Forwarders in areas that result in reducing costs and increasing information/data flow within the supply chain, in addition to improving international trade information and data quality to relevant Government bodies
- Identification of Blockchain based education and training needs for this industry sector in Australia as an enabler
- Development and use of a Blockchain based identification and registration system that increases identity and validation of registered LCB and FF with enhanced visibility by DoHA.
- Improve awareness of the importance of access to trusted original data in the international supply chain process, in a manner designed to improve and standardise compliance outcomes, including revenue collection, border security and consumer protection.

- Advance trade processes to be consistent with the WTO Trade Facilitation Agreement
- Work with relevant State Government bodies to ideally develop Port Community Systems ("PCS"), which would be ideally designed to allow for complete, appropriate and timely access to all data and processes within the international supply chain at the port interface to authorised parties, devoid of commercial and competing interests
- Opportunity assessment of the potential to augment provenance reporting services for commercial consumption
- Analysis of recently successful Blockchain technology-based trials involving agricultural and medical products, where the encrypting of data from the start of the process, through to end delivery, is starting to produce positive results in terms of data control, access security, integrity and efficiency
- Financial Impact assessment of the deployment and adoption of a Blockchain solution across the Licenced Customs Brokers, Freight Forwarders and related government bodies.

What is clear to the CBFCA and the authors of this White Paper is that a "watch and wait" position by industry and government agencies in relation to Blockchain based technology advancement would only serve to potentially block Australian involvement in the medium to longer term with this emerging technology with resulting risks in the areas of diminished impartiality in relation to data access, combined with the loss of Australia's already weakened commercial influence in Australia's international trade processes.

18.0 Reference Links & Research for this Whitepaper

Following are the CBFCA acknowledgement and references reviewed in the preparation of this Industry based whitepaper reviewing a number of Blockchain, Security, AI, Data, Supply Chain and Customs trends emerging globally.

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19.0 Input Recognition for this Whitepaper

The CBFCA and the authors of this White Paper, wish to acknowledge appreciation to the following people and organisations, who have contributed to the process involved in the development of this White Paper:

- Department of Home Affairs
- Australian Border Force
- GSBN/Cargo Smart
- Maersk/TradeLens
- Transport for NSW
- International Trade and Logistics College (RTO 30772)
- The content contributors listed on page 4 of this White Paper