Digitalising Australia's trade and border systems

Data-rich supply chains driving border security and efficiency

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Contents

Creating digital supply chains is an investment in resilience, efficiency, and security – but who should be making that investment and how?

In brief:

‣ Digital supply chains have the potential to enhance the trade of goods by making supply chains more robust, efficient and secure.

‣ Australian industry and governments would see economic benefits, improved border efficiencies, and acceleration of Environmental, Social and Governance (ESG) initiatives.

‣ Creating digital supply chains requires the government to incentivise industry-led transformation by reforming rules and regulations.

For Australia to thrive in a global economy, government investment in digital supply chains is essential. A deliberate and incremental approach is required to get this right.

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What are the digital supply chains?

Digital supply chains use digital tools and systems to manage the flow of goods from suppliers to customers. Unlike traditional methods that rely on paper documents, digital supply chains use readily accessible electronic data, which can be checked frequently and audited quickly.

A combination of technology innovations is making supply chain digitalisation increasingly simple to achieve. The cost of distributed ledger technologies, like blockchain, is falling. New digital artefacts such as smart contracts, verifiable credentials, electronic signatures and transferable electronic documents are creating opportunities for increasing automation and efficiency. The assurance that information is verified reinforces transparency and accountability. The digital artefacts will also foster trust throughout the supply chain.

Transitioning to digital supply chains can bring massive benefits.

Imagine, for example, Aziza running a wholesale outlet selling ethically sourced food. Recently, there have been significant challenges beyond her control. Dealing with unpredictable customer demands, escalating costs, insufficient stock and the imperative to constantly validate the ethical sourcing of her inventory have all compounded to affect her business.

Regrettably, Aziza's experience is not unique. Global supply chains have been overwhelmed and consumer behaviour has become increasingly volatile ever since the COVID-19 pandemic. Consumer volatility peaked whilst traditional supply chains strained until they broke. Whilst this has stabilised somewhat, digital supply chains can give businesses the upper hand in navigating supply and demand pressures caused by other macro impacts such as extreme weather events, geopolitical upheaval, abrupt consumer hysteria, raw material shortages, and sanctions.

Digital supply chains provide structure, resilience, and clarity in an increasingly turbulent global marketplace. They provide enhanced transparency, reliability and traceability. These enhancements, in turn, enable business owners like Aziza to easily verify the source of their stock and the thoroughness of quality assurance procedures, and confirm the responsible production, transportation, and certification of all products.

She can do so at any time because digital supply chains maintain a securely traceable record of every transaction, automatically validate certifications, and establish confidence in the identities of all parties involved in the transfer of goods and products.

For Aziza, digitalising her food management system can also allow her to satisfy import compliance requirements with the Department of Agriculture, Fisheries and Forestry (DAFF) under a Food Import Compliance Agreement (FICA).[1] The transactional data generated by digital supply chains can also streamline audit and compliance processes, giving regulatory authorities greater confidence in Aziza's imports, and thereby reducing interventions and frustrating border delays. Whilst the technology is already well established, the non-technical components present a bigger challenge in the implementation process.

> " If we want to be connected to the rest of the world and be an internationally facing country, we must participate in the new supply chains that will dominate the world economy.[2]

Jennifer Westacott AO
Chief Executive of the Business
Council of Australia

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Progress so far

Digital supply chains aren't a novel idea. They've been attempted by government and industrial sectors, with varying degrees of success. To get the most out of these efforts, everyone involved in the supply chain needs to work together.

Each link in the chain – government bodies, regulators, industry players, logistic providers, and even the end users – has a role to play. With decisions made by one link potentially impacting others directly and indirectly. Therefore, decisions about implementing technology, standardising procedures or adopting new policies can't be made in isolation.

Australia's collaboration with Singapore for a blockchain trial of integrating the Digital Verification Systems[3] and the Digital Economy Agreement[4] has demonstrated the Australian Government's appetite to embrace many of the building blocks for digital supply chains.

Similarly, the launch of the Biosecurity Portal DAFF has removed a reliance on hard copy identity documents and enabled the use of digital submissions of information from trusted sources.

These digitalisation efforts by the Australian Government, whilst positive, have unfortunately been siloed and fail to address one of the primary use cases for the use of digital supply chains, integration with Australia's trade system.

The shift towards digitalisation is becoming more pressing within the trade industry. Electronic trade documents are not just a concept but are being

actively used. Indeed, opt-in blockchain-based platforms that are explicitly designed for creating and transferring digital documents are growing.

In addition, there have been various attempts to implement blockchain technology within the industry's operational structure. Despite these initiatives proving technically successful, their overall impact has been diluted by the lack of collaborative support from across the industry and the lack of government promotion.

This highlights that the introduction of new technology alone is not the sole answer to successful digitalisation. The industry is keenly waiting for the government to actively participate in driving the change.

DAFF has already showcased the effectiveness of such collaborations with its recently rolled out National Agricultural Traceability Strategy[5] (Traceability Strategy). This identifies a 10-year plan placing trade compliance and competitiveness improvement at its core.

The coordinated and collaborative efforts from industry and government, which realised the Traceability Strategy, are needed to identify a shared vision for digital supply chains. Such a vision must encompass technology, policy, process, and people.

Industry is ready and waiting to work with Australia's governments to create a shared vision and a meaningful plan-to-action detailing how to get there.

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An opportunity to build a more resilient supply chain and advanced risk assessments

It's easy to see the appeal of a digital supply chain for businesses like Aziza's. But investments in digital supply chains also benefit Australia's State and Federal governments, especially when the rising cost of living and declining productivity pose economic challenges.

A network of interlinked digital supply chains can significantly increase productivity, giving traders more time to focus on creating outcomes. The resulting data can also provide opportunity for Australian businesses to analyse the flow of goods, reduce waste and allocate time and resources more efficiently. All of which can reduce the cost of bringing goods to market.

Risk management can also significantly improve with digital supply chains. A risk-based assessment approach can identify high-risk scenarios and assess trust levels in supply chains. For the government, this radically improves border controls, the detection of harmful substances and revenue collection. Businesses, in turn, would benefit from faster clearance times and fewer non-tariff trade measures.

Moreover, a robust digital supply chain helps exporters navigate the complexities of global trade more effectively. They give exporters the agility to adapt to changes in domestic and international regulations, and to respond to diverse market demands. Such adaptability could allow Australian exporters to explore and capitalise on new markets, thereby expanding their global influence.

> " Our international border is an incredibly important strategic asset that both drives and protects our economy, but it also requires strong foundations, of course, based on integrity and on security.[6]

Michael Outram APM
Commissioner of the Australian Border Force (ABF)

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What can government do?

Government has a crucial role to play in making and linking of digital supply chains as easy and as secure as possible. The cornerstones of this action should be investments in the trust, integrity and autonomy of supply chains.

A key step in achieving this is the establishment of clear and flexible regulatory frameworks that are conducive to digital processes. Introducing changes in policy within government entities like the Australian Border Force, DAFF, Austrade and other border agencies will enhance this integrity. To achieve these outcomes requires a continuation of the processes, started by the Department of Finance, to recognise electronic documentation, integrate government information-gathering mechanisms with data sharing protocols and explore options for simpler and user-friendly regulations.

Creating comprehensive data governance frameworks is essential to address data ownership, protection and promote a 'collect-once, use-many-times' approach. Without this, there is a risk of data fragmentation across competing digital supply chains, thereby decreasing interoperability and the ability to make informed decisions – leading to a decline in public trust.

Maintaining privacy rights and implementing strict cybersecurity measures is critical in gaining system trust for digital supply chain operations. The Simplified Trade System Implementation Taskforce's work on cross-border data-sharing standards is a good start in this direction. Greater collaboration with industry stakeholders can strengthen cybersecurity and data standards further.

A review of cybersecurity regulations can instil greater trust in the system, as presently, only one-in-five top-tier leaders believe their approach is effective against present and future challenges. Government can set standards to protect digital supply chains from cyber threats, such as setting firewall and encryption protocols, implementing continuous monitoring, and conducting regular security audits.

Clarity, regarding data management without misuse within digital supply chains, is also crucial. Government regulations should ensure that data collection, storage and processing of personal and sensitive information complies with all laws. Transparent operations communicated clearly to stakeholders will foster trust and highlight the commitment to responsible data management. The regulations should be designed to foster innovation and facilitate security, privacy and compliance with international trade standards.

To do so, government should work with industry to promote the development and adoption of industry standards for digital supply chain processes. It should understand industry challenges, co-create solutions and use collective market expertise to advance digitalisation efforts. Whilst, simultaneously, fostering collaboration between the public and private sectors that drive digital supply chain initiatives.

> **"**
> Australia has a great story to tell, but there are clear opportunities to modernise and harmonise our traceability systems. For too long, we've been missing a coordinated and strategic approach to improve our world-class agricultural traceability systems for the future.[7]
>
> **Murray Watt**
> Minister for Agriculture,
> Fisheries and Forestry

Government also plays a leading role in continuing to allocate resources for the development and maintenance of digital infrastructure that include robust broadband networks and data centres. This role also extends to increasing digital skills that enable all businesses, especially smaller enterprises, to have the necessary connectivity and resources to participate in digital supply chains. The relevant training must include ongoing security education and awareness programmes for all stakeholders involved in the digital supply chain. Educated users are better equipped to recognise and respond to security threats and contribute to an overall culture of cybersecurity.

Building on setting frameworks, and embedding trust, government can support with targeted technology adoption and innovation.

The recognition of electronic signatures will remove barriers to digitisation, and blockchain would enable data sharing based on mutual trust. Verifiable Credentials (VCs) through chains of trust create very detailed information on the provenance of goods and trade actors without the need for a centralised register. They can be adopted in older, paper-based processes with QR codes; as well as modern, digital trade systems in a way that is cryptographically secure, private, and machine-verifiable.

Coupling the regulatory reform, data frameworks and security standards with the adoption of innovative technology will create the foundations for paperless trade. But this is only the first step.

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Moving towards paperless trade

The government can significantly impact investment in digital supply chains by reforming its own regulatory frameworks, thereby incentivising industry whilst capitalising on digital trade technologies.

This would build trust in the system, streamline customs procedures, cut down paperwork and expedite cross-border transactions. Thereby reducing the time and cost associated with international trade.

There are templates for undertaking this work. For instance, the UK passed the *Electronic Trade Documents Act* in July 2023, granting digital and paper trade documents the same legal status. This then paved the way for innovations like the UK's first fully digitalised shipment.

Leveraging the digital supply chain for trade document creation revolutionises the traditionally paper-intensive and time-consuming processes associated with international trade. This transformation brings substantial advantages, enhancing efficiency, accuracy and overall trade facilitation.

Stakeholders, including exporters, customs authorities and logistics partners, can work on documents concurrently in real time. This fosters better communication, reduces delays, and enhances overall transparency in the creation and approval of trade documents.

The adoption of digital supply chain solutions also offers governmental benefits. Enforcing data accuracy at entry, as is currently done, can be replaced by more efficient digital solutions that reduce errors, and provide for more efficient audits and investigations of inaccuracies.

Digital documents simplify ongoing compliance with international trade regulations − cross-referencing data against changing regulatory requirements. Every interaction is tracked, inherently enhancing security and accountability in the event of discrepancies.

Using the globally recognised UNCITRAL Model Law on Electronic Transferable Records (MLETR) should fast-track Australia's digital advancement. Implementing it in Australian trade, however, would require considerable revision of the century-old trading regulatory system. Hence, the Australian Government must persistently modernise its complex trade rules and encourage businesses to digitise their operations.

Along with regulatory reform to enable industry-led initiatives, the government should also consider introducing incentives for businesses to adopt digital supply chain technologies within the export sector.

Building upon effective platforms like the Simplified Trade System Industry Advisory Council, the Australian Trusted Trader programme, and other forums, the government could work in synergy with industry to foster innovation and encourage widespread adoption.

In summary, harnessing the digital supply chain for trade document creation is transformative in modernising and optimising international trade processes. The integration of digital technologies enhances accuracy, reduces processing time, and establishes compliance, positioning exporters at the forefront of a more efficient and agile global trade landscape.

> " By establishing a robust evidence trail for quality goods, traceability can help distinguish brands from their competitors, empower consumers to make informed choices, support ethical and sustainable practices, and mitigate the risks associated with counterfeit products for both consumers and businesses alike.[8]
>
> **Arnold Jorge**
> Chief Executive Officer,
> Export Council of Australia

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How this can be achieved

It requires a staged, incremental approach and cooperation across government:

‣ Building a strong foundation of trust
‣ Enabling automation of government and industry processes
‣ Fostering continual improvement

The early stages of this incremental approach will require substantial government intervention. Building the frameworks and foundations of trust will require cooperation among numerous agencies bringing their key stakeholders together to review, reform and remove legislation and regulation. And to assist in establishing mechanisms for industry, to collaborate around standards that are technology-neutral to drive uptake and innovation.

The next phase in the evolution of supply chains involves leveraging the trust that has been built, to further automate operations that create more significant benefits for all involved parties. Achieving this requires determined efforts from both industry stakeholders and government.

For the government, this would necessitate implementing strategies to effectively use the wealth of data yielded by these digital supply chains. This can directly benefit the industry by accelerating clearance procedures, and benefit society by safeguarding Australians through enhanced protection against illicit and harmful substances.

Paperless trade, which is at the core of digital supply chains, represents just one of the many potential areas for improvement. The information that arises from digital supply chains has a wide range of applications within the government, including use in biosecurity, agriculture, and other industry portfolios.

Creating a roadmap and timeline for governmental agencies to rely on digital supply chain data in all available use cases would facilitate further automation of government processes. This would not just provide a concrete rationale for investments in the sector, but also visibly demonstrate government's confidence in the robustness of the digital era for supply chains.

> **"**
>
> Simplifying the processes and systems that enable Australian exporters to trade more efficiently will deliver flow on benefits to virtually all aspects of everyday life. More trade means more well-paying jobs, more national income, and more opportunities for business.[9]
>
> **Hon Don Farrell**
> Minister for Trade and Tourism

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Caution and consideration

Whilst digital supply chains are potentially transformative, they do have potential pitfalls.

Digital divide

Avoiding proper and timely intervention, high initial investment and the necessary regulatory management costs may, unknowingly, deepen the digital divide. Organisations and regions with the means to invest in enabling infrastructure may reap greater benefits than those unable to make a similar investment, which could inadvertently disadvantage smaller business owners.

Digital disruption

Operational disruptions are a common concern in any tech-driven system and must be planned for. The increasing volume of trade makes paper fallbacks ineffectual. Though overreliance on digitalisation without contingency planning can lead to broken supply chains impacting the one-in-five Australians (or one-in-four in regional areas), whose jobs are dependent on trade.

Inclusive benefits

Although using incentives to propel the adoption of digital supply chains by importers and exporters is beneficial, tailoring the system explicitly for their needs may inadvertently reduce cumulative economic benefits. The government, therefore, has a crucial role in advocating for broader adoption.

Broad adoption

Widespread uptake of digital supply chain solutions is essential in realising their benefits in streamlining operations, reducing manual labour, minimising errors, and optimising global efficiency within the supply chain, alongside real-time visibility.

High adoption rates create uniformity in data entry, storage, and retrieval - contributing to improved precision and dependability of information. Accurate data is vital because it forms the cornerstone of accurate analytics, forecasting and decision-making tools, enabling more informed and comprehensive business strategies and governmental policies.

High adoption rates also foster continuous innovation. As more participants integrate digital technologies, motivation for further advancement grows. It also enhances the resilience of supply chains because when disruptions do occur, a digitally interlinked network can bounce back more effectively than any analogue process. Better risk identification, mitigation, and overall supply chain resilience are achievable because of the visibility and data-driven insights made possible by widespread adoption.

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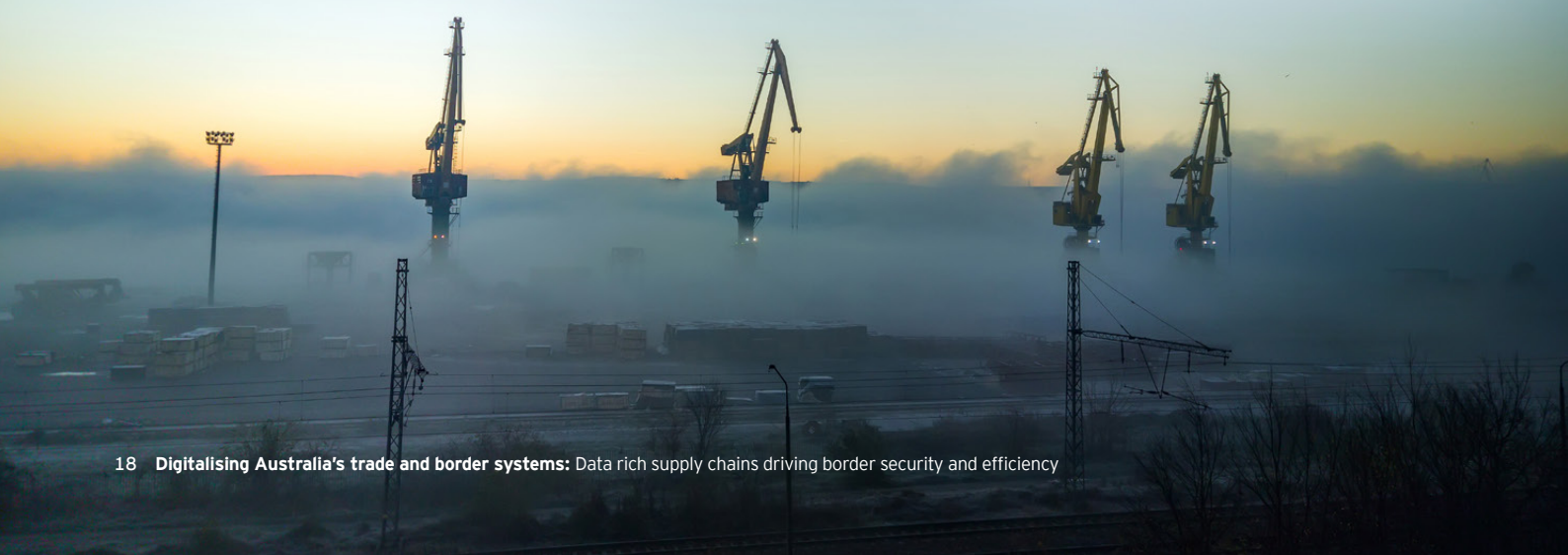
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