



Australian
Payments Council

FACT BASE AUSTRALIAN PAYMENTS PLAN

DECEMBER 2015



Section 1:

Provides an overview of the components of the current payments system framework.

Sections 2 to 6:

Contain research prepared on behalf of the Australian Payments Council by an independent researcher to assist in the development of the Australian Payments Plan and provide supportive background material. It does not necessarily represent the views of the Payments Council nor should be taken to have been endorsed by the Payments Council.

Australia Payments Plan – Reference Sources

(for statistics included on the inside front cover & page 1 of the Plan)

[APCA Annual Review, pages 2 and 7](#)

[NAB Online Retail Sales Index, June 2015](#)

[ACMA, Australian's embrace a digital life, page 9, March 2015](#)

[RBA Payments Statistics, Cheques and Direct Entry Payments, C6 \(Consulted 30 November 2015\)](#)

[ACMA, m-Commerce: Mobile transactions in Australia, 24 June 2014](#)

1 Understanding payments

Users of the payments system span the entire community.

They can be summarised as including:

- Individuals;
- Community groups, such as charities, educational institutions and clubs;
- Businesses, including retail merchants; and
- Governments at all levels.

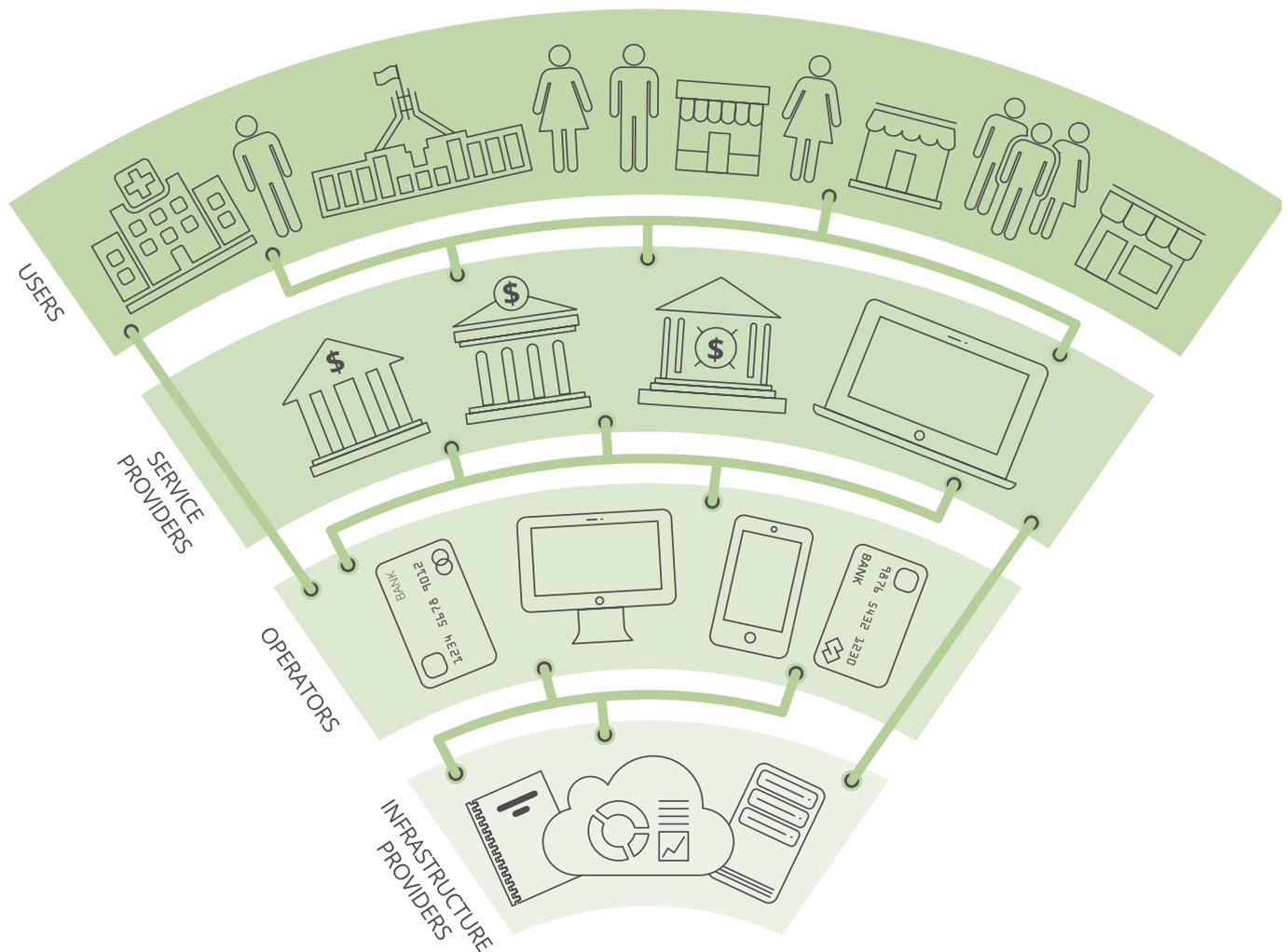
These user groups are in turn supported by three groups of industry stakeholders:

- **service providers** such as banks and other payment organisations who offer services to payment users;
- **operators**, such as Visa, MasterCard, eftpos and BPAY, who provide the payment networks that link service providers and/or users with each other and often define certain payment services; and
- **infrastructure providers**, who administer common elements of the payments system, often used by multiple payment networks and services, such as the Reserve Bank of Australia's settlement infrastructure.

The diagram below was used during the consultation phase to represent the current payments system framework – a world of defined connections and relationships between users, service providers, operators and infrastructure providers.

From today's position it seems likely that the payments system will evolve to become more layered, as new service providers enter the market, meeting the needs of consumers, businesses and government alike, on a global and international scale. Accordingly, we expect the existing framework outlined below to evolve.

PAYMENT SYSTEMS FRAMEWORK



Australia's payments mix is shifting towards the digital economy

The Australian payments landscape has evolved significantly over the past decade, most notably with consumers accessing the digital economy by favouring electronic payment methods, and the corresponding displacement of cash and cheques.

Australia's mix of electronic payment methods are also evolving, where the shift towards remote payments over the internet and using smartphones to make payments will escalate into the future. This will bring with it new opportunities and new risks to manage.

a. Less paper

In line with global trends¹, Australian consumers are using cash less frequently as a means of payment. Since 2002, the use of cash in Australia has fallen from 77% of all payment transaction volumes to 56% in 2014. Cash payments are predominantly low value and make up only 1% of Australia's total payments value.² Australian's cheques usage is declining at a rate between 14-16% per year.³

b. More electronic payments

The world's total non-cash electronic payments (card, credit transfer and electronic debits) is increasing rapidly, from 240 billion in 2008 to an estimated 550 billion in 2018.⁴ Global growth continues to be driven by debit and credit card use, up 13.4% and 9.9% respectively.⁵ Australia's Direct Entry credit transfers and direct debit volumes increased 4.8% in the last year.⁶ Each Australian makes an average of approximately 300 non-cash electronic payments each year, ranked 4th in the world.⁷ More Australians are picking up the technology tools to enable access to the digital economy, for example the percentage of Australians older than 15 that have a debit card has risen sharply from 79.1% in 2011 to 88.9% in 2014.⁸

c. Electronic payments are increasingly online and remote

The internet has enabled burgeoning online economy that is reliant on online payments. In line with global trends, Australians are initiating an ever-greater portion of their payments remotely using the internet. 68.2% of Australians (older than 15) have used the internet to pay bills or buy things (ranked 7th in the world).⁹

In 2014 in Australia, the volume of all online remote payments grew at a rate of 24.2%, with the vast majority of this growth supported by cards.¹⁰ As a percentage of all card payments volumes, remote card payments (card not present) have more than doubled from 6% in 2007 to 14% in 2014. Also, remote card payments transactions have a higher average value than face-to-face card transactions, with remote card transactions rising from 21% of all total cards value in 2007 up to 45% in 2014.¹¹

1 MasterCard, 'Measuring progress toward a cashless society'.

2 APCA, *The Evolution of Cash: An Investigative Study*, July 2014.

3 Reserve Bank of Australia, *Statistics_C6*.

4 McKinsey, *Global Payments 2014*, exhibit 7 page 12.

5 Capgemini, *World Payments Report, 2014*, page 5.

6 Reserve Bank of Australia, *Statistics_C6*, 12 months Aug-July 2014 Vs 2015.

7 Capgemini, *World Payments Report, 2014*, page 10.

8 World Bank Financial Inclusion Database, 2014.

9 World Bank Financial Inclusion Database, 2014.

10 RBA, *Payments System Board Annual Reports 2012 to 2014*.

11 RBA, *The Evolution of Payment Costs in Australia*.

d. Mobile devices are being increasingly used to initiate electronic payments

Mobile phones are increasingly being used around the world to make payments. Globally, m-payment transactions increased from 6.4 billion in 2011 to an estimated 39.9 billion in 2015 and are expected to grow by 60.8% annually.¹² While this trend is self-evident given today's digital life, the impact of this trend on payments is immense. "Mobile smartphone and tablet technologies – with their rich functional capabilities supported by increasingly sophisticated applications, are capable of enabling complex transactions in a relatively secure technical environment".¹³ There is a convergence of e- and m-payments, as the distinction between the two diminishes.¹⁴

Australians are at the forefront of the world's movement towards using smartphones to make payments, for example;

- 33.3% of all Australians (older than 15) have used a bank account to make a transaction through a mobile phone, which is ranked 2nd in the world (after Sweden).¹⁵
- Of those Australians that pay utility bills (older than 15), 22.0% have used a mobile phone to make the payment, which is the highest in the western world.¹⁶
- Of all Australians who have a smart phone;
 - in 2013 45% of those Australians used their smartphone to purchase goods or services over the internet. This is up from 26% in 2011 and is well above the OECD 2013 average of 38%.¹⁷
 - In 2013, 60% of those Australians used their smartphone to conduct online banking, which is ranked 5th in the world.¹⁸

¹² Capgemini, [World Payments Report, 2014](#), page 12.

¹³ BNY Mellon [Global Payments 2020, Transformation and Convergence](#), page 26.

¹⁴ Capgemini, [World Payments Report, 2014](#), page 12.

¹⁵ [World Bank Financial Inclusion Database, 2014](#).

¹⁶ [World Bank Financial Inclusion Database, 2014](#).

¹⁷ OECD, [The Digital Economy Outlook July 2015](#), figure 3.14.

¹⁸ OECD, [The Digital Economy Outlook July 2015](#), figure 3.18.

Technology: connectivity, innovation, disruption and contestability

Changing customer preferences, technology-enabled innovation, regulatory calls for change, and increasing non-bank competition all create an environment for digital disruption occurring to payments. Digital disruption is confirmed as the dominant force of future change to Australia's payments industry.

Ever increasing connectivity and connectedness have raised customer expectations, but also have brought significant payments innovation. The Internet of Things will bring new payments innovation, such as wearables. The area most likely to experience disruption is in 'services' layer. As a result, there will be heightened levels of contestability for the customer, both between incumbents, and from non-traditional companies.

a. Increasing connectivity and connectedness

Internet based technologies and communities continue to flourish, increasing peoples digital connectedness. People have increasing expectations of being able to instantly access information, connect with people and businesses alike, and transact anywhere and anytime from a range of internet enabled devices. This is mirrored in peoples' expectations of payments, which is seen as a vital enabler of the digital economy. People have "... an expectation of being able to settle anytime, anywhere, across any channel – which implies a high level of interoperability across systems..."¹⁹

McKinsey capture this rising expectations and payments systems response by stating "The emergence of digital technology is leading to faster and more convenient payments solutions and a subsequent rise in the expectations of both retail-consumer and commercial clients."²⁰

The levels of connectivity are going to rapidly increase. Internet networks will continue to improve and extend. A greater share of the population will become connected and have the potential to access the digital economy. The 'internet of things' will rapidly come about – the OECD estimated that in 2012 an average family of 4 people had 10 devices connected to internet, and this is estimated this could rise up to 50 per household by 2022.²¹ Many of these new internet enabled devices could be capable of initiating payments. 'Wearables', such as smart watches, are the initial 'internet of things' device capable of initiating payments, as evident in the Apple Watch being connected to Apple Pay. Wearables are also forecast to entirely change the in-store shopping and payments experience, for example; via "chips embedded in wearables, stores could access certain shopper information upon a consumer's entrance into their shop. This would allow consumers to simply walk in a store, pick-up an item, and walk out—their cards charged automatically."²² In many cases, when wearables initiate payments, they will rely on a combination of NFC and Bluetooth technology. With Australia leading the world with the proportion of the adult population who has made a contactless payment (53%)²³, Australia is well poised to adopt wearables payments technology.

Payments related devices other than wearables are also expected to be developed, such as intelligent vending machines, kiosks and digital signage.²⁴

19 BNY Mellon [Global Payments 2020, Transformation and Convergence](#), page 26.

20 McKinsey, [The Future of Global Payments](#).

21 OECD, [The Digital Economy Outlook July 2015](#), figure 6.2.

22 Yale Economic Review, [The Internet of Things Will Revolutionize the Payment Industry](#).

23 RFI Group, [Australia leads the way for contactless ownership and usage](#), chart 2.3.

24 PYMNTS.com, [Intel Pushes Payments into the Internet of Things](#).

b. Innovation

The range of recent and developing innovations in the payments industry is vast and too numerous to cover. To understand innovation in payments, it is useful to understand where it mostly occurs, and what its common characteristics are. “Most payment innovations do not disrupt the existing payment processes, but rather modify front-end processes to improve customer and merchant experience”.²⁵ In the context of the Australian Payments Plan’s network diagram (refer section 1), the majority of innovations are occurring at the ‘service’ layer.

“Innovations are having the greatest impact where they employ business models that are platform based, modular, data intensive, and capital light”²⁶ Other common characteristics of successful payments innovations include;

- “Simplicity: Payments innovations allow customers to make payments in a single tap or automatically by leveraging connectivity (e.g., wireless network, near-field communications).
- Interoperability: Most innovative payment solutions are not restricted to a single payment method, allowing customers to manage and use a variety of credit cards, debit cards or bank accounts for payment.
- Value added services: Many innovative solutions offer value-add functionalities in addition to payments, enabling merchants and financial institutions to interact more closely with customers and deliver additional value (e.g., loyalty, offers).²⁷

²⁵ World Economic Forum, [The Future of Financial Services: How disruptive innovations are reshaping the way financial services are structured, provisioned and consumed](#), page 31.

²⁶ *Ibid*, page 13.

²⁷ *Ibid*, page 30.

²⁸ Deloitte, [Digital disruption Short fuse, big bang?](#)

²⁹ Wikipedia, [Disruptive innovation](#).

³⁰ Deloitte, [Payments disrupted](#).

c. Disruption

Consultations confirmed that the Australian payments industry views digital disruption as the dominant force for change in payments for the foreseeable future. Digital disruption is the impact of digital and network innovation on consumers, businesses, markets and society as a whole.²⁸ Disruptive innovation helps create a new market and value network, and eventually disrupts an existing market and value network.²⁹ Some of the biggest examples of recent disruptions to established industries include:

- Facebook – the world’s most popular media company but creates no content.
- Uber – the world’s biggest ‘taxi’ company but owns no vehicles.
- Alibaba – the most valuable retailer but owns no stock.
- AirBnB – largest accommodation provider in the world but owns no property.

Deloitte sees the payments industry as being poised for disruption, due to a combination of factors including; changing customer preferences, technology-enabled innovation, regulatory calls for change, and increasing non-bank competition.³⁰

d. Increased contestability

The payments industry is experiencing increasingly levels of contestability, from both between incumbents financial institutions, and from non-traditional providers. In many cases, non-traditional payments providers have technology driven business models with established platforms or networks that benefit from integrating with payments. “...internationally-known brands such as Amazon, Google and Apple are looking to monetise their enormous client reach to expand in the payments space”.³¹ The FinTech sector has rapidly emerged with niche payments start-ups attracting high levels of investment, with venture capital tripling in 2014 to USD \$12.2B.³²

³¹ BNY Mellon, [Global Payments 2020: Transformation and Convergence](#), page 6.

³² Accenture, [The Future of Fintech and Banking: Digitally disrupted or reimaged?](#)

4 Security and Trust – managing risks

Managing the security and trust of payment systems is of paramount importance.

Australia is experiencing increased fraud levels, cybersecurity risks and other threats. However, there are opportunities to mitigate these threats, ranging from a coordinated approach to digital identity verification, biometrics and tokenisation standards.

a. Cards fraud is on the rise

In Australia, cards fraud is increasing across all measures, with fraud volumes and values almost doubling in the five years from 2010. The increasing prevalence of remote payments, and EMV chip decreasing card counterfeit and skimming fraud, has brought card not present fraud to exceed card present fraud at a ratio of 4-to-1. In 2014, there were 1.7 million fraudulent card transactions in Australia, with a value of \$387 million. 2014's fraudulent value increased 32.7% versus 2013. The rapid increase in the absolute numbers of cards fraud statistics is mainly driven by the corresponding volume rise in remote card payments. However, in relative terms, fraudulent transactions are also growing as percentage of all card transactions with fraudulent volumes rising from 0.0176% in 2010 up to 0.0259% in 2014, and with fraudulent values from 0.0379% in 2010 to 0.0588% in 2014.³³ By international standards, Australia's fraud loss % (0.0588%) relative to total cards value is comparatively low, for example 2013's loss ratios were 0.059% in the UK, 0.087% in Canada, and 0.104% in USA, with the Netherlands low at 0.028%.³⁴ However, Australia's loss ratio trajectory is on a different course to many other countries – since 2010 all of the aforementioned countries have had flat or decreasing levels of fraud loss ratios, whereas Australia's has increased.³⁵

The fraudulent payments amounts represent only a part of the total impact and loss associated with fraud. For example, for every dollar of fraud from online channels, merchant's total loss once taking into account all costs, is \$2.69.³⁶

Internationally, the leading types of fraud, in order of prevalence, are cross-border data compromise, card not present fraud, ATM fraud, and identity fraud. The leading fraudster threat is from global crime rings with a decentralised organisation structure.³⁷

b. Protect consumer payments information

One observable trend in 2014 is an increase in the theft of card account and customer credentials. A reflection of this trend is that the top two concerns of internet shoppers were the misuse of personal data and security of online payments.³⁸ Lack of security and a lack of trust are cited by payers as the top two barriers that to payments innovation.³⁹ PCI DSS is designed to protect customer card information held by merchants. In response to the growing threats, the next generation of security capabilities include biometrics, location based identification, and tokenisation.⁴⁰

c. Digital identity verification

As society switches to digital channels, new and larger challenges are emerging on how to manage an individual's electronic identity. High profile stories have propelled the topic of internet security, identity and privacy to the forefront of public awareness. Central concerns for the online consumer include being able to electronically prove who you are, while simultaneously ensuring privacy, and the protection and control of your electronic information.

33 APCA, [Australian Payments Fraud Details and Data](#).

34 Payments Cards and Mobile, [Card Fraud Report 2015](#).

35 Ibid, page 6.

36 LexisNexis, [2014 LexisNexis True Cost Of Fraud Study](#).

37 Ibid, page 20.

38 OECD, [The Digital Economy Outlook July 2015](#), page 211.

39 Accenture, [A review of the international landscape of innovation in payments systems and insights for UK payments](#).

40 World Economic Forum, [The Future of Financial Services: How disruptive innovations are reshaping the way financial services are structured, provisioned and consumed](#), page 30.

Globally, the importance of electronic identity is driven by accelerating demand from consumers and businesses for trusted e-identity services.⁴¹ Australia's Document Verification Service (DVS) is one of the key initiatives of the Council of Australian Governments' National Identity Security Strategy. In recognising this wider market demand, the DVS from March 2015 has expanded access to businesses with a reasonable need. The possible potential usage of DVS, in an Australian payments context, is not yet clear.

The payments and banking industry simultaneously;

- requires the usage of digital identity verification tools and processes to ensure the person initiating a payment is authorised to do so, and
- is uniquely positioned with a durable advantage in the domain of identity verification due to their stringent existing identity verification requirements around the likes of 'Know Your Customer' and 'Anti-Money Laundering'.⁴²

New forms of verifying identity are emerging, such as biometrics and tokenisation (refer standards section).

In a digital economy, managing identity verification is likely to be a key challenge for the payments industry and many other sectors, both public and private alike. Accordingly, there is a strong case for coordination and collaboration.

⁴¹ MyBank, '[MyBank Identity Verification](#)', page 4.

⁴² MyBank, '[MyBank Identity Verification](#)', page 7.

Global Payment Standards

Payment standards are increasingly global. Standards will underpin the digitalisation of payments, for both established and new ways to pay.

The development of standards will closely follow technical advancements and digital disruption. As a result, the opportunity and maintenance costs of remaining with bespoke out-dated domestic standards is likely to rise over time.

The trends of globalisation and the adoption of common technologies around the world are also impacting on the development and increasing importance of global payment standards for electronic payments. Global payment standards can be broadly placed into four categories;

- Cards-based standards
- Non-card electronic payment standards
- New standards supporting emerging technologies
- Regulatory driven standards

Across all four areas there have been significant recent developments. As the rate of technology advancement and disruption increases, it is reasonable to assume there will be a continued global focus on payment standards.

a. Drivers of the global development of standards

As reflected in the Desirable Characteristics, payments need to be efficient, safe and legal, as well as be supported by a scalable network with interoperability between all those involved. Standards help underpin and help make it possible to efficiently achieve these characteristics. Payment standards provide a mix of technical and business documentation that acts as a common language for customers, participants and infrastructures to interact in a safe, dependable and predictable manner.⁴³

The six drivers⁴⁴ behind why payment standards get developed and are adopted;

1. Regulatory requirements and legal considerations
2. Deliver economic benefits, e.g. cost savings
3. Replace outmoded technology
4. Enhance security and reduce risks or losses
5. Solve business problems
6. Achieve ubiquity & interoperability

b. Card-based standards

The majority of card-based standards are set by the established global standards bodies of;

- International Standards Organisation (ISO) and its supporting structures facilitate a significant amount of card standards development work, for example refer to ISO's **work-in-progress on cards standards**.
- **The PCI Security Standards Council**, provides standards and supporting material to help ensure the safe handling of cardholder information, and to help prevent card fraud, hacking and other data security threats.
- **EMVCo** facilitates worldwide interoperability and acceptance of secure payment transactions, specialising in EMV Specifications based on contact chip, contactless chip, common payment application (CPA), card personalisation, and tokenisation.⁴⁵

A major standards development activity is occurring on tokenisation security standards. Tokenisation is the process of substituting sensitive information, such as your credit card number, with a non-sensitive equivalent so that the sensitive information cannot be exploited. This adoption of tokenisation standards and processing capabilities has the potential to prevent large-scale fraud, as merchants will no longer store actual card numbers. Tokenisation standards activity includes;

- PCI Security Standards Council – Non-Payment Tokenization Technical Standard that protects data at rest.
- EMVCo Payment Tokenisation Specification – a Technical Framework.
- The Clearing House Secure Token Exchange.

⁴³ Payments UK, 'Payments industry standards'.

⁴⁴ NACHA 2015 Payments, 'Next Gen Payment Standards on the Horizon', page 29.

⁴⁵ EMVCo, 'About EMVCo'.

- ASC X9's standard X9-119-2 defines how a token should be generated & security requirements for requesting & generating a token.
- TG1 – data elements & messaging for token management & use in ISO 8583 & ISO 20022.⁴⁶

The Australian industry is at the early stages of assessing the adoption of tokenisation standards.

c. Non-card electronic payments

The most significant non-cards electronic payments standards development has been the convergence towards a common global standard for payments messaging – ISO 20022. “With a multi-pronged promise of enhancing interoperability, efficiency, competition, and addressing user needs for richer remittance information, many countries are now either implementing the ISO 20022 standard across various domestic payment schemes or have committed to doing so.”⁴⁷ Globally, there is a significant amount of ISO 20022 **adoption activity**. Australia's first adoption of the ISO 20022 standard is by the New Payments Platform.

The global trend of adopting ISO 20022 will help drive interoperability, both domestic and international, and will help unlock new digital information and data based services.

SWIFT's MT message set also represents a widely adopted non-cards electronic payments standard.

d. New standards to support emerging technologies and new approaches

Standards are often developed to enable the more efficient uptake of emerging technologies or new approaches, and examples of current activity include;

- The development of mobile payment standards ISO 12812, for both proximate & remote mobile payments.⁴⁸
- The development of common Application Programming Interface (API) standards, for example the UK Government's Open Banking Working Group⁴⁹ will deliver an API Standard for use in UK banking.

- R3 has partnered 13 banks to develop standards for distributed ledger / blockchain technology.
- The Worldwide Web Consortium (W3C) is developing a range standards with the vision to “build payments into the core Web architecture”. W3C's Web Payments Community Group was established to explore how to ease & secure payments on the Web. Their standards will include: product descriptions, transactions, receipts, verifying the identity of sellers, security and APIs.⁵⁰
- The Bill and Melinda Gates Foundation's ‘Level One Project Guide’ focus on developing new payment systems frameworks and standards-based components to provide affordable financial inclusion to many of the worlds developing countries and poor.

e. Regulatory Driven Standards

Regulation is another key driver of the adoption and development of global payments standards. There are three general sources of standards being developed as a result of regulation;

- Domestic adoption of required international requirements and standards. For example the Bank of International Settlement's Committee on Payments and Market Infrastructures Core Principles act as a set of standards that central banks adopt domestically.
- Domestic regulation becoming a de-facto global requirement or standard. For example the USA's FATCA has been effectively adopted globally, and their Dodd-Frank Act lead to the likes of the Legal Entity Identifier standards.⁵¹
- Development of business solutions to meet regulatory requirements. For example, the European Commission's revision of Payment Service Directive 2 (PSD2) is a major set of payments regulation reforms.⁵² PSD2's requirements to open up non-discriminatory access to payment account information and payments initiation capabilities to third parties. Amongst other things, PSD2 is likely to necessitate the development of API common standards to improve interoperability and efficiency – a single common standardised interface would enable access to multiple banks.⁵³

46 NACHA 2015 Payments, ‘Next Gen Payment Standards on the Horizon’, page 17.

47 Canadian Payments Association, ‘2014 Environmental Scan: Global Trends, Challenges and Impacts on Canada’, page 9.

48 ‘Status of Mobile Payments: An Executive Summary of ISO 12812 Parts 1-5’, May 1, 2015.

49 Open Date Institute, ‘UK experts to explore how open banking will impact consumers, regulators and industry’ September 18, 2015.

50 Web Payments at W3C.

51 SWIFT, ‘Legal Entity Identifier (LEI) FAQ’.

52 Out-law.com, ‘Final’ PSD2 text published, June 2015.

53 UK Payment Systems Regulator & Accenture, ‘Review of the International Landscape of Innovation in Payments and Insights for UK Payments’, 2014.

Emerging infrastructures and networks

Traditionally, payment systems have been separated into three types; real time high value, deferred low value clearing houses, and cards. The distinction between these three is blurring. Not only is the distinction between low and high value systems diminishing, but there is a movement towards developing new real time retail payment platforms.

New blockchain payments platforms also have the potential to cause disruption and also redefine the categorisation of payment systems.

a. Rise of real time retail payment systems

There is a clear global trend towards the development of real-time retail payment systems. According to SWIFT, 18 countries have responded and now have 'live' real time systems in place. Additionally, 12 countries are 'exploring/planning/building', and another 17 countries are 'exploring' through a pan-European initiative.⁵⁴ The primary driver behind the demand for real-time payments is the dramatic increase and prevalence in mobile technology, bringing with it a market that wants payment services that offer speed, convenience, ubiquity, safety and value for money.⁵⁵

McKinsey and Company cite the rise of non-card real time payments as one of five disruptive forces to reshape the payments landscape over the next three to five years.⁵⁶

Australia is acting decisively in line with this global trend, with our New Payments Platform's implementation scheduled for 2017.

b. New networks – blockchain

It is likely that the enduring impact of the blockchain technology will be higher on mainstream financial services, than the impact of crypto currencies such as Bitcoin which are underpinned by blockchain. Crypto-currencies will remain a permanent feature of the world's financial system landscape, but they are likely to remain on the fringes.⁵⁷ However, the blockchain technology that supports crypto-currencies is increasingly being used as a new platform for mainstream financial activity, including payments. This view is shared by the Bank of England who say using blockchain platforms to transfer value securely without a trusted third party shows considerable promise.⁵⁸ The Federal Reserve Bank of Boston also put confidence in blockchain being used to accelerate the development of better technologies for making payments.⁵⁹

Blockchain technology uses a distributed ledger system that requires any transfer of value changes to ownership of money balances to the entire community for verification (instead of just through the current 'central ledger' approach using trusted 3rd parties).

⁵⁴ SWIFT, *White Paper: The Global Adoption of Real-Time Retail Payments Systems (RT-RPS)*, page 3.

⁵⁵ Ibid.

⁵⁶ McKinsey and Company, *The future of global payments*.

⁵⁷ Deloitte, *'State-Sponsored Cryptocurrency: Adapting the best of Bitcoin's Innovation to the Payments Ecosystem'*.

⁵⁸ Bank of England, *One Bank Research Agenda*, February 2015, page 31.

⁵⁹ Federal Reserve Bank of Boston, *'Bitcoin as Money?'*, September 2014, page 19.

This change has the potential to disrupt the status quo⁶⁰ and has the ability to trigger the simplification of process and cost systems across a range of financial transactions that involve counterparties.⁶¹

From a payments perspective, blockchain seems to have immediate use cases in real-time payments⁶² and cross-border foreign exchange settlements.⁶³ Many challenges remain however, including:

- Where accountability, liability, governance and consumer protections lies within a decentralised system;
- Legal and regulatory hurdles including tax evasion, know your customer and anti-money laundering, and generally how they should be regulated;⁶⁴
- Digital identity management while balancing privacy.⁶⁵

A wide range of explorative and commercial activity is now occurring on developing innovative uses of blockchain technology. For example:

- Citigroup⁶⁶ and Barclays bank⁶⁷ have been exploring blockchain's use in payments.
- The Euro Banking Association is working on how to harness distributed ledger technology in payments frameworks and is examining use cases.⁶⁸
- IBM is researching using blockchain to coordinate devices in the 'Internet of Things'.⁶⁹
- Clearmatics has developed a platform for clearing and settling over-the-counter derivatives.⁷⁰
- Ripple⁷¹ works with mainstream players in the financial system to provide "secure, instant and nearly free global financial transactions".⁷²

Blockchain's use in payments is at the 'early adopters' stage and it remains uncertain as to the range and impact of change and disruption it could bring to payments.

60 The Huffington Post, '[Bitcoin Revisited: Focus on Alternative Currency Masks the Power of Blockchain Technology Innovation](#)', February 2015.

61 Euromoney, '[Exit Bitcoin, enter block-chain technology](#)', January 2015.

62 Euro Banking Association, '[Cryptotechnologies, a major IT innovation and catalyst for change](#)', May 2015, page 14.

63 As provided by [Ripple](#) today.

64 Ibid.

65 Bank of England, [One Bank Research Agenda](#), Discussion Paper, February 2015.

66 International Business Times, '[Codename Citicoin: Banking giant built](#)

[three internal blockchains to test Bitcoin technology](#)', July 2015.

67 International Business Times, '[Barclays talks blockchain, bitcoin and distributed ledgers](#)', July 2015.

68 Euro Banking Association, '[Cryptotechnologies, a major IT innovation and catalyst for change](#)', May 2015.

69 IBM, '[Device democracy- Saving the future of the Internet of Things](#)'.

70 Clearmatics, '[Here is the future of clearing](#)'.

71 Ripple, '[Join the Global Settlement Network](#)'.

72 The Economist, '[Blockchain: The next big thing](#)', May 2015.

A stylized, light gray graphic of a city skyline and a windmill is positioned on the left side of the page. The skyline includes a tall skyscraper with a pointed top, a building with a dome, and other structures. A windmill is on the far left. The background is a light gray gradient with a large, faint 'X' shape formed by two diagonal lines.

CONTACT

LEVEL 6, 14 MARTIN PLACE SYDNEY NSW 2000
TELEPHONE +61 2 9216 4888
EMAIL INFO@AUSTRALIANPAYMENTSCOUNCIL.COM.AU