

Horizon Scanning Working Group

The Horizon for Payments A new vision for UK Payments

Report from the Horizon Scanning Working Group
Amended draft for discussion

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1 CONTENTS

2	The payments horizon and a new vision for UK Payments – Executive Summary	4
2.1	Summary of conclusions for the User Needs Working Group	5
2.2	Summary of conclusions for the Simplifying Access Working Group	5
2.3	Summary of conclusions for the Financial Crime Working Group	6
2.4	Proposals for further consideration by the Payments Strategy Forum	6
3	Introduction	8
4	What was the Working Group set up to do?	8
4.1	Objectives	8
4.2	Methodology	9
5	Political and regulatory landscape	10
5.1	A summary of the regulatory horizon for the working groups	11
5.1.1	The regulatory horizon for the ‘user needs working group’	11
5.1.2	The regulatory horizon for the ‘Simplifying Access Working Group’	12
5.1.3	The regulatory horizon for the ‘Financial Crime Working Group’	12
5.2	Key regulatory initiatives identified on the horizon	13
5.2.1	Second Payment Services Directive (PSD2):	14
5.2.2	Payment Accounts Directive 2014/92/EU (PAD)	18
5.2.3	PSR Interim report – Market review into the supply of indirect access to payment systems (MR15/1.2.)	19
5.2.4	Fourth Money Laundering Directive and new Fund Transfer Regulation	20
5.2.5	HMT Action Plan to for anti-money laundering and counter-terrorist finance	21
5.2.6	HMT proposals to apply anti-money laundering controls to Virtual/Digital Currency Exchanges (“DCXs”)	22
5.2.7	European electronic ID initiative (e-Idas Regulation No. 910/2014)	24
5.2.8	UK electronic ID initiative (Gov.uk Verify)	24
5.2.9	Interchange Fee Regulation	25
5.2.10	Article 7 – Scheme/Processing Separation	26
5.2.11	Introduction of cheque imaging in the UK	26
5.2.12	CMA Retail Banking Market Investigation	27
5.2.13	Bank of England – Real Time Gross Settlement (RTGS) Review	28

5.2.14	European Retail Payments Board initiatives.....	29
5.3	Regulatory initiatives mapped to the detriments.....	36
5.4	Brief conclusions for UK payments strategy.....	36
6	The international horizon.....	38
6.1	A summary of the findings for working groups	38
6.1.1	The international landscape for the 'user needs working group'	38
6.1.2	The international landscape for the simplifying access working group	39
6.1.3	The international landscape for the Financial Crime Working Group	39
6.2	Themes identified on the international horizon.....	40
6.2.1	Increased connectivity	42
6.2.2	Identity and authentication.....	43
6.2.3	Layered and intermediary services.....	44
6.2.4	Cashless.....	45
6.2.5	Scheme bypassing.....	45
6.2.6	The move to real time	46
6.2.7	Domestic schemes development.....	47
6.2.8	New and evolving payment instruments.....	47
6.2.9	Structural and governance developments.....	48
6.2.10	Payments linked to other processes.....	49
6.3	International initiatives mapping to the detriment categories	49
6.4	Concluding remarks and recommendations	50
7	Technology Horizon	52
7.1	A summary of findings for the working groups	52
7.1.1	The technology landscape for the 'user needs working group'	52
7.1.2	The technology horizon for the 'simplifying access working group'	53
7.1.3	The technology horizon for the 'financial crime working group'	53
7.2	Key Technologies identified by the technology horizon scan	54
7.2.1	Identity Management.....	55
7.2.2	Richer Data.....	56
7.2.3	Blockchain: Distributed Ledger Technology (DLT).....	57
7.2.4	APIs.....	58

7.2.5	Layer modelling.....	58
7.2.6	X as a Service.....	59
7.2.7	Developments in Commerce (Retailers / Merchants)	60
7.2.8	Big data, data analytics and artificial intelligence	60
7.2.9	Tokenisation	61
7.2.10	Social messaging, conversational commerce and embedded payments	62
7.2.11	Contactless and wearables (NFC, RFID and BLE).....	62
7.2.12	Internet of things	63
7.2.13	Smart contracts.....	63
7.2.14	Developments for SMEs.....	63
7.3	Time horizon.....	64
7.4	Technologies mapped to the detriments	64
7.5	Concluding remarks and recommendations	65
8	Conclusion.....	66
8.1.1	Short term proposals.....	66
8.1.2	Longer term proposal.....	66

2 THE PAYMENTS HORIZON AND A NEW VISION FOR UK PAYMENTS – EXECUTIVE SUMMARY

The Horizon Scanning Working Group has considered the impact of initiatives taking place internationally, regulatory developments and technology themes on the payments markets in the UK with a view to making proposals to the Payments Strategy Forum for further consideration.

The UK payments industry is at an exciting point in its history, forming just one part of a bigger story of global digitalisation. The UK payments industry, while idiosyncratic, is generally a leader in payments innovation and there are limits to what it can learn from its overseas competitors. However, initiatives like the New Payments Platform¹ in Australia are migrating towards a single 'push' scheme and should be kept under observation as the UK may usefully learn something for its own strategy.

By and large most regulatory intervention stems from Europe. The digital agenda and move to e-invoicing set the stage for innovation. The Bank of England's review of its Real Time Gross Settlement System ("**RTGS**") system considers how technological advances (like Distributed Ledger Technology) could help it meet the needs of the next generation. The Second Payment Services Directive ("**PSD2**")² and the associated work by HM Treasury ("**HMT**") on Open Banking direct the industry to opening up access to the system using application programming interfaces ("**APIs**"). Security and privacy remain key concerns with these continuing to be the greatest risks affecting consumers, alongside concerns over the potential detrimental impact of digital exclusion.

Developments in technology may mean that many detriments identified by the Payments Community could be addressed. Potentially, use of APIs, Distributed Ledger Technology ("**DLT**"), Richer Data and identity management could bring benefits to users and payment service providers ("**PSPs**"). Some technologies are already being introduced on a competitive basis by card schemes – enabling users such as merchants to avoid onerous regulation by deploying technical solutions like tokenisation.

The current payments systems, while offering many benefits, are not versatile and struggle to respond to user needs. There are barriers to making greater innovations necessary to meet rising customer expectations and access to payments systems. Simplifying and redesigning the core payments systems over time, using layered architecture and APIs would naturally open payments systems to greater participation, foster innovation, improve competition and create greater resilience, ensuring payments mechanisms are fit for the next generation.

¹ <http://www.apca.com.au/about-payments/future-of-payments/real-time-payments>

² <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015L2366>

2.1 SUMMARY OF CONCLUSIONS FOR THE USER NEEDS WORKING GROUP

User Needs detriments identified by the Payments Community may be somewhat improved by regulatory interventions, which largely stem from Europe, such as the PSD2. However, the advent of the PSD2 is likely to have the greatest impact, in opening up access to account data to third parties and potentially spawning a range of new services to meet customer needs. Means to improving security however could increase unwanted friction in payment services. The recent remedies proposed by the Competition and Markets Authority (CMA) will also go some way to alleviating the user needs detriments identified by the Payments Community.

Internationally the User Needs Working Group may be interested in BankServ³ in South Africa which addresses problems related to misdirected payment (UN 12,13 and 14). It operates an online Account Verification Service. A Request to Pay, which addresses user needs for control in payments, is being worked on in the US. Services like Transferwise⁴ largely by-pass the traditional schemes and make remittances significantly cheaper.

Technology offers the greatest opportunity to meet user needs, although security and privacy continue to be over-riding concerns. The development of new technologies like big data analytics, artificial intelligence and improvements in decision making sciences could leave consumers vulnerable to new potential detriments. Conversely, APIs, distributed ledgers and layering could ameliorate several detriments related to the key issues of control, transparency, reduction of errors and instant access to information. The way in which those detriments could most likely be resolved would be through a redesign of the core payments schemes based on these technologies.

2.2 SUMMARY OF CONCLUSIONS FOR THE SIMPLIFYING ACCESS WORKING GROUP

There are currently a number of regulatory initiatives looking at issues related to access to payment markets in the UK, and directly relevant to the Payments Strategy Forum's ("PSF") Simplifying Access Working Group proposals. These include the Payment Systems Regulator ("PSR") reviews into the supply of indirect access to markets⁵, and on the ownership and competitiveness of infrastructure provision⁶; PSD2's new requirements obliging payment account providers to open access to third parties and the Bank of England's strategic review of its RTGS infrastructure. The PSR review of the infrastructure provisional findings includes the view that competition for, and within, the provision of infrastructure is not sufficiently competitive. The proposed remedies include competitive procurement, divestment of PSP shareholdings in VocaLink to remove the vertical ownership that may impede competition and innovation and to ensure interoperability through common payment messaging standards. Technological solutions may help.

Access to payment systems appears easier in some other international payment ecosystems. However, there is a lesser degree of sophistication of some of the payments systems which

³<http://www.bankservafrica.com/Regulated-Payments/Account-verification-service>

⁴<https://transferwise.com/>

⁵<https://www.psr.org.uk/psr-publications/market-reviews/MR1512-interim-report-supply-of-indirect-access-payment-systems>

⁶<https://www.psr.org.uk/psr-publications/market-reviews/MR1522-interim-report-infrastructure-provision>

inherently means simpler access. Developments in Australia (NNP⁷), America (TCH⁸) and Singapore (G3⁹) should be kept under observation. A conclusion of the international scan is that very few countries demonstrated a greater degree of access than the UK or conversely dealt with the fundamental problems associated with the UK system.

Layer modelling and APIs are two specific technologic principles which could significantly achieve a simplification and actual opening up of access to payments schemes to PSPs, along with a move to a single 'push' scheme.

2.3 SUMMARY OF CONCLUSIONS FOR THE FINANCIAL CRIME WORKING GROUP

The Working Group should consider the following regulations in more depth: The 4th Money Laundering Directive ("4MLD")¹⁰ which may make it more difficult for high-risk customers and Politically Exposed Persons ("PEPs") to gain access to financial services; HMT Proposals on digital currencies¹¹ which may increase the legitimacy around their use; and PSD2's new IT security requirements and work to reduce fraud on direct debits.

The Financial Crime Working Group may usefully learn from international examples which focus on identity and authentication. Initiatives include identity proxies, alternative sign-in methods, national initiatives for identity verification and digital signatures and beneficiary verification (which may help to address misdirected payments).

From a technological point of view many of the detriments identified for the Financial Crime Working Group relate to identity of counterparties and Know Your Customer ("KYC"). These issues derive from the often poor quality or simply the lack of sufficient data in the payment instructions that would allow PSPs to perform adequate checks. Improving the amount and quality of data would be a necessary step to solving these issues. Using technologic principles like layering and APIs along with Richer Data and Big Data could help prevent and fight financial crime. Should DLT be developed, smart contracts may provide for a simpler KYC landscape.

2.4 PROPOSALS FOR FURTHER CONSIDERATION BY THE PAYMENTS STRATEGY FORUM

Bringing together the Horizon Scanning Working Group's overall intelligence gathering and analysis there are a number of key themes emerging. Digitalisation is taking place around the world at a fast pace. Developments in technology could answer many of the detriments outlined by the Payments Community and create solutions which meet the PSF's objectives that payments systems be secure and resilient, versatile, responsive and efficient. Key themes we believe will resonate with

⁷ <http://www.apca.com.au/about-payments/future-of-payments/real-time-payments>

⁸ <https://www.theclearinghouse.org/press-room/in-the-news/2014/10/20141022-tch-to-develop-real-time-payments-system>

⁹ <http://abs.org.sg/consumer-banking/fast>

¹⁰ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32015L0849>

¹¹

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414040/digital_currencies_response_to_call_for_information_final_changes.pdf

the Forum include: the move to real time, the use of Richer Data, improved messaging standards, the use of new, well governed APIs, a layered payments architecture and the potential of DLT.

The Group has considered what will appear on the horizon in the short (1-3 year term) and the longer term (3+ years). In particular, it has been concerned with developing an outline of what the future *could* look like for payments. In the short-term the PSF should discuss the following proposals for admission in the strategy:

Short-term proposals:

- Support the work of the Open Banking Working Group; and ensure the necessary leadership and support for Open APIs is in place to enable guidance facilitating compatibility as the schemes and the underlying platforms evolve in the medium to long term
- Implement Richer Data through the inclusion of a reference in the payment message and required APIs
- Implement the 'Request to Pay' APIs and 'Confirmation of Payee' APIs independently of existing schemes to demonstrating an 'Overlay API'
- Support the Bank of England RTGS infrastructure review
- Support the general move to ISO messaging and particularly the move globally to a single, instant 'push' messaging.

Longer-term proposal:

- Simplify the UK payments scheme platforms by following a layered approach to payment systems implementation together with a migration approach using APIs to minimise disruption.

The development of such a simplified scheme platform would allow the flexibility of distributed federated and/or centralised distribution of the technology platform underlying the schemes, allowing for future localised technological evolutions, simpler access and on-boarding and faster innovations without impacting the entire delivery chain. This proposal is described in the solution concept assessments annexed to this document.

- Monitor and co-ordinate efforts to develop DLT to ensure that correct used cases are followed and the systemic impact is understood.

If it is to be taken forward, developing DLT as an interoperable 'open standard' will still allow for competition in its implementation.

These proposals, taken together, could allow for significant improvement of the UK's payments systems and offer the opportunity to provide a simplified platform enabling many identified detriments to be resolved.

3 INTRODUCTION

The PSF was established in summer 2015 by the PSR. Its goal is to identify, prioritise and help to deliver initiatives where it is necessary for the payments industry to work together to promote collaborative innovation. The aim is to make payment systems work better for those that use them. It is tasked with developing a strategy by summer 2016. Three objectives underpin its work: payments should be secure and resilient; versatile and responsive to user needs, and efficient.

The Horizon Scanning Working Group was established to assist the Forum. Its role is to provide intelligence on relevant UK and international initiatives, regulatory and technological developments; assessing these against the detriments identified by the Payments Community; and to make short and long term recommendations to the Forum.

The following document outlines how the group went about its work, summarises its findings and explains the recommendations above it has made to the PSF. Annexed to this document are the Solution Concept Assessments which provide detail on next steps along with a discrete report on Account Number Portability.

The PSF is requested to review this document and to provide its considered views to the Group on necessary amendments.

4 WHAT WAS THE WORKING GROUP SET UP TO DO?

4.1 OBJECTIVES

As noted in the introduction the Group was set up to provide intelligence on the 'horizon'. It should:

1. Explain the political and regulatory context within which payments is operating and developing
2. Summarise international developments and learnings for the UK
3. Consider technological developments and how these can be applied within payments
4. Make proposals for the long term UK Payments Strategy.

The intelligence gathering exercise undertaken by the Group is based on the expertise of its membership and their own research and analysis. No specific research project was established.

Objectives 1 and 2 provide immediate material for the other working groups ('User Needs', 'Access' and 'Financial Crime') which together with objective 3, offer material for the 5-10 year time horizon, for which the Group makes specific proposals.

Separately, the Group was also tasked more specifically by the PSF to consider Account Number Portability ("**ANP**"). The Group has submitted a paper on ANP to the forum as a separate report.

4.2 METHODOLOGY

Members for the Horizon Scanning Working Group were invited from the PSF and Payments Community. In total 34 members self-selected to join group, including representatives from individual firms, trade associations, consultancies and user groups. Observers attended from the Financial Conduct Authority (“FCA”) and the PSR.

Together the membership applied weights to the various detriments provided by the Payments Community, since it was recognised that not all detriments were of equal importance. The concept of importance of a detriment was acknowledged to be hard to define. ‘Importance’ was mainly measured relative to how many (or what proportion of) service-users (at their level in the payments value chain map) would benefit from the resolution of the detriment. No specific data was used to score this measure, and thus scoring was based on the experience of the members of the group, where individual scores were agreed by majority. Scores were set on a scale of 1-4 with 4 being the most important. Detriment weighting was then normalised in each group of detriments (end user needs, simplifying access to markets, technology-related and other orphaned detriments). Initiatives across the geographic, regulatory and technological horizons were then marked as whether they had the potential to mitigate each detriment in some way (by a simple yes/no). The importance score of the detriment was multiplied by the tallied number of initiatives corresponding to the detriment to create an overall score. These scores populate the graphs which illustrate this document. A paper outlining this process was presented to the PSF. Given the limitations in methodology, the scores should be taken as ‘indicators’ rather than as a robust measure.

The group organised itself into three sub-groups to consider the regulatory horizon, the geographic and commercial horizon, and the technological horizon. Each group noted relevant initiatives, considered their relevance and mapped them to the payments value chain and to the detriments provided by the Payments Community. The Payments Community identified 84 detriments which were grouped into 16 categories by the PSF. The work of the sub-groups is illustrated in both the graphs, which show the types of initiatives that are most likely to solve detriments; and in the tables which highlight those detriments for which little existing initiatives are designed to address. In some cases, the detriment may be solved by individual firms working competitively. In other cases, it highlights the need for concerted action to address the problem.

Separately a report was written to consider the potential merits of ANP for discussion by the PSF.

The Horizon Scanning Working Group convened to discuss a consolidated picture of the horizon. Proposals were formed based on this work before being subject to scrutiny by the whole Horizon Scanning Working Group.

5 POLITICAL AND REGULATORY LANDSCAPE

In the past decade, the payments industry has seen significant changes in the payment systems and types of products used by service users. The industry has witnessed the successful launch of the Faster Payments Scheme in 2008, the Current Account Switch Service ("**CASS**") in 2013, PayM¹² in 2014. There may also be new services launched in the future, such as Zapp¹³ (also known as Pay by Bank). These changes have been driven by a combination of regulatory and commercial incentives. The 2007 Payment Services Directive ("**PSD**") opened up the payment service industry to other players outside the traditional banking world, and in the UK the PSR was established in April 2015. In 2014, the Chancellor of the Exchequer George Osborne announced his vision for the UK "to lead the world in developing FinTech"¹⁴. The announcement heralded the development of a regulatory regime designed to enable the unlocking of disruptive innovations and to foster new competition in the interest of service users. Examples include the FCA's initiative Project Innovate, which launched a 'Regulatory Sandbox' in spring 2016, and the active encouraging of regulatory technology, or RegTech. There have also been successful commercial innovations, albeit still at an embryonic phase, like Currency Cloud and Transferwise¹⁵.

The PSR's role is to promote competition and innovation in payments systems, and to ensure they work in the interests of the organisation and those customers who use it. In this context, the Horizon Scanning Working Group has identified several key EU directives and UK regulations that could affect these goals:

- the PSD2,
- the Payment Accounts Directive ("**PAD**")¹⁶,
- the Interchange Fee Regulation ("**IFR**")¹⁷,
- the 4MLD,
- the Competition and Market Authority ("**CMA**") investigation,
- the Bank of England's review of RTGS,
- several initiatives by the European Retail Payments Board ("**ERP**B"),
- the regulation of digital currency,
- the move to digitalisation, and
- the General Data Protection Regulation ("**GDPR**")¹⁸.

¹² <http://www.paymentsuk.org.uk/project-delivery/past-projects/paym>

¹³ <http://www.zapp.co.uk/>

¹⁴ <https://www.gov.uk/government/speeches/chancellor-on-developing-fintech>

¹⁵ <https://transferwise.com/>

¹⁶ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014L0092>

¹⁷ http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2015.123.01.0001.01.ENG

¹⁸ http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.119.01.0001.01.ENG&toc=OJ:L:2016:119:TOC

5.1 A SUMMARY OF THE REGULATORY HORIZON FOR THE WORKING GROUPS

5.1.1 The regulatory horizon for the ‘user needs working group’

The User Needs Working Group may wish to consider the following regulations which are likely to have some impact on the way consumers interact with services:

- PSD2 (section 5.2.1 to **Error! Reference source not found.**) opens up access to the payment market to non-traditional players and most importantly allows them access to customer account data (with the customer’s permission) which could see the development of services which help people to manage their money better or switch more easily. PSD2 should also increase security of online payments.
- The PAD (section 5.2.2) improves access to basic bank accounts, enhances transparency and comparability, and facilitates switching. However, its impact is likely to be limited as previous reforms already in place in the UK, such as CASS and the Basic Bank Account Agreement, effectively forerun the Directive in the UK.
- The aim of the IFR is to reduce the cost of card payments to users, and to increase merchant control (although in reality some in the industry believe it may change very little from the perspective of consumers or the existing card schemes).
- The CMA market investigation seeks to improve access to, and switching options for, current accounts for both consumers and businesses. It has also made recommendations on overdrafts, the governance of CASS, the development of the Open Banking Standard, and SME lending.
- Although business rather than consumer focused, the various European-level initiatives around e-invoicing have so far had little success in fostering a harmonised market enabling more growth, although the ERPB is currently working towards possible solutions. There is potential for a standardised e-invoice regime being also a new request to pay payment system for B2B payments – but only if supported by industry and government.

Overall these initiatives could improve trust and confidence in the market, if implemented in a balanced and considered way and if firms innovate in ways that are customer centric, transparent, fair and avoid conflicts of interest.

Unfortunately some initiatives may exacerbate existing detriments, such as increased payment friction from the prescriptive security requirements in PSD2, or increased exclusion from financial services for certain categories of consumer as a result of 4MLD.

None of these regulatory initiatives deals directly with the inflexibility of individual payment mechanisms (like DD), control issues like Request to Pay or the problems identified with Continuous Payment Authorities. Nor do they deal with misdirected payments or the desire for more data or payment tracking (except perhaps the e-invoicing initiatives, which have potential to assist in some of these areas). Unavailability of free to use ATMs in more rural locations – linked to lack of availability of branches – continues to be a problem.

5.1.2 The regulatory horizon for the ‘Simplifying Access Working Group’

There are currently a number of regulatory initiatives looking at issues related to access to payment markets in the UK, and directly relevant to the PSF’s Simplifying Access Working Group proposals. These initiatives include:

- Two market reviews being conducted by the PSR into the supply of indirect access to markets, and on the ownership and competitiveness of infrastructure provision. The PSR has already adopted a “Sponsor Bank Information Direction”¹⁹, requiring an industry code for sponsor banks in order to increase transparency for firms wishing to gain indirect access to payment systems. The proposed remedies of the infrastructure review include competitive procurement, divestment of bank shareholdings in VocaLink to remove the vertical ownership that may impede competition and innovation, and interoperability through common payment messaging standards.
- PSD2 will introduce new requirements obliging payment account providers to open access to third parties. It also introduces new obligations on designated payment systems and indirect access providers not to discriminate when passing payment instructions through the system. Regarding access by non-bank PSPs to accounts maintained with a credit institution, PSD2 requires that Member States ensure access on an objective, non-discriminatory and proportionate basis and any rejection must have a disclosed “motivated reason”.
- The Bank of England is conducting a strategic review of its RTGS infrastructure in response to changes in payments arising from ‘technological innovations’ and ‘a more dynamic focus on competition and innovation driven by the PSR’ which will consider technology like DLT.

Despite these developments, there is still scope for industry to collaborate to improve the experience of PSPs who have to deal with: the diversity of schemes, the complexity of the scheme landscape and associated standards, rules and messaging; as well as switching, choice of PSPs and lack of competition. There may also be merit in considering how technology could improve these areas. In addition, current proposals will not necessarily improve the experience of indirect non-bank PSPs in terms of accessing IBAN or BIC numbers for customer accounts.

5.1.3 The regulatory horizon for the ‘Financial Crime Working Group’

The Working Group should consider the following regulations in more depth:

- 4MLD (section 5.2.4) which may make it more difficult for high-risk customers and PEPs to gain access to financial services, although this depends on how it is implemented. It is also likely to address a number of the detriments highlighted by the FCWG.
- HMT and European Commission proposals on digital currencies (section **Error! Reference source not found.**) which may increase the legitimacy around their use

¹⁹ <https://www.psr.org.uk/psr-specific-direction-1>

- HMT's AML Action Plan (section 5.2.5), which will address a number of the financial crime detriments in relation to information-sharing, and the regulatory regime for banks that makes it difficult to identify account holders and beneficiaries
- PSD2: New IT security (section 5.2.1.2) which could inadvertently restrict firms' ability to respond to cyber threats

With regard to Financial Crime Working Group solutions, we would recommend in particular a legal review of each solution to consider the data protection implications in addition to a review of existing regulatory requirements.

With regard to setting standards for addressing identity and authentication, it is suggested that the group first identify gaps in the regulation, and then consider whether to use the planned revision of JMLSG guidance in line with the implementation of 4MLD rather than creating a new and separate standard.

With regard to the opportunity for the payments industry to exploit a UK digital identity approach for the benefit of payment services and end users it is suggested that consideration be given to exploit /utilise a broader UK digital identity approach, including government initiatives in this space, such as Gov.UK Verify.

5.2 KEY REGULATORY INITIATIVES IDENTIFIED ON THE HORIZON

The Horizon Scanning Working Group identified several regulatory or related initiatives across both the European and UK horizon, different aspects of which are represented below in the graph. They show how key aspects of PSD2 (access to the payment system, third party access to payment accounts and new IT security) and 4MLD would appear to contain either: (i) existing imposed regulatory requirements for individual PSP implementation; or (ii) potential for UK Payments Industry collaboration on implementation of imposed requirements, which could impact the most in terms of helping to solve the detriments identified by the Payments Community. While PAD (consumer right to a payments account) has some potential to address certain detriments, voluntary initiatives concerning key aspects of the Directive are already in place in the UK, so its impact is likely to be limited.

Finally, a number of the initiatives by the PSR, the Bank of England, and the CMA may address detriments related to access and user needs.

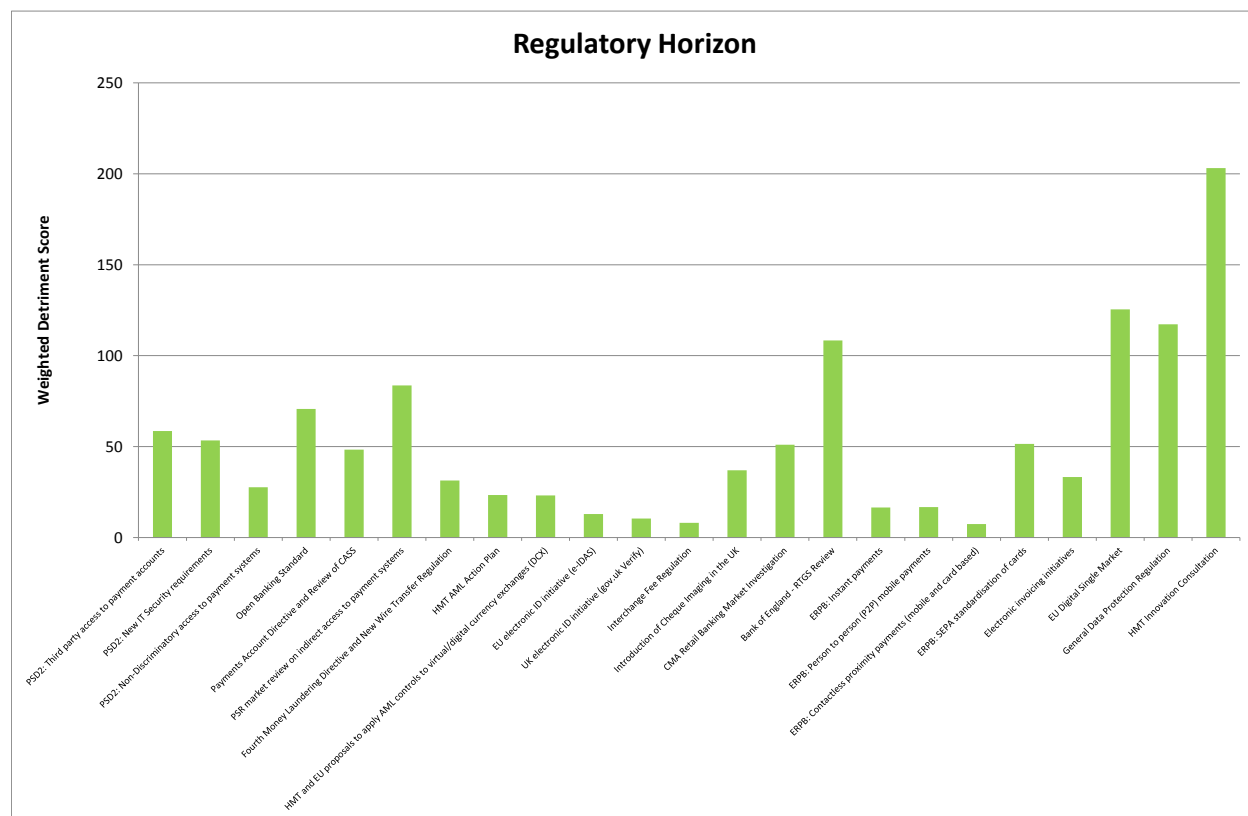


Figure 1: Regulatory initiatives by the detriments they solve

5.2.1 Second Payment Services Directive (PSD2):

PSD2 was adopted in December 2015, and will be implemented across the EU in January 2018. It introduces a number of significant changes to payments regulation across the EU, and will shape the payments competitive landscape in the years to come. If implemented well, it could address a number of detriments identified by the PSR Forum. One of PSD2's key objectives is to increase competition in the payment space and open the market to allow third party payment service providers ("TPPs") to offer regulated payment initiation and account information services. The opportunity for new business models, services and underlying technologies will therefore increase and be reflected in the market through the arrival of more new entrants that can play in this space.

It will also require considerable industry collaboration in a number of areas, for instance in the development of standards for sharing data. The PSF should consider how its strategy could ensure implementation by coordinating the required "considerable industry collaboration".

5.2.1.1 PSD2: access to payment accounts and payment account information by payment initiation service ("PIS") and account information service ("AIS") providers

These provisions require payment account providers ("ASPSP") to permit TPPs (AIS and PIS) to - with the consent of the customer - access account information such as balance and recent transactions, and/or initiate payments directly from their account. This new element of regulation is one of the most significant changes introduced by PSD2, and will require industry collaboration to ensure that requests for access to information can be communicated in real time and subsequently provided. This is particularly challenging given the number of different potential business models that may want to take advantage of these changes, and the fact that the ASPSP is not required to have a contractual agreement with the AIS or PIS.

The UK's approach to managing this challenge could be partially addressed through the Open Banking Standard, a government-driven initiative to create a standardised API that permits any third party complying with the standard to be able to access account information on behalf of their customer. The aim is to encourage the development of new and innovative services that can make use of the information held in bank accounts for the benefit of their customers, and it will require significant industry collaboration to implement. For instance, new services may emerge which allow consumers to provide multiple account data to a third party service which can then offer analytics on transactions (similar to MoneyDashboard²⁰) as well as highlight and enable switching to new products which better serve the customer. Additional control may improve take-up of electronic payments among the marginally banked.

The Open Banking standard is however intended to be a voluntary standard for industry participants, so will not be able to replace the regulatory implementation of PSD2, although it could help address a number of the complexities involved in resolving liability disputes or ensuring customer consent between parties that have no contractual relationship. Its scope is also much wider than the payments industry, so it is not designed solely with PSD2 compliance in mind. See the Open Banking Standard section below which recommends that one strand of the PSF strategy should be to support and drive forward the development of the Open Banking Standard, which the CMA have included within the package of remedies published on 17 May.

User need detriments that may be partially addressed by this element of PSD2 are UN1, UN2 and UN13 regarding the need for more flexible mechanisms for payer and payees to control payments, through their access to third parties that might be able to offer such a service. Also UN4, regarding the need to confirm adequate funds are available to cover a payment.

In helping third parties to initiate payments and access bank account information real-time, the PSD2 will serve to address detriment SA18 on the third party PSPs having difficulty initiating payments and accessing accounts (SA18 and O6).

²⁰ <https://www.moneydashboard.com/>

5.2.1.2 PSD2: New IT Security requirements

PSD2 requires effective management of operational and security risks, and introduces detailed requirements around the authentication of customers and the authorisation of payments. This is intended to enhance the level of consumer protection and thereby address customers' day-to-day concerns about the risk of identity theft or fraudulent activity on an account (detriments FC2 and O2), and their ability to make use of new technology solutions. However, the provisions set out an inflexible regulatory framework for the security of online payments, and this may restrict firms' ability to react to cyber security threats, which could eventually undermine consumer confidence. It is also likely to lead to higher levels of customer friction (see detriment FC4), which can in fact reduce online security (e.g. through frequent 'forgotten password' requests, using the same password for several accounts etc.) rather than increase it. The requirement to "dynamically link" the payment amount and payee may also help address detriment UN7 and FC6, about the lack of reference data to enable reconciliation.

The European Banking Authority ("**EBA**") has been tasked with developing the detailed requirements in this area. There may be an opportunity for industry collaboration to ensure that any requirements are compatible with UK initiatives, such as the Open Banking Standard.

There is a need for industry alignment in relation to the application of provisions related to incident reporting and advocacy to ensure that there are no overlaps/duplication with the Network and Information Security Directive ("**NIS**"). This is an EU Directive which, amongst other things, requires companies in critical sectors – such as energy, transport, banking and health – as well as key Internet services to adopt risk management practices and report major incidents to the national authorities. A potential carve-out from the NIS has however been introduced for firms already subject to equivalent incident reporting requirements in other sectoral Directives, such as PSD2. It is currently unclear whether the PSD2 reporting requirements – which are more limited in scope compared to those in the NIS – will be considered "equivalent" to the NIS requirements, thus exempting PSD2 authorised firms from reporting under the NIS.

5.2.1.3 PSD2: Access to payment systems

An important provision in the PSD2 requires non-discriminatory access to payment systems. This provision is not new, but the wording has been strengthened in relation to 'designated' payment systems/schemes, (which in the UK includes Bacs, CHAPS, Faster Payments, LINK, Cheque & Credit, Northern Ireland Clearing, Visa and MasterCard). Whilst the schemes themselves remain exempt from any legislative requirement to open up access to the system, scheme members who provide indirect access to other PSPs will not be permitted to discriminate against other authorised PSPs wishing to gain access, and where they refuse access to the payment system, they must provide the applicant PSP with "full reasons for any rejection".

The PSR is conducting a review of the UK's current landscape around access to the inter-bank payment systems, and the Bank of England's review - covered below in section 5.2.13 - considers whether or not the RTGS should be opened up to non-bank PSPs. These initiatives may lead to greater domestic access to payment systems than PSD2, and thereby address detriments SA3 – SA6

Similarly, the PSF's own work on Simplifying Access may solve these detriments more successfully than the formal legislative changes to the PSD2.

5.2.1.4 Open Banking Standard

In the Autumn Statement 2014, the UK government announced its intention for the UK to be the global centre for financial technology and to lead the world in open source data in banking. One of the measures to support this goal is the development of an open standard for APIs in UK banking. This was outlined in a report on Data Sharing and Open Data for Banks²¹ written by the Open Data Institute and consultancy firm Fingleton Associates. Following the results of a government Call for Evidence in early 2015, an industry steering group was set up in September 2015 and given the task of drafting a report setting out the framework for such an API standard. Following wide collaboration within the payments and wider industry, the Open Banking Standard report²² was published in February 2016, and recommended the setting up of a governance framework and implementation plan for the standard. The proposal for the standard has been well received in other jurisdictions.

The standard could provide the basis for innovative solutions to several customer detriments identified by the PSF, such as UN1 and UN2 on the lack of customer control over payments, UN4 regarding the need to confirm adequate funds are in place before initiating payment, and UN13 about the fact that competition is not meeting user needs for control. By opening up the market to third-party providers could address UN15 and UN16 regarding the lack of alternatives to cards for business users. It could also address detriments raised by the payment service community such as SA18 & O6 about third party providers being unable to initiate payments or access account data, and HS5 about making it easier for new entrants to become established in the market.

Although HMT has stopped short of providing explicit support for the standard, on 17 May the CMA announced they will make an order requiring 9 banks²³ to adopt and maintain common API standards through which they will share data with other providers and third parties.. They will be required to fund and set up an "Implementation Entity" with an independent chair to oversee implementation and maintenance of the open banking standards by January 2018 (with an interim deadline of Q1 2017 for open data such as price and product information, and reference data such as branch and ATM locations and open hours).

As long as action is taken rapidly, the risk that individual players - who are obliged to implement the PSD2 - will take individual approaches, resulting in market fragmentation and further complexity for smaller players can be avoided. It is also important to ensure that the standard is aligned with the regulatory technical standard being developed by the European Banking Authority under the PSD2 for open and secure intra-PSP communication.

²¹ <https://www.gov.uk/government/publications/data-sharing-and-open-data-for-banks>

²² <http://theodi.org/open-banking-standard>

²³ RBSG, LBG, Barclays, HSBCG, Nationwide, Santander, Danske, Bol and AIBG

5.2.2 Payment Accounts Directive 2014/92/EU (PAD)

The PAD was adopted by the European Parliament and the Council of the European Union in July 2014. It aims to:

- improve transparency and comparability of fee information on payment accounts, some standardised terminology, and rules on packaged accounts
- facilitate switching of payment accounts between the same denominated accounts issued by PSPs in the same member state
- ensure every EU resident has access to a payment account with basic features

The Directive has some potential to address certain detriments, but voluntary initiatives concerning key aspects of the Directive are already in place in the UK so its impact is likely to be limited.

Firms are obliged to apply the provisions on packaged accounts, switching and payment accounts with basic features by 18 September 2016. Requirements related to increased transparency and comparability of fees will fall into place once further details have been agreed by regulators.

Prior to this Directive the UK's retail banking industry had agreed voluntary arrangements to enable two out of the three key changes introduced by the PAD: (a) account switching (i.e. CASS launched in September 2013 which has 40 bank participants) and (b) 'basic bank accounts' (agreement made by 9 major high street banks December 2014 to offer basic bank accounts).

On transparency and comparability, the UK has already introduced annual summary statements and common terminology for overdraft services under a voluntary agreement between HM Treasury and 7 banks with regards to overdrafts. As such, some of the substance of the Directive has already been achieved in the UK, which may help to address detriment UN9 on the complexity of financial products leading to consumer disengagement.

Certain detriments around "financial capability" identified by the Forum (including UN10 and 14 relating to the needs of low income/low use users who need simple payment mechanisms and prefer cash) are to some extent addressed by the existing voluntary agreements by the major retail banks.

Beyond existing activity, the Directive:

- will ensure that people who are unbanked are assured of their right to open a basic bank account. This is important in opening up access and making electronic payments more available to people currently excluded from the market.
- will lead to a greater number of banks (and non-banks who offer payment accounts) offering a switching service, as it will become compulsory for all providers of payment accounts (as opposed to just the current members of CASS) to offer a switching service.
- will lead to a greater number of banks offering basic bank accounts.

While there is limited scope for industry collaboration specifically on the PAD, in order for the PAD to be effective it may be helpful for the industry to undertake an awareness raising campaign to

highlight consumers' right to an account and their availability. This could also help to counter previous problems relating to a lack of awareness of the existence of basic payment accounts and the mis-selling of current and packaged accounts. Likewise, activity around the Directive may go some way towards raising public awareness and consumer confidence in the switching service, which could address the detriments related to difficulty in switching (HS1 & HS2). Another potential area for collaboration might be to develop standards to deal with switching between CASS and non-CASS members.

However, on its own, the Directive will not provide the control that the unbanked or marginally banked require (see UN12 & 13 around competition not currently meeting user needs for transparency/control) and so there may be limited up-take of electronic payment services among those who may stand to gain most from using them. This points to the need for industry to address issues of customer control and 'request to pay'. This in turn will need appropriate marketing to build the awareness and confidence of that set of consumers with the services.

There is also scope for the industry to consider how it can work together to solve detriment FC4 on acceptable identification and verification documents for account opening, which is currently often a barrier for vulnerable or non-standard customers. The Directive has very strict criteria for refusing to open a basic bank account and banks should not be able to hide behind AML as a reason for refusing a basic bank account. Even so, if the Directive is poorly implemented, there is potentially a risk that identity requirements could limit the usefulness of the PAD in increasing inclusion.

5.2.3 PSR Interim report – Market review into the supply of indirect access to payment systems (MR15/1.2.)

The PSR has recently published two interim reports on the current set up of the payments infrastructure supply chain. Each has relevance for the aims and objectives of the PSF and there is an overlap around potential 'remedies' and the solutions proposed by Access to Markets working group.

In its review of the supply of indirect access to payment systems (MR15/1.2), the PSR noted that competition in the supply of indirect access is producing some good outcomes for indirect payment service providers. It also noted high overall satisfaction with the quality of service and higher levels of recent investment and innovation in the market. However, it also raised some concerns around choice, and the ability of indirect payment service providers to switch providers. In particular, the PSR found that financial crime regulation is limiting the provision of indirect access for some indirect payments systems providers, and market conditions are less favourable for non-agency and smaller indirect payment service providers.

Given the ongoing development of new entry options by indirect access providers, new forms of access arrangements, and the PSR's current and anticipated regulatory work on access the PSR have decided to monitor current developments, and take further action if its concerns are not sufficiently addressed over the next 12 months. These ongoing developments may address SA1 – SA5 on difficulties for PSPs accessing payment systems, and SA16 on the multiplicity of payment schemes and their terms for joining.

The interim report on infrastructure provision reflects the PSR's same core objectives around competition and innovation to enable the best end user service, focusing on the interbank payment systems provided through Bacs, Faster Payments and LINK. The review centres on VocaLink as the current Central Infrastructure provider in the UK's supply chain for these services, and provisional findings are that competition for, and within, the provision of infrastructure is not sufficiently competitive.

The proposed remedies include competitive procurement, divestment of Bank shareholdings in VocaLink to remove the vertical ownership that may impede competition and innovation – which may address SA13 on the fact that indirect PSPs have no role in the governance of schemes and SA6 on the lack of competition between schemes - and to ensure interoperability through common payment messaging standards – which may address detriments SA7, SA9 and SA11 on the many schemes standards and lack of interoperability.

Some PSF technology solutions may help enable the implementation of change in this area. For instance, detriments associated with access to payment systems and innovation could be partly addressed by standardising the payment layers, making it easier to make discrete changes at pace. Standardised interoperability built upon improved payment messaging standards could underpin new end user payment options such as Request to Pay or e-invoicing, giving customers more control of their transactions (thus addressing UN1, UN2, UN13 and FC7). It will be important to align timings of the relevant work underway via the Payments Strategy Forum and the final outputs and directions from this separate, but related, Market Review.

5.2.4 Fourth Money Laundering Directive and new Fund Transfer Regulation

An important area of concern for law enforcement is financial crime and terrorist financing of various forms. Legislation has been in place for many years to help to prevent and track these activities. European legislation is based on core recommendations made by the Financial Action Task Force ("**FATF**"), a collaborative global body.

Two key elements of the European legislation have recently been updated. These are:

- The 4MLD (Directive (EU) 2015/849) of 20 May 2015, to be implemented by member states by 26 June 2017; and
- The Fund Transfer Regulation ("**FTR**")²⁴ (Regulation (EU) 2015/847) of 20 May 2015, which will apply (with direct effect without needing to be implemented by member states) from 26 June 2017.

To further combat terrorist financing and also prompted by the terrorist attacks in Paris late last year, the European Commission will publish additional amendments to the 4MLD on 7 June 2016 to tighten up rules related to customer diligence requirements for prepaid cards, and to bring digital currencies within the scope of the 4MLD.

²⁴ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015R0847>

In the UK, Guidance developed by the JMLSG is approved by HMT and followed by the Financial Services Industry to comply with the UK Money Laundering Regulations 2007 (“**MLRs**”). As the 4MLD (like 3MLD) is a minimum harmonisation Directive, the UK can choose to apply higher standards than set by the Directive. The JMLSG Guidance will be updated and this is a potential area for collaboration within the industry and with users. In comparison with the 3MLD, the 4MLD provides an enhanced framework for a risk-based approach to prevention of money laundering. In developing guidance to support the development of new risk-based approaches to prevent money laundering, industry participants and users could co-operate in identifying areas of concern and approaches to reduce the risk of money laundering, while still enabling access for vulnerable or non-standard customers (detriment FC4) as noted above.

The wider application of KYC may alleviate FC10 by increasing understanding of customers opening accounts. Requirements to identify beneficiaries may also improve FC15 and FC23 regarding the inability of banks to be able to make decisions on third parties due to lack of information regarding identity. Finally the WTR requires the transmission of information regarding payer and payee, and will address detriments UN3, UN7 and potentially UN8.

5.2.5 HMT Action Plan to for anti-money laundering and counter-terrorist finance

In April 2016, HMT published a comprehensive Action Plan²⁵ representing the most significant changes to the UK’s AML and TF regime in over 10 years. The Action Plan consists of 19 separate “actions”, covering the following areas:

- Enhancing the law enforcement response, including new legal powers to enable the disruption of criminals and terrorists, such as requiring individuals to evidence their source of wealth through the use of Unexplained Wealth Orders
- Improving the effectiveness of the supervisory regime to ensure a risk-based approach to tackling money laundering and terrorist finance; obliged entities will be expected to take a proportionate approach and focus their efforts on the highest risks rather than all risks.
- Increase the UK’s international reach through more use of international groups like the G20 and FATF, and a new approach towards cross-border information sharing.
- Stronger partnership with private sector:
 - o Making the pilot Joint Money Laundering Intelligence Taskforce (JMLIT) permanent, and considering extending it to other obliged entities
 - o Legislative reform to permit more information-sharing, similar to the Section 314 of the US Patriot Act²⁶
 - o Significant reforms to the SARs regime, including the removal of the consent regime

Two consultations accompanied the Action Plan, with deadlines of 2 June. These were a consultation on the legislative changes being proposed above, and a call for information in relation to the current UK AML supervisory regime.

²⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/517992/6-2118-Action_Plan_for_Anti-Money_Laundering__web_.pdf

²⁶ https://www.fincen.gov/statutes_regs/patriot/section314a.html

This Action Plan, if implemented well, is likely to address a number of detriments. A reformed supervisory regime may help address FC13, FC15, FC16 and FC17 on the regulatory responsibilities placed on banks in relation to customer KYC. More public-private and cross-border data sharing may help address FC14, FC22 and FC25.

5.2.6 HMT proposals to apply anti-money laundering controls to Virtual/Digital Currency Exchanges (“DCXs”)

Virtual/digital currencies (“VCs”) operate outside the regulated field and outside government-controlled monetary frameworks. As such, they allow payments to take place in an uncontrolled environment. This contributes to their allure but can facilitate criminal activity, on the basis of anonymous (or at least pseudonymous) transactions.

Whilst the UK Government is keen to support the development of FinTech and related activities, it has decided that some control is needed. It is therefore putting in place requirements for DCXs to carry out customer due diligence (“CDD”) so that at the touch points with the “real” financial world, where virtual/digital currency is exchanged for fiat currency, or vice versa, users of virtual/digital currencies are identified and their identity verified. The Government views this as a proportionate approach to regulation in this area, which will support the growth of confidence in virtual/digital currencies as legitimate forms of currency for payment. There might be scope for collaboration in developing the risk-based CDD needed for DCXs, however this may be limited as there could be quite standardised approaches.

The UK developments are taking place in the context of other developments at European level.

European Banking Authority Report - 2014

In July 2014, the EBA published an Opinion on Virtual Currencies (EBA/Op/2014/08)²⁷. In the report, the EBA identified potential benefits of virtual currencies and also risks posed by them. The EBA concluded that any regulation “to address the risks comprehensively... would ...require a substantial, and in some aspects unprecedented and untested, body of regulation, as well as resources to enforce the regulation.” In the short-term, therefore only those risks that arise between VC schemes (“VCS”) and the regulated financial services sector (but not those that arise from activities within or between VCS) and that this would include risks of money laundering and financial crime, the risks to conventional payment systems, and some risks to individual users. The EBA recommended that national supervisory authorities discourage credit institutions, payment institutions, and e-money institutions from buying, holding or selling VCs, thereby ‘shielding’ regulated financial services from VCs.

The EBA also recommended that EU legislators consider declaring VC exchanges as ‘obliged entities’ that must comply with anti-money laundering and counter terrorist financing requirements set out in the 4MLD. However at the same time, the EBA cautioned against drawing similarities between existing payment and payment-related services and some VC-based services, on the basis that the decentralised nature of many VCS, the fact that the functioning and rules of a VCS can be

²⁷ <https://www.eba.europa.eu/documents/10180/657547/EBA-Op-2014-08+Opinion+on+Virtual+Currencies.pdf>

changed, and the absence of a redeemer of last resort means that VCs are not comparable to conventional payment or electronic money services.

European Central Bank Report - 2015

The European Central Bank published a report on Virtual Currency Schemes in February 2015²⁸, where they defined virtual currency as ***“a digital representation of value, not issued by a central bank, credit institution or e-money institution, which, in some circumstances, can be used as an alternative to money.”*** The ECB also said that: *“The term “virtual currency scheme(s)” is used throughout this report to describe both the aspect of value and that of the inherent or in-built mechanisms ensuring that value can be transferred.”*

The ECB reviewed existing regulatory responses to VCs and called on each authority to consider how the relevant legislative, regulatory and supervisory frameworks apply to VCS, as well as possible amendment of these frameworks if necessary.

They concluded that there was no “need to amend or expand the current EU legal framework for virtual currencies as the usage of VCS for payments is currently limited, meaning that there is not yet a material risk for any central bank tasks, including promoting the smooth operation of payment systems. However, a major incident with VCS and a subsequent loss of trust in VCS could also undermine users’ confidence in electronic payment instruments, in e-money and/or in specific payment solutions. The ECB recognises that, besides their drawbacks and disadvantages, VCS could also have some advantages over traditional payment solutions and specifically for payment within virtual communities/closed-loop environments and for cross-border payments. As such, it is not excluded that a new or improved VCS may be more successful in future. Therefore, the Eurosystem will continue monitoring developments, notably for payments-related aspects of VCS.”

The European Parliament is considering a motion in relation to virtual currencies, contained in an Own-Initiative Report for the Committee on Economic and Monetary Affairs (2016/2007(INI))²⁹. This again points out that there are potential benefits and also risks relating to VCs and calls for: *“a proportionate regulatory approach at EU level so as not to stifle innovation or add superfluous costs to it at this early stage, while taking seriously the regulatory challenges that the widespread use of VCs and DLT might pose”*. The report welcomes the European Commission’s proposal to bring VCs into the scope of the 4MLD, and calls on the European Commission to analyse whether other payment regulations should likewise be amended, including the PSD2, PAD and EMD.

It also calls for the creation of a horizontal Task Force DLT (“**TF DLT**”) led by the Commission, consisting of technical and regulatory experts, in order to:

- i) monitor DLT use at the European level and globally;
- ii) analyse the benefits and risks – including to end-users – of DLT applications, and potentially identify standards for best practice where such standards are emerging;
- iii) set out a roadmap for future steps at EU and member state level, including an assessment of existing European regulation;

²⁸ (Virtual currency schemes – a further analysis – <https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf>).

²⁹ [http://parltrack.euwiki.org/dossier/2016/2007\(INI\)](http://parltrack.euwiki.org/dossier/2016/2007(INI))

iv) develop stress tests for all relevant aspects of VCs and other DLT schemes that reach a level of use that would make them systemically important for stability;
Finally, the report calls on the Commission to develop guidelines to ensure transparency of information for existing and future VC users.

It is clear that there has been a good deal of thought about and analysis of VCs but the regulatory framework has yet to develop beyond the conceptual stage. This may address detriment HS4 on the lack of a long-term strategy for blockchain.

5.2.7 European electronic ID initiative (e-IDas Regulation No. 910/2014)

Regulation (EU) N°910/2014 on electronic identification and trust services for electronic transactions in the internal market ("**e-IDAS**")³⁰ was adopted on 23 July 2014, and will apply from 1 July 2016. Its aim is to enable secure and interoperable entity identification and authentication between businesses, citizens and public authorities by:

- enabling consumers and businesses to be able to use their own national electronic identification schemes ("**eIDs**") to access public services in other EU countries where eIDs are available.
- creating a European internal market for eTS - namely electronic signatures, electronic seals, time stamp, electronic delivery service and website authentication - by ensuring that they will work across borders and have the same legal status as traditional paper based processes. Only by providing certainty on the legal validity of all these services, businesses and citizens will use the digital interactions as their natural way of interaction.

The EBA's Discussion Paper on Strong Customer Authentication and intra-PSP Communication³¹ proposed that e-IDAS could be a useful framework for the payments industry and the implementation of the PSD2. However the scope and timeline of adoption of e-IDAS by the private sector (and even by government entities in different EEA countries) is unclear, and no country outside the EEA has indicated they will be adopting e-IDAS identification services; this limits the appeal of this framework for PSPs with a global presence. In addition, the UK does not yet have an electronic identification scheme (unless Gov.uk Verify qualifies), so it may have limited benefit in the UK.

If the framework were to be extended to use by the private sector, it might also be able to address detriment FC22 on the fact that customer identity and data sharing is less robust for international payments than for UK-UK payments. It also might help address detriment FC4 on the complexity and cost of online verification of identity and UN3 on the need to confirm payee information.

5.2.8 UK electronic ID initiative (Gov.uk Verify)

GOV.UK Verify is a government initiative to allow individuals to complete verification of their identity online with one of 8 certified service providers, giving them access to government services securely and privately. GOV.UK Verify is being built by Government Digital Service ("**GDS**"). It is currently voluntary, and being tested with various government departments, such as DWP,

³⁰ http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0073.01.ENG

³¹ https://www.eba.europa.eu/news-press/calendar?p_p_id=8&_8_struts_action=%2Fcalendar%2Fview_event&_8_eventId=1303933

HMRC, DVLA, BIS and Defra. It went live on 9 May 2016.

As with e-IDAS, if the initiative were to be extended to use by the private sector, it might also be able to help address detriment FC22 on the fact that customer identity and data sharing is less robust for international payments than for UK-UK payments. It also might help address detriment FC3 on the need for customers to complete KYC every time they switch to a new bank account, and FC4 on the complexity and cost of online verification of identity.

5.2.9 Interchange Fee Regulation

On 29 April 2015 the European Parliament and the Council of the European Union adopted the IFR. Interchange was previously an established uniform rate set by the schemes such as Visa and MasterCard that obviated the need for interbank bi-lateral negotiations and agreements.

The IFR's aim is to create a properly functioning Internal market in the area of card-based payments and internet and mobile payments based on cards, by setting the interchange fees at economically efficient levels, and supporting fair competition, innovation and market entry of new operators. The IFR imposes requirements directly on card schemes, issuers, acquirers and merchants. The PSR is the main competent authority for monitoring compliance with and enforcing the IFR in the UK, although the FCA and Trading Standards Authorities will have some responsibilities in this respect also.

On 9 December 2015, the IFR introduced interchange fee caps on consumer debit and credit card transactions where both the issuer and acquirer are located in the EEA. This regulation aims to reduce costs for merchants and thus make these transactions more affordable, potentially passing further benefit to consumers. Commercial card transactions are exempt from the caps.

From 9 June 2016 business rule requirements will come into force. The business rule requirements, amongst other things, are aimed at ensuring consumers and merchants have accurate information on fees paid in relation to payment transactions and to allow merchants to choose to accept only cheaper cards or steer consumers towards the use of cheaper cards.

To enable this, IFR Articles 10(4) and (5) require that "payees and payers should have the means to identify the different categories of cards". Therefore the various brands and categories should be identifiable electronically, and for newly issued card-based payment instruments, also be visible on the device. In addition, the payer should be informed about the acceptance of the payer's payment instrument(s) at a given point of sale. Any limitations on the use of a given brand should be announced by the payee to the payer at the same time and under the same conditions as the information that a given brand is accepted."

These are areas identified for potential UK industry collaboration so that the requirements are implemented in the same way by the industry. This could help tackle detriment UN12 & 13, which state that competition is not working well for transparency and control. However, it highlights the increasingly complex landscape of payment schemes for consumers who are unrealistically expected

to make sense of the options. This may connect to the initiatives of the ERPB around EU standardisation of card payments, which is set out below.

Though directionally the IFR requirements have been generally well received, they have been inconsistently communicated and implemented to key stakeholders, specifically merchants. To deliver the transparency and choice options, they do require significant effort by most stakeholders, including merchants that request the changes, to ensure implementation. Significant implementation considerations are imposed to deliver the required convenience, choice, transparency and cost savings.

5.2.10 Article 7 – Scheme/Processing Separation

Equally from 9 June 2016, Article 7 of the above European regulation comes into force. Article 7, otherwise known as “Separation of payment card scheme and processing entities”, addresses regulatory concerns that international card schemes, such as Visa and MasterCard, have commercial and operational advantages versus processor-only organisations, when offering transaction-processing services in Europe.

Article 7 requires payment card schemes and processing entities to

- be independent in terms of accounting, organisation and decision-making processes
- not present prices for payment card scheme and processing activities in a bundled manner
- not cross-subsidise such processing activities
- allow for the possibility that authorisation and clearing messages of single card-based payment transactions be separated and processed by different processing entities
- not discriminate in any way between their subsidiaries/shareholders on the one hand and users of the payment card schemes and other contractual partners on the other hand
- not make the provision of any service they offer conditional in any way on the acceptance by their contractual partner of any other service they offer.

The forced and very visible separation of payment scheme and processing is intended to introduce greater competition between schemes such as Visa and MasterCard and other existing payment processing providers. It is likely that all processing entities will be eager to pursue all processing opportunities that maximise their processing capacities, and not be restricted to card transaction processing only.

5.2.11 Introduction of cheque imaging in the UK

The Small Business, Enterprise and Employment Act 2015 (PART 1 Access to Finance - Section 13 and associated Secondary legislation) introduces changes to the Bills of Exchange Act 1882 to enable cheques to be presented as images between consenting banks in place of the existing physical exchange of paper. It also repeals the changes introduced by the Deregulation (Bills of Exchange) Order 1996 which enabled data only exchange with recourse to paper. The changes enable the introduction of cheque imaging thereby improving the customer offering by speeding up cheque processing, reducing costs (eliminates the need for transportation of paper cheques

thereby enabling a reduction in central processing costs), and enabling new products to be developed by banks and third party suppliers. HMT are also expected to enable secondary legislation introducing a 'responsible banker' liability model prior to the ICS. This will inform fraud liability in the image clearing world.

The changes are currently being enabled by the development of an Image Clearing System ("**ICS**") by Cheque and Credit Clearing Company Ltd and the Belfast Bankers Clearing Company Ltd within the UK.

This initiative continues the existing multi operator model (which was considered a detriment – SA16 - by the Payments Community) by the introduction of an electronic cheque processing scheme, but this is mitigated by the reduction in the overall number of schemes due to the closure of the two existing sterling paper schemes. Eventually it will result in an electronic payment scheme speeding up cheque payments as well as enabling sort codes to be transferred between banks. This will address a long standing complaint relating to the ability of small banks to move between sponsoring banks and granting greater access of small banks to the payments market, thereby addressing detriments SA1, SA3, SA4 and SA5 on indirect access to payment schemes. Like other electronic payment schemes it will have the ability to reroute payments under the CASS to the new bank whilst maintaining the same payment timelines. As it is an electronic payment scheme it will be able to better accommodate ANP if this is developed, improving detriment HS2 on the barriers to switching caused by having to change bank account number and sort code.

The move to cheque imaging enables customers to benefit from the same timescales even when the drawer has changed bank since issuing the cheque. Initially this will be a pay in one day and receive the next working day, but has the functionality to move to same day or hybrid model for processing, although this would require significant further investment by institutions that participate. These changes should further enable niche players in the payment market to innovate in the customer arena, and could enable the introduction of other collaborative payment/image related services over the secure network, thus helping to address detriment HS3 on the lack of innovation by banks. The build of the infrastructure was competitively tendered resulting in a new supplier of payment infrastructure to the UK.

5.2.12 CMA Retail Banking Market Investigation

On 6 November 2014, following the conduct of market studies, building on work done previously by the Office of Fair Trading, the CMA decided to make an ordinary market investigation reference, under section 131 of the Enterprise Act 2002, in relation to the supply of retail banking services to personal current account ("**PCA**") customers and to SMEs. It published its findings and remedies on 17 May 2016.

It has found that there is a combination of features of the markets for PCAs, business current accounts ("**BCAs**") and SME lending that give rise to adverse effects on competition. These features relate to low levels of customer engagement, barriers to accessing and assessing

information, barriers to switching and incumbency advantages, and multiple account holdings with the same banks (for instance, current account, business account and an SME lending product).

The remedies it has proposed involve measures to promote engagement and prompt searching and switching behaviour, measures to make it easier for SMEs to shop around between lenders, changes to the governance of CASS, and remedies for PCA overdraft customers. In particular, the CMA is proposing measures to facilitate comparisons between providers, make it easier to open BCAs and to improve the switching process³².

The CMA has also announced it will make an Order requiring 9 high street banks³³ to - by January 2018 - adopt and maintain common API standards through which they will share data with other providers and third parties. To that end the banks are required to set up and fund an Implementation Entity with a suitably qualified, independent chair. They are also required to provide open data such as product data, branch and ATM location by Q1 2017. This implementation of the Open Banking Standard API should allow new services to develop, including those that could help customers switch to products better suited to their needs, with less consumer effort required. Thus use of algorithms could improve consumers' ability to 'assess' the market. (However it will rely on more post-sale product information to be made available to effect the most meaningful change in the market).

These remedies should go some way towards addressing detriments UN11, UN12 and UN13 regarding competition not meeting user needs for control, simplicity and transparency. It will also address SA18 on third party difficulties accessing data. Finally, it may also address HS1 & HS2 about difficulties and reluctance for consumers and corporates to switch bank accounts

5.2.13 Bank of England – Real Time Gross Settlement (RTGS) Review

Following an outage of its RTGS system on 20 October 2014, the Bank of England launched an independent review (conducted by Deloitte)³⁴ of the causes of the disruption. Following the publication of the review's results the Bank has recently announced that it has completed, or agreed steps that will complete, all the actions in response to the Deloitte report (Government)

One of these actions was an overall review of the RTGS system in order to address the challenges of today's payment market and also to meet and shape payments trends in the coming decades.

In structuring the blueprint for the RTGS review, the Bank will seek to answer the following points:

- The mission of the Bank, that is the maintenance of the UK monetary and financial stability;
- The desired level of functionality;
- The access to the RTGS and the challenges it raises; and

³² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/470024/Banking_remedies_notice.pdf

³³ RBS Group, LBG, Barclays, HSBC Group, Nationwide, Santander, Danske, Bank of Ireland and AIB Group

³⁴ by the then Office of Fair Trading (OFT) and HM Treasury through the Payment Systems Task Force.

- The role of the Bank in delivering payments and settlement services, looking closely at how the UK compares to elsewhere around the world and the international guidance on risk standards set out in the Principles for Financial Market Infrastructure.

In light of the emerging results of the blueprint, the Bank's supervisory function will review whether any changes are necessary to the supervisory model for the high value sterling payments system.

The Bank's aim is to have agreed on a blueprint for high-value sterling settlement by the end of 2016, with technological development of that blueprint beginning in 2017. To do so, the Bank is consulting with a wide range of stakeholders, both in the industry and outside and it is considering whether DLT could help. The outcome of the Bank's work could help address detriment SA8 regarding difficulties obtaining a Bank of England settlement account in order to become a direct participant of certain designated payment schemes.

This review may result in addressing detriments SA1 – SA14 and SA16 regarding indirect access to payment schemes, governance, cost and the complexity of joining schemes. It may also make it easier for third party users to initiate real time payments, as set out in SA18. It may also address HS4 regarding the lack of long term strategy for blockchain, and HS5 regarding new technologies and the need to make it easier for new entrants to become established in the market.

5.2.14 European Retail Payments Board initiatives

The ERPB was set up by the ECB in 2013, as the successor to the SEPA Council which had governed the Single European Payments Area ("**SEPA**") since 2010. The ERPB's aim is to foster the development of an integrated, innovative and competitive market for retail payments in euro in the EU.

The ERPB has initiated a number of new projects, which are listed below. Whilst most are limited to the Euro system, they may have some impact on UK PSPs and the UK Payment Services landscape.

5.2.14.1 ERPB: Instant Payments

In November 2015 the ERPB endorsed a scheme proposal for instant credit transfer, known as SEPA Credit Transfer, or SCTInst³⁵. It will be developed by November 2016, and implemented by November 2017. The European Payments Council ("**EPC**") has been tasked with creating an SCTInst³⁶ rulebook to underpin the operation of this scheme, and the intention is to extend the scheme to SEPA Direct Debit ("**SDD**") and card payments.

The UK payments industry will have to collaborate to ensure interoperability with the EU system in order to facilitate cross-border payments as well as foreign exchange between sterling and euro. It will also need to collaborate in order to extend its domestic instant payment system to Customer to Business ("**C2B**") and to cards and direct debit.

³⁵ <http://www.europeanpaymentscouncil.eu/index.cfm/sepa-instant-payments/sct-inst-consultation/>

³⁶ <http://www.europeanpaymentscouncil.eu/index.cfm/sepa-instant-payments/sct-inst-consultation/>

As it is limited to the SEPA area, it may have limited impact on UK consumers, but it could reduce detriment UN15 and UN16, on lack of access for business users to online credit transfer payments.

5.2.14.2 ERPB: Person-to-person (P2P) mobile payments

In June 2015, the ERPB agreed on recommendations to set up a mobile Person-To-Person (“**P2P**”) payment network across the EU. This aims to allow payments to be made between customers across the EU using a mobile phone number as a proxy for an IBAN number, similar to the UK PayM³⁷ initiative. The potential proxy could extend to other identification information that the payee is prepared to share, such as an email address. The project aims to set up a standardised proxy lookup (“**SPL**”) service, to connect between existing EU and national infrastructures. Whilst the plan is currently focused on P2P payments, it may be extended to Person to Merchant/Retailer (“**P2M**”) in future, as this holds a stronger business case.

As with SCTinst³⁸, the UK payments industry will need to collaborate in order to ensure interoperability with the EU system, bearing in mind the challenges related to currency exchange. Currently the main opportunities for the UK payments industry lie in contributing towards the ongoing work of the steering committee to set up a mobile P2P forum. The first meeting was held in March 2016 and next scheduled for May 2016.

This project may assist in reducing detriment HS7 regarding the lack of interoperability between mobile payment solutions, although the structure of the proposed solution is not focused on mobile phone payments, but rather the use of a mobile phone number as a proxy for an IBAN for the purpose of a SEPA payment.

5.2.14.3 ERPB: Contactless proximity payments (mobile and card-based)

In November 2015, the ERPB published a statement agreeing to develop, over time, a secure, convenient, consistent, efficient and trusted payment experience for customers (consumers and merchants) for all retail transactions at the point of interaction (“**POI**”), based on commonly accepted and standardised contactless and other proximity payment technologies.

A working group has published a report setting out a number of recommendations for the take-up of mobile and card-based contactless proximity payments in the EU, many of which are already under development. These include further standardisation across industry, coordinated communication promoting the take-up of contactless, and the addressing of certain technical and regulatory issues.

As with the mobile P2P project, the UK will need to collaborate with the EPC and the ERPB and provide input to any relevant consultation processes. This project could potentially assist in reducing detriment HS7 regarding the lack of interoperability between mobile payment solutions.

³⁷ <http://www.paymentsuk.org.uk/project-delivery/past-projects/paym>

³⁸ <http://www.europeanpaymentscouncil.eu/index.cfm/sepa-instant-payments/sct-inst-consultation/>

5.2.14.4 ERPB: SEPA standardisation of cards

The ERPB's Card Stakeholder Group maintains the SEPA Cards Standardisation volumes, with the next one (Volume 7.05) due to be completed by 31 October 2016. The Volume defines standard requirements to enable an interoperable card and terminal infrastructure across SEPA, based on open international card standards. It only applies to Euro payments, and whilst IBAN and BIC can be used for inter-PSP transactions, PSPs are not permitted to require customers to provide more than simply the IBAN when initiating euro transactions (SCT³⁹ and SDD). It may impact on the UK payments market where customers should be informed that they don't need to provide more than their IBAN. If ANP is eventually adopted, customers may be able to use only one IBAN for each account they hold throughout their lifetime.

5.2.14.5 Electronic invoicing solutions

E-invoicing is the electronic transfer of billing and payment information between business partners.

The problem that exists with the European e-invoicing market today is market fragmentation in technologies, diversity of data and usage requirements and different approaches to their implementation. Because no existing e-Invoicing format has achieved dominance, market players need to support multiple formats, which requires substantial mapping and conversion exercises. According to the European Commission the key challenge is to define a single and clear semantic data model because a common data model will facilitate semantic interoperability and ensure technological neutrality.

There are several e-invoicing initiatives elaborated below. The PSF may wish to adopt a strategy for the UK payments industry that incorporates either industry collaboration (which so far seems to have been lacking in noticeable achievement in this area) or regulatory requirements around e-invoicing. There may be potential significant benefits in the PSF fostering a widespread use of harmonised and interoperable e-invoicing across the UK's private and public sector, allowing for quicker retrieval of money from customers and quicker and cheaper processing as invoice information can be fed directly into a company's payment system. These company payment systems obviously rely on the services offered by the UK's Payments Industry and there is potential for a standardised e-invoice regime therefore being a new request to pay payment system for B2B payments.

The relevant e-invoicing initiatives the PSF would have to consider further in relation to a decision to incorporate an e-invoicing initiative in its payments strategy are as follows:

- In June 2015, the ERPB began to look at the potential benefits of a harmonised SEPA-area electronic invoice/bill presentment and payment ("**EIPP/EBPP**") service, and proposed the setting up of a working group to analyse existing EIPP/EBPP solutions in the EU. The working group will report back in November 2016, analysing the reasons why previous

³⁹ <http://www.europeanpaymentscouncil.eu/index.cfm/sepa-instant-payments/sct-inst-consultation/>

attempts have failed and the barriers to the take-up and integration of such solutions in Europe. On this basis, the ERPB will then review the need for further work in this field.

- The European Committee for Standardization (“**CEN**”)⁴⁰, which is funded by the Commission and runs a number of activities on e-invoicing implementation issues
- A series of informal meetings with representatives of standards organisation produced the report, 'e-Invoicing Standardisation Overview, issues and conclusions for future actions', September 2012
- Following the adoption of Directive 2014/55/EU on e-invoicing in public procurement⁴¹ and in accordance with the provisions of Article 3⁴² within, the Commission issued a standardisation request to the European standardisation organisations in December 2014. The work is being carried out by the CEN Project Committee on Electronic Invoicing⁴³ (CEN/PC 434).
- European Multi-Stakeholder Forum on Electronic Invoicing brings together delegates from national e-invoicing forums and stakeholders from the user side of the market. Its objective is to help pave the way for a broad-scale adoption of e-invoicing at national and EU-level. The Forum is chaired by the Commission and meetings are held twice a year. As part of its mandate, the Forum will support the implementation of Directive 2014/55/EU on e-invoicing in public procurement.

Potentially the following detriments identified by the PSF could be ameliorated to some extent by such a new system:

- UN2 that payers and payees need more mechanisms for payments that give greater control to the payee
- UN13 that competition is not currently meeting user needs for control;
- UN20 and UN5 regarding corporate service users wanting to know where payments are at all times in case its non-real time;
- UN7 regarding improving reference data in payments to ease reconciliation;
- UN21 Transparency of users for services in the corporate space
- UN22 reconciliation costs and treasury management for business; also government reporting costs;
- And of course the particular detriment highlighted in relation to e-invoicing – UN23 – that a lack of communication and engagement between financial and non-financial firms makes e-invoicing less effective.

Any such UK-centric initiative would need to collaborate with or closely follow the European-level initiatives so that a variation in national rules governing the validity of e-invoices in legal, financial and administrative terms would not make their cross-border use difficult.

⁴⁰ <http://www.cen.eu/Pages/default.aspx>

⁴¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0055>

⁴² <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0055#d1e651-1-1>

⁴³ https://standards.cen.eu/dyn/www/f?p=204:7:0:::FSP_ORG_ID:1883209&cs=1E81C9C833655EEDC7010C8D0A2FB786C

5.2.14.6 EU Digital Single Market

The Digital Single Market is a European Commission initiative trying to bringing down barriers to unlock online opportunities within the EU.⁴⁴ The Digital Single Market strategy is built on three policy areas or 'pillars'^{45,46}:

1. **Better access for consumers and businesses to online goods and services across Europe** – this requires the rapid removal of key differences between the online and offline worlds to break down barriers to cross-border online activity.
2. **Creating the right conditions for digital networks and services to flourish** – this requires high-speed, secure and trustworthy infrastructures and content services, supported by the right regulatory conditions for innovation, investment, fair competition and a level playing field. .
3. **Maximising the growth potential of our European Digital Economy** – this requires investment in ICT infrastructures and technologies such as Cloud computing and Big Data, and research and innovation to boost industrial competitiveness as well as better public services, inclusiveness and skills.

In the context of the Strategy, key regulatory objectives that the Commission has identified include:

- Concluding negotiations on common EU data protection rules (published on 5 May).
- Giving more ambition to the ongoing reform of telecoms rules.
- Modifying copyright rules to reflect new technologies, and to make them simpler and clearer.
- Simplifying consumer rules for online purchases, which could help address UN2 on more mechanisms to give greater control to the payer, and more certain outcomes for the payee, and UN11 where competition is not currently meeting user needs for control.
- Making it easier for innovators to start their own company.
- Boosting digital skills and learning.
- Enjoying the same online content and services regardless of the EU country we are in.

5.2.10.7. Data Protection Regulation and Directive

The payments industry is likely to be substantially affected by future EU data protection reform initiated by the Commission in 2012.⁴⁷ The Reform consists of two instruments:

⁴⁴ http://ec.europa.eu/priorities/digital-single-market_en.

⁴⁵ <https://ec.europa.eu/digital-single-market/en/news/digital-single-market-strategy-europe-com2015-192-final>.

⁴⁶ <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1447773803386&uri=CELEX%3A52015DC0192>.

- The **GDPR**, which the Commission hopes will enable people to better control their personal data and businesses to make the most of the opportunities of the Digital Single Market by cutting red tape and benefiting from reinforced consumer trust.
- The **Data Protection Directive** for the police and criminal justice sector, which intends to ensure that the data of victims, witnesses, and criminal suspects are duly protected in the context of a criminal investigation or a law enforcement action.

The General Data Protection Regulation

The current EU data protection regime is based on the Data Protection Directive (95/46/EC)⁴⁸ that was introduced in 1995. Since then, there have been significant advances in information technology, and fundamental changes to the ways in which individuals and organisations communicate and share information. In addition, the various EU member states have taken divergent approaches to implementing the Data Protection Directive, creating compliance difficulties for many businesses.

For this reason the European Parliament and the Council of the European Union reached an informal agreement on the new revised GDPR, which was published in the Official Journal on 5 May, and will apply by 25 May 2018.⁴⁹ The GDPR will introduce a number of new concepts and approaches, the most significant of which are outlined below. The GDPR main ambition is to be more future-proof and forward-looking than the Data Protection Directive, and as technology-agnostic as possible.

Key concepts and changes are:

- **Greater harmonisation:** The GDPR introduces a single legal framework that applies across all EU member states. This means that businesses will face a more consistent set of data protection compliance obligations from one EU member state to the next.
- **Expanded territorial scope:** Non-EU businesses will be subject to the GDPR if they: (i) offer goods or services to EU data subjects; or (ii) monitor EU data subjects' behaviour. Many non-EU businesses that were not required to comply with the Data Protection Directive will be required to comply with the GDPR.
- **Clear and affirmative consent:** Unlike the Data Protection Directive, the GDPR does not distinguish between ordinary and explicit consent. It instead adopts a uniform approach and proposes that consent must be freely given, specific, informed and explicit, and demonstrated either by a statement or a clear affirmative action.
- **Increased enforcement powers:** Currently, fines under national law vary and are comparatively low (for example, the UK maximum fine is £500,000). The GDPR will significantly increase the maximum fine.

⁴⁷ http://europa.eu/rapid/press-release_IP-15-6321_en.htm.

⁴⁸ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31995L0046:en:HTML>.

⁴⁹ <http://www.europarl.europa.eu/news/en/news-room/20151217IPR08112/New-EU-rules-on-data-protection-put-the-citizen-back-in-the-driving-seat>.

- **The "one-stop shop".** Currently, each DPA may exercise authority over businesses operating on its territory. Under the GDPR, a business will be able to deal with a single DPA as its "lead authority" across the EU. Cooperation among the DPAs will also be significantly strengthened to ensure consistency and oversight.
- **Privacy by design and by default:** Businesses will be required to implement data protection by design (for example, when creating new products, services or other data processing activities) and by default (for example, data minimisation). They will also be required to perform data protection impact assessments to identify privacy risks in new products.
- **Firms will have to appoint a data protection officer** if they are handling significant amounts of sensitive data or monitoring the behaviour of many consumers. Firms whose core business activity is not data processing will be exempt from this obligation so as to avoid red tape.
- **Pseudonymisation:** The European Parliament Text introduces a concept of "pseudonymised data" (that is, key-coded or enhanced data). Pseudonymous data will still be treated as personal data, but possibly subject to fewer restrictions on processing, if the risk of harm is low.
- **The right to be forgotten:** Consumers will thus have the "right to be forgotten" or erased from the databases of companies holding their personal data, provided there are no legitimate grounds for retaining it.
- **The right to know when your data has been hacked:** companies and organisations will be required to notify the national supervisory authority of serious data breaches as soon as possible so that users can take appropriate measures.
- **The right to data portability:** Article 18 of the Commission text proposes that data subjects would have a new right to obtain a copy of their personal data from the data controller in a commonly used format.

This regulation's potential regulatory requirements around "data portability" and electronic subject access requests may provide some inspiration to the PSF's vision for UK payment industry initiatives, in particular the HSWG solution for standardised APIs. The requirements are designed to permit the data subject to quickly establish what types of data individual controllers hold about him and to extract that personal data in a compatible format for his own further use. Also the promotion of further interoperability between online systems. Data subjects are to be enabled to move their data seamlessly from one online provider to another without losing any data previously disclosed to an online service or having to re-input such data.

There is potential for industry collaboration on a centralized data base of personal data regarding payment services users, that puts customers in control of their data (i.e. they choose what can and cannot be held there and give explicit consent about who can access that data and for what purposes) -This could improve the experience of consumers applying for new payment service products who have to complete KYC/CDD by way of a standardised and automated process, thus addressing detriment FC13.

Less ambitious is collaboration on interoperability for compliance with data portability requirements, although it would need to have a wider scope than the payments industry, as the GDPR applies to all businesses. It would also require close collaboration with the Information Commissioners Office ("ICO").

[Please note: No reference has been made with regard to banking structural reform-ring fencing, BRRD and TARGET2 etc.

5.3 REGULATORY INITIATIVES MAPPED TO THE DETRIMENTS

Mapping regulatory initiatives to the detriment categories shows that action is being taken to improve access to the payments system. Some of the regulatory issues may improve transparency and access for vulnerable consumers too.

Detriment Category	Initiatives Mapped
ACCESS	20
BACK END COMPETITION	3
CHOICE / COMPETITION	7
COMMON STANDARDS AND RULES	0
COSTS / COMPLEXITY	7
CUSTOMER ASSURANCE	2
DIGITAL CURRENCIES	1
E-INVOICING	1
FINANCIAL CAPABILITY	13
FRAUD / KYC / SMALL PSPs	4
GENERAL KYC / FRAUD / AML	0
GOVERNANCE	7
GREATER CONTROL	7
INTERNATIONAL	1
OTHER	1
RETAIL	6
RISK OF CHANGE	1
SCHEME GOVERNANCE	1
SYSTEM VULNERABILITY	2
THIRD PARTIES	3
USER NEEDS	0
Total	87

Table 1: Number of regulatory initiatives which answer detriments identified by the Payments Community. One initiative may help to solve multiple categories of detriments

5.4 BRIEF CONCLUSIONS FOR UK PAYMENTS STRATEGY

Overall the sub-group finds that while there is significant regulatory activity, the initiatives do not successfully deal with all of the detriments outlined by the Payments Community, although many are addressed in some form. There is currently little to support customer assurance although some initiatives could improve transparency. There is limited support for e-invoicing which could hinder improved payment services for SMEs and corporates (and the associated benefits of liquidity and growth).

In fact, some of the initiatives detailed above would heavily benefit from collaborative PSF solutions as they are implemented. For example, the development of standard open APIs could help with the implementation of the GDPR package, PSD2, the PSR market review on access, and the CMA remedies in relation to switching accounts.

Furthermore, and as acknowledged by the CMA in its retail banking market investigation, regulatory complexity constitutes one of the main barriers to entry in the financial services market. Apart from the large number of requirements that market participants have to comply with, each regulator is also often responsible for similar or overlapping parts of the market. As the market is currently operating during a time where a number of significant and critical regulatory measures with long term effects are expected to be implemented by different regulators (i.e. PSD2, banking recovery and resolution, ring fencing, payment accounts framework, access obligations for payment systems, data protection regulation), it will be important that the regulators involved ensure that their collaboration is indicative of close cooperation and communicated clearly to the market and that they do not underestimate the potential economic impacts or legal uncertainties that can arise from an uncoordinated approach.

6 THE INTERNATIONAL HORIZON

Analysis of payments across the international horizon confirms that global digitalisation is changing the face of payments. Banks are no longer the sole custodians of the financial products and services which were once their preserve. Digital platforms are now widely available for moving money, borrowing/lending or even funding a business venture; all of which are requiring banks to develop digital strategies that can compete to retain their existing customer base.

An international comparison shows that the UK payments market is world leading in many ways despite its idiosyncratic nature and design. Many innovations found in other countries are simply catching up with the UK and in this respect do not therefore meet the needs identified by the Payments Community in the detriments list. Others are focussed on the move to digitalisation and the promotion of e-commerce.

The analysis of the geographic horizon was representative rather than exhaustive and covered 35 identified initiatives. In scanning payments innovation around the world, consideration was given to the purpose of innovations as well as the functionality and technology because these are often shaped by the environment (i.e. the PEST factors). Specific initiatives often appear under a number of themes.

6.1 A SUMMARY OF THE FINDINGS FOR WORKING GROUPS

6.1.1 The international landscape for the 'user needs working group'

Overall, international initiatives offer a limited contribution to the user detriments outlined, especially around issues of greater control, customer assurance and financial capability (detriments UN3, UN5, UN6, UN7, UN10, UN15 to UN27). This is because in certain instances, some of the UK's own payments related services are already considered as world class, such as the Faster Payments Service. However, initiatives like Australia's New Payments Platform⁵⁰ do allow for the development of overlay services which may address more user needs detriments. It is therefore suggested that the NPP⁵¹ initiative should be kept under review.

There are other initiatives the Working Group should consider. For instance, alternative sign-in methods like Apple ID⁵² improve the user experience so that security does not become an obstacle (UN8). Problems related to misdirected payment (UN 12,13 and 14) are addressed by BankServ⁵³ in South Africa which operates an online Account Verification Service. A Request for Payment service, which addresses user needs for control in payments is being worked on in the US. Services like Transferwise⁵⁴ make remittances significantly cheaper. We therefore draw the attention of the User

⁵⁰ <http://www.apca.com.au/about-payments/future-of-payments/real-time-payments>

⁵¹ <http://www.apca.com.au/about-payments/future-of-payments/real-time-payments>

⁵² <https://appleid.apple.com/#!&page=faq>

⁵³ <http://www.bankservafrika.com/Regulated-Payments/Account-verification-service>

⁵⁴ <https://transferwise.com/>

Needs Working Group to sections 6.2.1 below on Identity and authentication and 6.2.8 on new and evolving payment instruments.

With reference to corporates and SMEs we found initiatives that services like Square Capital and WorldPay Business Finance (in partnership with Liberis) are clearly offering alternative forms of finance by helping firms through a different type of financing arrangement by taking an unsecured cash advance based on their future credit and debit card sales.

In addition we found that there are a wide variety of services in development across the world that aim to insulate the customer from the complexities of the underlying payment systems by giving them a simple 'one click' buying experience. Services like Klarna⁵⁵ and Alipay⁵⁶ generally achieve this by acting as an intermediary between customer and supplier by providing an assurance to the buyer that their goods will be as advertised and will be delivered and providing an assurance to the supplier that they will receive payment. Many of these services accept a number of different payment types, with most using the international credit and debit card networks to fulfil the actual payments. So for the customer they only need to register one preferred payment mechanism (generally a credit card but could be a bank transfer mechanism), once this has been done, subsequent purchases are 'one click' and do not require re-entering of security information for each transaction. For the supplier they can receive payment for their goods from the service and the underlying payment mechanism used by the customer is irrelevant to them.

6.1.2 The international landscape for the simplifying access working group

Access to payment systems appears easier in some other international payment ecosystems. However, there is a lesser degree of sophistication of some of the payments systems which inherently means simpler access. A conclusion of the international scan is that very few countries demonstrated a greater degree of access than the UK. Where access is complex in European systems it attracts more onerous regulation (see section 6.2.9 on structural and governance developments below describing mandated open access).

In considering the longer term payments strategy, the group may wish to take note of scheme bypassing in section 6.2.5 which was a noticeable trend in analysis (based on DLT) as well as the development of intermediary services in section 6.2.3 which highlights that the underlying differences between payment mechanisms are increasingly of less interest to consumers.

6.1.3 The international landscape for the Financial Crime Working Group

Identity and authentication are areas of focus in multiple international payment ecosystems, responding to the opportunities and challenge of digitisation. We draw the attention of the Financial Crime Working Group to section 6.2.1 on identity and authentication below which summarises international initiatives in identity proxies, alternative sign-in methods, national initiatives for identity verification and digital signatures and beneficiary verification (which helps to address misdirected payments).

⁵⁵ <https://www.klarna.com/us>

⁵⁶ <https://global.alipay.com/ospay/home.htm>

6.2 THEMES IDENTIFIED ON THE INTERNATIONAL HORIZON

35 initiatives were mapped across the payments value chain and a number of themes emerged.

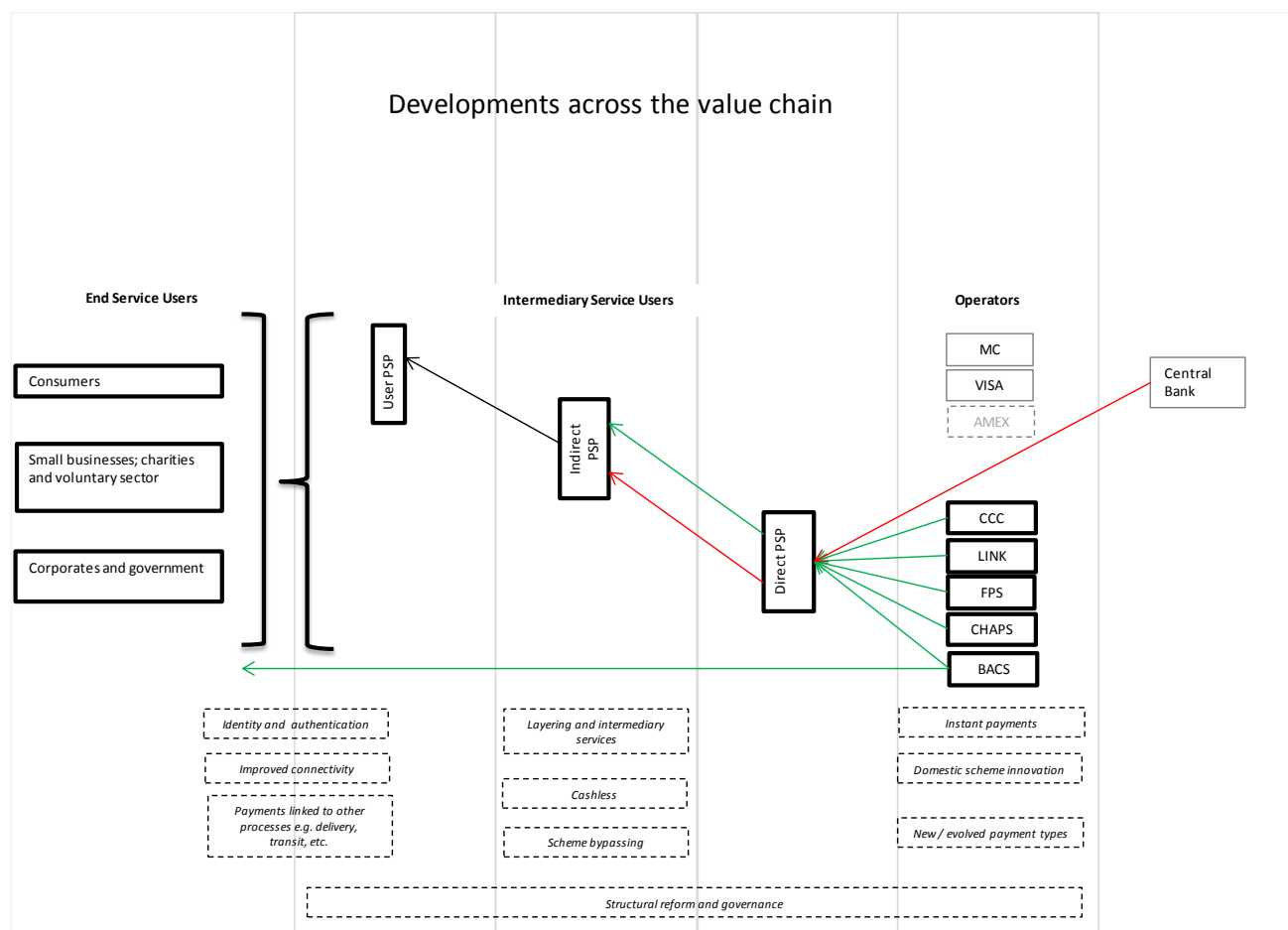


Figure 2: International payments mapped to the Payments Value Chain

Of these themes there was an over-arching 'super theme' that became apparent: digitalisation. The following table maps the initiatives to the themes identified:

Initiative themes	Number of initiatives
Identity and authentication	6
Layering and intermediary services	6
Cashless society	0
Scheme bypassing	3
Instant payments	7
Domestic schemes	8
New / evolved payment types	9
Structural and governance changes	4
Improved connectivity	0
Payments linked to other processes e.g. to delivery, to transit, etc.	5
*** SUPER THEME "digitalisation" ***	17

Table 2: International initiatives by identified theme

17 of the 35 developments considered are in some way linked to the digitisation of society and commerce with a number of governments having a clear ambition to move towards an e-economy, e.g. overlaying services onto mobile services, delivering government services digitally, a deeper integration of payments into the value chain, and moves to a cashless society, etc.

Once these initiatives are mapped to the detriments identified by the Payments Community, it shows that the PSF may usefully observe the developments of The Clearing House and New Payments Platform which are developing faster payments services based on ISO20022 with value add overlays and information messages and the delivery of government services digitally through initiatives like Singpass⁵⁷, RealMe⁵⁸ and E-Estonia⁵⁹.

The UK Government, by way of the Department Culture of Media and Sport (DCMS) instigated in December 2015 an open consultation (*UK Digital Strategy – The Next Frontier*) in setting a new Digital Strategy for the UK over the course of the coming five years. This builds, as a continuum, on the successes seen since 2010 as part of key Government led initiatives (e.g. Tech City UK) in the creation of tech clusters.

⁵⁷ http://www.ifaq.gov.sg/SINGPASS/apps/fcd_faqlmain.aspx#FAQ_130407

⁵⁸ <https://www.realme.govt.nz/what-it-is/>

⁵⁹ <https://e-estonia.com/e-residents/about/>

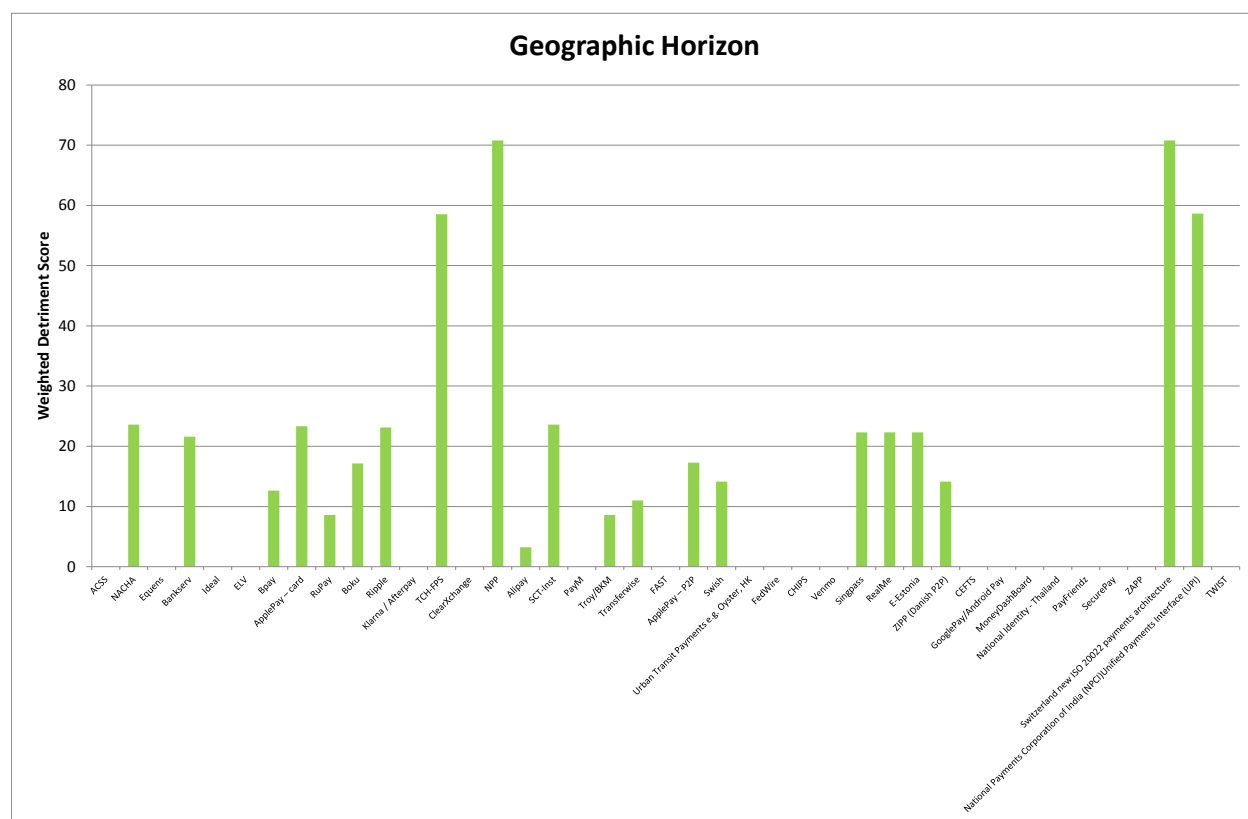


Figure 3: International initiatives weighted by the detriments they solve

Each of the international initiatives has different degrees of success and consumer/end-user adoption. Of the 10 highest scoring initiatives, 8 are nation-wide. Further investigation may need to be undertaken to determine the key success factors for any of the initiatives that are of interest to the UK's payments community.

6.2.1 Increased connectivity

The pretext of any digital banking revolution relies on the underlying connectivity and IT infrastructure needed to make all of this possible.

The practical effects of a broader digital transformative piece transform the lives of how people live, learn and work disrupting established practices in a variety industry sectors. An anticipated trend is one of convergence between the information technology, finance and media industries. This is likely to require closer regulatory alignment between interrelated and corresponding financial and telecoms regulators.

Singapore offers a good example of the role its government is playing in investing towards this needed infrastructure, topping the Ookla chart as the nation with the highest download speeds, as well as articulating its Smart Nation vision defined as being 'a nation where people live meaningful

and fulfilled lives, enabled through seamless technology, offering exciting opportunities for all.’ Singapore also has a real time payments initiative underway called G3⁶⁰ which is moving to a single ‘push’ scheme.

6.2.2 Identity and authentication

The developments in this area are very much about supporting digitisation in a number of areas:

- *Identity proxies* - Traditionally payments products are accessed using either a card primary account number (“PAN”) or a bank account identifier (sort code and account number in the UK). Tracking the broader technical trend towards multiple personal identifiers, there are a number of initiatives that allow payments to bank accounts to be made on the basis of proxies. SWISH⁶¹ (Sweden), PAYM⁶² and the Danish instant payment systems all support mobile phone numbers. But other proxies are planned e.g. email address, national identity⁶³ (Thailand) and commercial IDs such as Facebook ID. So far, this data is only being used to make P2P instant payments and is not being used in other contexts to verify customer ID or to increase security by “hiding” bank account identifiers.
- *Alternative sign in methods* – as well as other methods of identifying customer accounts there has been significant development of alternative sign in methods aimed at making the on line experience simpler for consumers. These methods help to deal with the detriments identified around overly complicated security measures which put off consumers (detriments FC4 and FC14). PayPal, Google, Apple ID⁶⁴ and Alipay⁶⁵ in China are all examples of alternative sign ins. Paylib is another example that has been developed by French banks. With a Paylib account, users are able to pay on the web using a simple login and password instead of having to enter all their credit card information. The user experience is similar to paying with your PayPal account. In addition, there are a number of biometric authentication methods such as Apple’s TouchID⁶⁶ which link in these alternative sign-in methods and make the user experience more convenience and secure.
- *National initiatives for identity verification and digital signatures* –There are a number of government initiatives to make online access to government services simpler and more secure. For example Singapore launched SingPass⁶⁷ in July 2015 to allow citizens access to

60 <http://abs.org.sg/consumer-banking/fast>

61 <https://www.getswish.se/om-swish/>

62 <http://www.paymentsuk.org.uk/project-delivery/past-projects/paym>

63 https://en.wikipedia.org/wiki/Thai_national_ID_card

64 <https://appleid.apple.com/#!/page=faq>

65 <https://global.alipay.com/ospay/home.htm>

66 <https://appleid.apple.com/#!/page=faq>

67 http://www.ifaq.gov.sg/SINGPASS/apps/fcd_faqmain.aspx#FAQ_130407

over 200 e-services. This is similar to the New Zealand government's RealMe⁶⁸ initiative launched in 2013 aimed at facilitating on line access to government and non-government services. So far the usage of RealMe⁶⁹ for non-government services has been limited. It is notable that these initiatives have both taken place in small economies.

- *Beneficiary verification:* services to verify the identity of the beneficiary have been developed by Bankserv⁷⁰ in South Africa. They operate batch and an online Account Verification Services (AVS). These allow the payer to verify before a payment has been made that the intended beneficiary is being paid, thus avoiding misdirected payments (detriments UN3, FC3 and FC7) and the need to recall funds post payment.

6.2.3 Layered and intermediary services

Service layering is the area that has seen the most innovation and which is becoming increasingly complex. Sometimes the layers are bank provided and sometimes not. An example of complex non-bank layering is PayPal. For example a customer may use the Amazon 1-Click ordering which may rely on PayPal as the payment method which in turn relies on a debit card to fund the PayPal account. Applepay⁷¹, Venmo⁷² and Googlepay⁷³ similarly build a proposition on underlying payment mechanisms. Klarna⁷⁴, is a different type of intermediary service creating the concept of 'after-delivery- payment' where Klarna⁷⁵ assumes the credit and fraud risk thereby enabling buyers to receive their ordered goods. Nevertheless this relies on the use of existing payment mechanisms. There are also bank provided layers, particularly in real time. In Sweden the underlying instant payments service is BIR, while P2P payments are made via SWISH⁷⁶. The same model applies in the UK and Denmark.

This overall trend to layering, particularly in the mobile space, makes the underlying differences between payment mechanisms (e.g. cards versus payments) increasingly immaterial to the consumer. In many parts of the world it is much easier for a business to join or access card systems and accept card payments than to access the interbank systems and accept direct payments from customers into their bank accounts. A customer's transactions on a card account may accumulate over a period (normally monthly) and then that card account is (normally) settled from their bank account.

68 <https://www.realme.govt.nz/what-it-is/>

69 <https://www.realme.govt.nz/what-it-is/>

70 <http://www.bankservafrika.com/Regulated-Payments/Account-verification-service>

71 <http://www.apple.com/apple-pay/>

72 <https://venmo.com/>

73 <https://www.android.com/pay/>

74 <https://www.klarna.com/us>

75 <https://www.klarna.com/us>

76 <https://www.getswish.se/om-swish/>

6.2.4 Cashless

In Sweden, the government has had a clear policy of creating a cashless society for many years. Already, cash represents only 3 percent of Sweden's economy, compared to an average of 9 percent in the eurozone and 7 percent in the U.S., according to the Bank for International Settlements. There are cashless bank branches, fewer ATMs, and virtually any commercial transaction can take place using electronic payments. Even Stockholm's sellers of Sweden's answer to the Big Issue, were equipped with portable card readers to accept virtual payments two years ago. Recent news, however, suggests that the country is still in transition, as the Swedish Central bank has called for more access to cash, especially in remote/poorer areas.

Should the UK government consider a move to a cashless society, Sweden may prove a useful example to understand the particular challenges and transition states.

6.2.5 Scheme bypassing

There are a number of examples of where payments systems have been developed that bypass the traditional payment and card schemes. There are three key ways to by-pass the conventional SWIFT scheme by making payments: card to card; using a service like Transfer-wise which uses local automated clearing houses (ACH); or by way of Distributed Ledger Technology (DLT) which is already being used as the basis by the cross border payments provider Ripple⁷⁷ as well providing the basis for Bitcoin. Both Ripple⁷⁸ and Transferwise⁷⁹ aim to provide lower cost and faster cross border payments. Carrier billing services – allowing payment for something with an extra charge on a mobile phone bill - are not new.

BOKU⁸⁰ is an example of a carrier billing service. Customers can chose to pay using their mobile phone number and the payment is debited to their mobile phone account. This can be quite useful for the unbanked since they may make payments without having a bank account (or a credit card). In a way this mechanism works in a similar manner to using a credit card (which must be settled each month as well). If the mobile phone account is a 'Pay Monthly, and linked to a bank account then it may well be settled by a direct debit each month. Since the mobile account does need to be funded to cover calls as well as purchases, this can be cash for pre-pay or 'Pay As You Go' mobile accounts.

Many central banks are investigating Distributed Ledger Technology like that used by Ripple⁸¹ as they review their own payment systems. However, Ripple⁸² has yet to be used for inter-bank transfers, primarily because it is new and there is uncertainty about risk.

77 <https://ripple.com/>

78 <https://ripple.com/>

79 <https://transferwise.com/>

80 <http://www.boku.com/>

81 <https://ripple.com/>

82 <https://ripple.com/>

6.2.6 The move to real time

The move to instant payments to support online and mobile is well known and is happening globally, with services under development in the Far East, Europe and the Americas. Typically, the first use cases are consumer based. The development of real time services in countries like Australia (New Payments Platform - NPP⁸³), Singapore (G3⁸⁴) and the US (The Clearing House -TCH⁸⁵) is also in some cases underpinned by a move to what is effectively a core 'push scheme' built on ISO20022 messaging standards. Some countries (including the Netherlands in Europe) envisage the migration to the new scheme for many if not most business payments that are currently processed through the current bulk batch payment system. As well as being a way to offer enhanced services directly to bank customers, these real-time services are also being layered up and used by third parties to create new services (e.g. Curve/ Bud).

A natural caveat to temper the banking industry's desire for real time payments has to be a commercial recognition that the same aspiration may not be entirely suitable in meeting the business requirements, or, satisfying the user-needs and entrenched behaviours when applied to other industry sectors (e.g. transit).

A good example is seen in the UK and the use of contactless cards on the Transport for London (TfL) network. The TfL model is based on an aggregated fare model and back end billing system where a 'near' real-time solution (i.e. use of a debit/ credit card) has proven a better and more flexible payment instrument when configured and aligned to the business need, and use case, in question.

Another example of this type of layering is Paym⁸⁶, the UK mobile phone payment service. This allows customers to make a payment to another person provided both of them are register (via their PSP) for the service. The underlying payment systems are either Faster Payment or Link (PSPs choice as to which to use).

A further example is the New Payments Platform⁸⁷, currently under development in Australia. All payments via this new system will be cleared and settled in real time providing certainty to both payer and payee. Though the system is not live yet, there are plans for a number of 'overlay services' that will sit above the system (and these might be developed collaboratively or competitively). The overlay services are likely to be services that carry more data than today (that is of value to the parties to each transaction) without having to be embed that data into the transaction itself.

83 <http://www.apca.com.au/about-payments/future-of-payments/real-time-payments>

84 <http://abs.org.sg/consumer-banking/fast>

85 <https://www.theclearinghouse.org/press-room/in-the-news/2014/10/20141022-tch-to-develop-real-time-payments-system>

86 <http://www.paymentsuk.org.uk/project-delivery/past-projects/paym>

87 <http://www.apca.com.au/about-payments/future-of-payments/real-time-payments>

There is another example in Saudi Arabia when the main inter-bank system is being updated to include additional services for customers including the possibility of withdrawing from ATMs without a card, obtaining prepaid cards loaded with amounts as per clients' request, facilitating electronic payments for purchasing tickets, and cash-back options from tellers and shops to reduce pressure on ATMs.

6.2.7 Domestic schemes development

Although centralised models featuring a single clearing operation are common, infrastructure provision is not seen as a 'natural monopoly'. A number of infrastructure providers compete and operate across borders and therefore there is a variety of operating models internationally. In some cases, such as the UK, there may be a single Central Infrastructure such as VocaLink supporting several core bank to bank services such as near real time and bulk electronic payments.

However, just as VocaLink competes and supplies its services abroad, a range of other suppliers have emerged in the multi-provider model that supports SEPA. The introduction of SEPA was intended to be managed and implemented by cross party agreement within the payments industry, but needed a regulatory mandate for formal and ubiquitous adoption. While the intention was to provide a number of schemes that would allow common payment processing, the schemes were intentionally designed to allow competition at the operator level.

Allowing for competition has led to some incompatibilities between operators requiring banks that wish to use multiple operators to implement different business rules and formats of messages (variations on the ISO20022 messages). In addition, local country rules make cross border processing difficult, for example, local tax rules in Spain, centralised mandates in Belgium. While the intended goal was to allow for multiple operators of the scheme that could interact with each other to provide access to all potential parties, this has not yet been achieved in practice and may be unlikely to be achieved without direct governance.

A number of countries are in process of developing domestic card schemes or promoting their own domestic card schemes as alternatives to the international schemes such as Visa and MasterCard - examples include TROY⁸⁸ in Turkey and schemes in Switzerland and Poland.

6.2.8 New and evolving payment instruments

A number of countries (e.g. USA) are investigating or developing Request To Pay services. Unlike a direct debit that relies on the debtor pre-authorising payments, RTP services require the debtor to authorise each payment with their bank before it is paid within a defined time window. Once the customer has authorised the payment, a credit transfer follows. There appear to be a number of drivers for this kind of mechanism – for example online payments in the Far East and cheque replacement linked to payables reconciliation in the US.

⁸⁸ <https://troyodeme.com/en/>

There have been a number of initiatives around bill paying e.g. BPAY⁸⁹ in Australia. Although bank-enabled billing solutions have been around for over 10 years, the advent of mobile devices has stimulated renewed interest in convenient bill paying.

Some innovation relates to the substitution of one payment mechanism for another. There appear to be a number of drivers e.g. cost differentials, desire to innovate, and local conditions e.g. low penetration of credit cards. IDEAL⁹⁰ and ZAPP⁹¹ are based on using payments to provide payment services that compete with cards. On the other hand, the Sri Lankan CEFTS⁹² service uses the cards /ATM infrastructure to allow customers to make inward and outward fund transfers at a nominal fee in real time, 24x7.

6.2.9 Structural and governance developments

Although card payments have been governed by international schemes, payments have evolved as national services managed and operated by the local banks. There are developments, particularly in Europe, where the historic model continues to evolve i.e.

- *Scheme rules that are agnostic about clearing and settlement layer:* SEPA is built on the basis of a set of scheme rules developed by the European Payments Council (EPC) that do not specify how clearing and settlement is to be performed. The National Automated Clearinghouse Association (NACHA⁹³) in the US is a similar model where it has long operated as a rule setting body without any operational responsibility. FedACH and The Clearing House (TCH⁹⁴) provide the ACH services according to the NACHA⁹⁵ rules in the US.
- *Competing central infrastructures:* SEPA has enabled multiple clearing and settlement mechanisms to exist and co-operate. Although many countries have continued to operate a national clearing house, SEPA has allowed some processors to be pan SEPA e.g. Equens⁹⁶ and European Banking Authority clearing. The lack of proscriptive operational rules has however led to a certain amount of service variants across Europe.
- *Mandated open access:* many national payment systems continue to operate on a tiered access model i.e. direct and indirect participant. In some cases, a tiered model has led to smaller banks (indirect participants) being unable to offer equivalent payment services as compared to the direct participants, mainly for reasons of cost. This is not the same in the card schemes who have always operated a single layer participation model. Increasingly authorities are seeking to increase regulation and make payments services easier to access

⁸⁹ <http://www.bpay.com.au/>

⁹⁰ <https://www.ideal.nl/en/>

⁹¹ <http://www.zapp.co.uk/>

⁹² http://lankaclear.com/product_service/34-cefts

⁹³ <https://www.nacha.org/rules/same-day-ach-moving-payments-faster>

⁹⁴ <https://www.theclearinghouse.org/press-room/in-the-news/2014/10/20141022-tch-to-develop-real-time-payments-system>

⁹⁵ <https://www.nacha.org/rules/same-day-ach-moving-payments-faster>

⁹⁶ <http://www.equens.com/>

e.g. by mandating more open access to bank accounts under upcoming European directive PSD2.

Another emerging area of change is in settlement services. All payment systems ultimately rely on central bank RTGS services to settle funds between institutions. Traditionally settlement is undertaken on a batch basis during working hours only. The Australian central bank will be providing line by line settlement 24x7 to support the new instant payments system being developed. Both the European Central Bank and the Bank of England have announced a review of their real time services (including a review of Distributed Ledger Technology), which may facilitate other payment innovations.

6.2.10 Payments linked to other processes

There are a number of developments that relate to integrating the payments process within another part of the value chain. Klarna⁹⁷ and AliPay⁹⁸ are examples of services that link the payment to the delivery of the goods. The use of contactless transport cards (e.g. Hong Kong Transport authority) for non-travel related purchases is an example of linking the payment to transport services. Again the theme is using underlying payment rails to support overlay services.

6.3 INTERNATIONAL INITIATIVES MAPPING TO THE DETRIMENT CATEGORIES

The mapping exercise showed significantly, and possibly not surprisingly, the list of international initiatives and the list of grouped detriments show low levels of overlap as summarised in the following table.

Detriment Category	Initiatives Mapped
ACCESS	2
BACK END COMPETITION	2
CHOICE / COMPETITION	0
COMMON STANDARDS AND RULES	20
COSTS / COMPLEXITY	0
CUSTOMER ASSURANCE	15
DIGITAL CURRENCIES	1
E-INVOICING	0
FINANCIAL CAPABILITY	0
FRAUD / KYC / SMALL PSPs	0
GENERAL KYC / FRAUD / AML	0
GOVERNANCE	2
GREATER CONTROL	6
INTERNATIONAL	6
OTHER	0
RETAIL	5
RISK OF CHANGE	0
SCHEME GOVERNANCE	6
SYSTEM VULNERABILITY	0
THIRD PARTIES	0
USER NEEDS	0
Grand Total	65

⁹⁷ <https://www.klarna.com/us>

⁹⁸ <https://global.alipay.com/ospay/home.htm>

Table 3: Number of international initiatives which answer detriments identified by the Payments Community. One initiative may help to solve multiple categories of detriments

Account Number Portability (ANP) was an initiative that a geographic scan covered and no live examples were identified on an international basis. However, Sweden does have in operation arrangements which approximate account number portability using a separate number from their bank account number (called a bankgiro number), which can be issued to customers to set up the equivalent of direct debits and credits.

The Reserve Bank of India did look into ANP in 2013/2014 and concluded that portability is not immediately feasible, although recent comments have been made by Reserve Bank of India deputy governor indicate it may resurface on the political agenda (recent news reports, Feb 2016). In the Netherlands account portability was in place for several years (1980s), however more recently the scheme was abandoned because it was considered to be disproportionately expensive when compared to the end-user benefits. It was replaced by a switching service similar to the service we now have with CASS in the UK. Other markets have also looked at this concept but did not pursue it (including Australia, 2011).

6.4 CONCLUDING REMARKS AND RECOMMENDATIONS

Greater features and functionality in the payments infrastructure (vs. the UK) exist in a number of countries but they typically address niche payment domains, whether it is B2C or B2B or P2P.

What has evolved in the last decade is that across the globe consumer expectations have increased, enabled by emergent technology, which is challenging payments providers and systems to respond. Retailers, such as Amazon, and other non-high-street bank financial service providers, such as PayPal and Klarna⁹⁹, are demonstrating innovation and the effective application of technology, and pervasive consumer connectivity via the smartphone to meet or exceed consumer expectations.

The underlying payments infrastructure upon which all these new layered services are being offered has evolved at a slower pace, however it is noteworthy that newer providers such as Apple have chosen to build their services on top of the existing infrastructure rather than creating new infrastructure. The reason for this is that consumers and businesses rely on the resilience and security of the existing payments infrastructure every day and therefore change needs to be planned, considered and measured. There is heavy investment in the current UK infrastructure by PSPs and their customers (i.e. consumers, merchants and suppliers). From our scan we know other countries are grappling with the same issues as the UK, and a few have proposed a renewal of their payment systems (Canada for example).

The geographic subgroup looked to ascertain whether any of the international initiatives could resolve the UK's detriments and found that there were very few examples that resolved the

⁹⁹ <https://www.klarna.com/us>

fundamental challenges. In examples that came close, such as Australia's NPP¹⁰⁰ (New Payments Platform) and TCH¹⁰¹ (The Clearing House) which offer real-time payments, they have yet to be proven models for the future and still may be said to have some flaws around their settlement models given that they are only addressing part of the complete payment ecosystem.

It may be possible to conclude that there may be benefits to considering a managed renewal of the UK payments system to deal with the underlying issues and creating a system that allows greater flexibility to deal with detriments while still providing for the respected resilience and security of the current system.

¹⁰⁰ <http://www.apca.com.au/about-payments/future-of-payments/real-time-payments>

¹⁰¹ <https://www.theclearinghouse.org/press-room/in-the-news/2014/10/20141022-tch-to-develop-real-time-payments-system>

7 TECHNOLOGY HORIZON

Payments and the banking industry in general are undergoing a major transformation. Technology is playing a very important part in this process. The arrival of smart phones has helped to accelerate changes in customer behaviour and expectations. Customers expect services in real-time and from anywhere from any provider. What has already been possible in other industries is failing to be also possible in banking and payments, which has brought the need for new payments systems into the spotlight. Suddenly, even schemes such as Faster Payments in the UK, which provide near real-time payment services, may start to feel insufficient.

Customers are also demanding other features such as acknowledgement of delivery, payee confirmation, rich data attached to the payment. Customers' expectations are driven from their experience in other sectors, such as the logistics sector's 'track and trace' service.. The existing platforms within the banks and central infrastructure are, in cases, decades old. It is recognised that the age of banking infrastructure is a key source of systematic risk. It also hinders innovation and competition and thus consideration should be given to new technological approaches to underpin UK payments systems.

The working group has analysed which technologies, technological concepts and design choices are available, or emerging, that could mitigate the detriments identified by the Payments Community. Our analysis shows that technology has significant potential to address the concerns identified by the User Needs Group, the Simplifying Access Group and the Financial Crime Group and these are highlighted below, along with a more detailed explanation of key technologies that may help to solve detriments, including APIs, layering, Distributed Ledger Technology and more consistent messaging standards. We also highlight a number of technological developments available to improve retailers' business propositions and the end-user experience.

However, the technology available also provides us with the opportunity to consider how it could help to change payment systems over the longer term so that they promote competition, speedy innovation and efficiency while meeting a wider range of customer needs. To this end, learning from the telecoms industry we have submitted to the forum two solution proposals which follow our recommendations about how technology should be used to significantly simplify UK payment schemes so that they may benefit future generations of service users.

7.1 A SUMMARY OF FINDINGS FOR THE WORKING GROUPS

7.1.1 The technology landscape for the 'user needs working group'

During the analysis of the detriments related to User Needs, we found that various technologies, namely, APIs, distributed ledgers and layering could ameliorate those detriments related to the key issues of control, transparency, reduction of errors and instant access to information. The way in which those detriments could most likely be resolved would be through a managed redesign of the core payments schemes.

A collaborative approach to using these technologies in the core payments infrastructure would then allow PSPs to compete to use those features to provide what users need and demand. We therefore recommend to the User Needs workgroup that they consider the use of technology, rather than new regulation to solve those detriments.

We consider other detriments such as the fines imposed on merchants by schemes or the never ending liability on the PSP created by direct debit could also be resolved by the creation of a new scheme platform as suggested by our long term proposals. The proposals allow for new types of payment services with diverse operating rules. Such new services would appear as a result of competition and would carry rules of operations more adapted to the market needs.

Security and privacy continue to be over-riding concerns for users. The development of new technologies like big data analytics, artificial intelligence and improvements in decision making sciences (section 7.2.8) could leave consumers vulnerable to new known and unknown detriments.

7.1.2 The technology horizon for the 'simplifying access working group'

The analysis of the detriments allocated to the simplification of access working group show that the technologies cited above in 7.1.1, specifically layer modelling and APIs would be crucial to the simplification of access. We refer the simplifying access working group to section 7.2.4. Those technologies may constitute the foundation to simplify today's variety of access technologies, messaging standards and connectivity to the various schemes.

We propose a further investigation of the use of layer modelling and APIs which may help to achieve a simplification and opening up of access to payments schemes to PSPs.

7.1.3 The technology horizon for the 'financial crime working group'

Among the detriments assigned to the Financial Crime Working Group those related to identity of counterparties and KYC are the most important issues. The current variety of payment messaging and in some cases lack of payee and/or payer data in the payment message contributes to make difficult the fight against certain types of fraud. What the detriments also describe is the need for specific types of financial crime prevention mechanisms.

These issues derive from the often poor quality or simply the lack of sufficient data in the payment instructions that would allow PSPs to perform adequate checks. Improving the amount and quality of data would be a necessary step to solving these issues, since it would allow the development of services on top of the payment systems to help with KYC, ID verification and identity assurance.

Layering and APIs along with richer data and big data can help and actually be part of the solutions to diminish and better prevent and fight financial crime.

There are however certain detriments which mirror those encountered in the User Needs Working Group, that cannot be solved with technology, such as the limitless liability derived from direct debit, which could be used to commit fraud or the penalties applied to merchants. Those are examples of detriments that require regulation or different scheme rules to be resolved.

7.2 KEY TECHNOLOGIES IDENTIFIED BY THE TECHNOLOGY HORIZON SCAN

A number of technologies were identified by the Horizon Scanning Working Group. Technological developments could help improve almost every aspect of the payments value chain. However, some technology has the potential to reshape the entire payments value chain.

When initiatives are weighed in terms of their contribution towards solving certain detriments, key technologies score highly. These include Distributed Ledger Technology, APIs, X as a Service, layer modelling, big data, richer data and identity management. These initiatives are described in more detail below. It is worthwhile noting that DLT, APIs, X as a Service and Layer modelling are all interconnected. While it is possible to implement APIs without DLT, is unlikely that DLT could be usefully implemented without APIs or some form of layer modelling. Indeed, the usefulness of all the technology on the horizon highlighted relies to a degree on APIs.

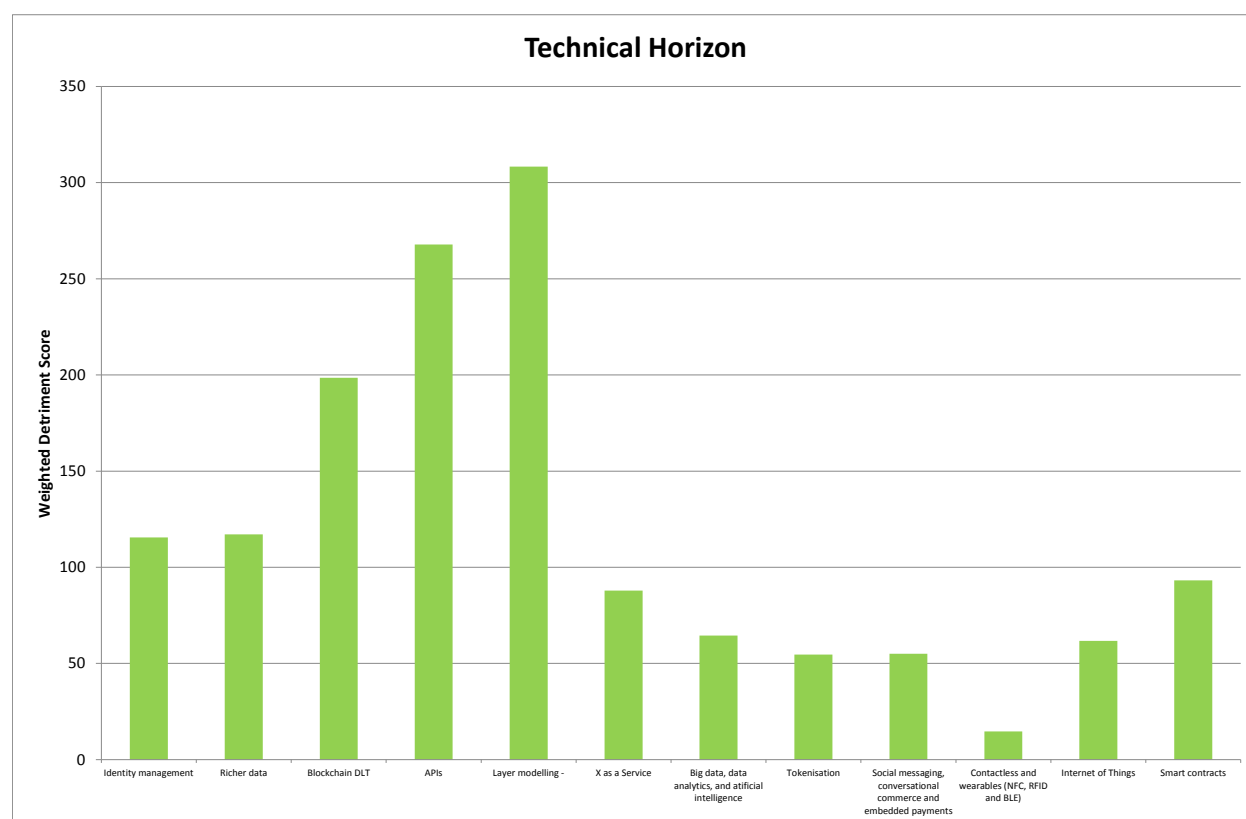


Figure 4: Technology initiatives weighted to the detriments they solve

Further initiatives were identified on the technology horizon which change or improve the retail sector and end-user experience.

7.2.1 Identity Management

Proving your identity and having authority to make a payment is one of the biggest causes of friction in financial services. For Payment Service Providers, properly identifying the customer to the institution and the institution to the customer are critical aspects in providing financial services to customers. PSPs are looking to enable seamless and robust identity recognition across all channels to ensure the customer omni-channel vision works for all yet meets regulatory requirements.

The use of biometrics is a key area of innovation. In the UK, Barclays and HSBC have already deployed voice biometrics in their contact centres. Whereas, Atom bank, a UK challenger will allow mobile log on with facial recognition and voice biometrics when they launch. Apple's Touch ID¹⁰² uses fingerprint scanning. Globally, USAA allows customers to choose from a range of biometrics to log into their app, such as face, touch and voice.

Using biometrics significantly improves the authentication process for users as they are no longer required to remember passwords or PINs but simply need to present themselves. There remain security concerns about different approaches to identification and authentication, the most significant risk to users being the theft and possible replication of their biometric data, of which there are not multiple versions which can be given out like PINs and passwords.

Identity Management is central to payments both for identifying the originator and beneficiary of the payment instruction, but also for the correct routing to the instruction, and handling misdirected payments.

Misdirected payments and the issues that result from them are of concern to the Payments Community (detriments UN12-15). An API based customer authentication solution could address the problem by linking the name to the sort code and account number. This could be implemented in a similar way as that achieved by the PayM¹⁰³ database for mobile payments, where banks provide a customer authentication to account ownership. Data protection issues would be dealt with through a general permission that forms part of the condition of service.

The alternative to using an API-based customer authentication approach would be to amend scheme messaging to incorporate the name of the account holder alongside the account number and sort code. Use of an API-based customer authentication solution could be a cheaper and more elegant approach than incorporating such additional data into the payments messages.

Distributed Ledger Technology could provide for a simpler KYC landscape in the form of a smart contract. A smart contract would allow for customer information to be held securely; access could be controlled; and there would be a clear audit of change. For example, the data on a company and its directors would be held within the contract with a clear auditable trail.

¹⁰² <https://appleid.apple.com/#!&page=faq>

¹⁰³ <http://www.paymentsuk.org.uk/project-delivery/past-projects/paym>

7.2.2 Richer Data

The concept of “Richer Data” responds to the need to send information alongside payments to and from an individual or organisation. In the past a payment was a physical transfer of value in exchange for the equivalent value of physical good or service. Now the value (money) is electronic, the services can be electronic too or goods provided remotely. Previously the exchange had an immediate context given the physical proximity of the parties, today this is increasingly not the case. However, payments continue to need a ‘context’, hence the need to attach data to the transfer of value (payment).

Beyond the basic data requirement imposed by anti-financial crime regulations, the need to provide context to a payment translates into the need to associate the payment to other data, which is relevant to the parties involved in the underlying business transaction. In the payments world the ‘critical data’ is the payment itself along with the minimum data required to comply with AML regulations. The ‘payload’ is any data any user would like to link to the payment.

In current UK domestic payments schemes, payments carry a ‘reference field’ of limited size. It is now more commonly accepted that more data should be able to be associated with the payment – conceivably any data, of any size and format. However, the attachment of significant data volumes (a video for instance) would potentially result in too large a file (or ‘payload’) for payment network or schemes to deal with, especially given the fact that thousands if not millions of other payments may require processing at the same time; and time is a critical aspect of payments that is not easily compromised.

The working group analysed techniques for managing richer data. The international standard CCITT N7 used in mobile telephony was taken as a helpful standard. We concluded there are principles that could allow our payment systems to achieve a level of data enrichment without compromising the functionality and performance of the payment system. These principles are:

- Critical data must be protected in its transmission.
- Associated payload must be transferred separately not competing with critical data for bandwidth. This typically translates into using a different network altogether.
- The critical data should include a defined number of data types and some fields to enable a link between the payment and an out-of-band transmission of the payload. The actual application of the principle could result in the attachment of a link, in the form of an URL or other to the payment so that it can be linked to the Richer Data.

The use of Richer Data in this way could help address identified detriments such as the current lack of control and difficulty in reconciling costs (UN 9, 15 and 31 and 32). Richer data would allow for delivery confirmation, the actual detail of the content of the transaction as well as easier reconciliation of payments and accounts.

Richer Data could have big implications for both consumers and businesses. For instance, a utility provider could transfer the entire itemized invoice along with the payment request enabling the consumer to view their bill through a URL before making payment a ‘one click’ exercise.

Designed in the right way Richer Data could also enable consumers or firms to part-pay invoices to which they agree to be charged. Discrepancies over invoices can increase payment time considerably. Allowing payers to pay for those parts of the invoice they agree would improve firm cashflow, while the unpaid parts of the invoice are negotiated. In effect, Richer Data could support a 'Request to Pay' or 'e-Invoicing' interaction, which empowers customers to control the timing and amount of their payment while making reconciliation for the payee easier.

Richer Data could also reduce fraud by ensuring fraud such as those that divert payments away from the intended beneficiary are identified before the payment is made. For instance, in house sales some scams intercept conveyancers' emails and request payments of house deposits to be made into a fraudster's account and the customer loses their deposit. Richer Data would provide an additional obstacle for scammers to get round and help to provide re-assurance when people transfer such large value payments. In a similar way real time Richer Data could provide better communication between the user of the funds and the grantor of such funds, limiting use of funds to a particular purpose provided for in the data by the grantor (for instance in house buying, this would limit the use of funds for anything other than the purchase of the house for which it was intended).

7.2.3 Blockchain: Distributed Ledger Technology (DLT)

Bitcoin has been heralded as a major technology innovation as digital currency, but its underpinning technology is of more interest. Commonly called the 'blockchain' or 'distributed ledger technology', there are two key technology types:

- Unpermissioned - an open decentralised ledger, which records the transfer of value, where each transaction is cryptographically chained to the previous transaction. The result is permanent, immutable and verifiable record of the truth, which cannot be edited.
- Permissioned - where a consensus of the truth is reached by computer algorithms. Instead of needing a paper copy, a "Smart Contract" is produced where all parties are in sync, together with the allowable rules of processing. Thus the "paper Single Ledger" where banks account for transactions could be replaced with a "Distributed Ledger Technology". This would remove the cumbersome reconciliation process and settlement latency, where transaction information is recorded separately and errors are not identified and rectified until late in the post-trade process.

DLT is a key concept since it allows all participants, in this case PSPs, to have a copy of the transaction ledger and therefore the entire system is more resilient, less prone to attacks and each entry in the ledger is final since it has been accepted by any of the two methods explained above. Having a copy of the ledger is important as it removes the need for a central authority to authenticate, own and track transactions. This also implies that within the right regulatory framework, clearing is enough to complete a transaction and in real-time or near real-time so removing the costs associated today with the current system.

DLT is an area of technology attracting significant investment with many competing implementation teams focused on the technical challenges. It is worthy of further consideration by the PSF given the claims about its accessibility, resilience, security and ability to allow innovation – key attributes sought by the PSF in its strategy for payments.

7.2.4 APIs

The current payments systems communicate via a variety of message technologies, which comprise the communication network, generally private telephony lines to centralised infrastructures and scheme message formats and interactions, for example:

- SWIFT MT,
- BACS 18,
- ISO 8583, cards and Faster payments,
- ISO 20022

Web APIs are not new and nor are they singular in kind. An API is simply a set of protocols for building software and linking it to other software. However, APIs are important to payments because they offer a standard and discoverable solution for developers looking to integrate services or develop overlay services. Thus they allow for the easy build of new software and the development of service innovation.

Web APIs are frequently used to help join up services into a single package that works well for the consumer. These ‘packages’ allow new payment services to develop.

PSD2 has provided momentum for HM Treasury’s work on Open APIs for banking. The Horizon Scanning Working Group supports the work of the Open Banking initiative. Indeed, it will help to address a number of detriments around third party access to data, improving security (which might possibly increase trust, even if it increases friction) and allows for the development of services which could give users more control over their spending and thus payments. We hope and expect the Open Banking initiative to continue with the necessary leadership so that there is effective governance and guidance for APIs as they develop.

We explain how APIs could be used with layer modelling in our solution proposal submitted to the PSF.

7.2.5 Layer modelling

The Layer Modelling approach is established best practice in the IT and telecoms industry where end-to-end systems are built in layer stacks. Each layer offers a standards-based service to the layer above.

The link between layers is clearly defined as service definition, which isolates the function of each layer. In this way it is possible to replace the components inside any layer, preserving the service

characteristics without affecting the other layers. The most well-known layer stack is the OSI model for networks, which composed of 7 layers and is the foundation of the internet model.

The concept of Application Programming Interfaces (APIs) are widely used in all industries for internet based software-to-software communication without any user intervention. Correctly classified and regulated APIs can create logical separation layers in the payment flows between parties involved.

Standardising the payments layers and APIs would go a long way to significantly addressing the detriments associated with access to payment systems, choice, competition and governance. Because of the ability to isolate the individual stacks and replace their components, deploying a layered API approach also lends itself well to innovation. Unlike the current system which requires all parts of the system to adjust their processes when something changes, within a layered model, this is no longer necessary. Changes can be made efficiently without affecting other parts of the chain, providing a degree of insulation from change. This insulation from change allows for multiple service innovation opportunities, improved competition and choice for participants.

We explain how layer modelling might be implemented in the payments systems in our solution proposal submitted to the PSF.

7.2.6 X as a Service

As a result of a growth in APIs, X as a Service has been coined as a term. X as a Service, also known as XaaS, or 'Anything as a Service' is a collective term used to describe the way in which new services can be created by the bringing together of different parts of the system. 'Anything' could be information, infrastructure, software, communications, monitoring etc. And these can be developed to provide services which can be packaged up and sold to others.

Payments are an integral part of the marketplace and therefore there is scope to develop 'payments as a service', combining other services (e.g. data analytics, identity management, smart contracts etc) into new payment services.

The concept of X as a Service with regard to payments refers to the possibility of creating new types of payments that are offered to payment participants as a service that are easy to access and use. But it is also linked to the design concept of pushing 'intelligence' to the edge of a system rather than concentrating intelligence in the centre.

A good example of X as a Service comes from the telecom industry. Previously UK users were reliant on the centralised BT network for information or 'intelligence' about their phone and usage. For instance, to discover the last caller, the user would be required to dial 1471. The intelligence was centralised within the network. However, following the development of the internet and mobile telephony, that 'intelligence' was decentralised and stored outside of the network on apps, like WhatsApp, Google hangouts etc.

In the same way, in the payments system the concept of distributed ledger points at the removal of the central authority.

Developing the concept of X as a Service further within payments would enable authorised PSPs accessing payments systems to develop payment types that would adapt and better service the needs of communities of services users in the business and commercial context. The deployment of such new services would be fast and would also allow for continuous upgrades and improvements. For instance, rather than having a single flavour of direct debit, with X as a Service there could be many versions, each adapted to the type of business in which the payment collection is inserted.

Using the X as a Service approach could be particularly helpful for allowing niche groups to receive services that meet their needs in a cost effective way (for instance, the unbanked wishing to make electronic payments). It may also allow for innovation to meet the needs of SMEs for whom there appears to be less innovation in the payments services (possibly because the potential return from changes that would help them are not worth the investment required to make changes within the current payments systems).

7.2.7 Developments in Commerce (Retailers / Merchants)

Payments are an integral but are a constituent part of a much more multi-faceted trend towards digitalisation of customer experiences in commerce. Customer interactions now span across physical, online, social and mobile channels. The marketplace for payments is changing rapidly as connectivity increases person-to-person, person-to-machine and machine-to-machine. An over-riding feature of the marketplace is for 'frictionless' payments, that is, making transactions smoother, easier and speedier to execute in as convenient a way as possible for the user.

Payments-related innovation has already taken priority for many of the larger multi-channel retailers based in the UK and outside the UK. There are good practices where further opportunities can be identified to generate additional sales, reduce costs and fraud, enhance profitability and improve the customer experience. Retailer innovation around payments has been significant – and includes developments in cooperation with card schemes to create retailer-branded payment mobile wallets and greater integration to loyalty, rewards and information services for consumers

7.2.8 Big data, data analytics and artificial intelligence

Big data are large data sets that can be analysed for unknown patterns, correlations, market trends, customer preferences and other business information (Rouse, 2016) using algorithms. Everything we do is increasingly leaving a digital trace – data -, which we, and others, can use and analyse: activity data (where you are, browsing history etc), conversation data (emails, social media and phone calls), photo and video data (including CCTV etc) and sensor data (via the Internet of Things and the devices we interact with).

Big data are important to payments systems because payments data will increasingly become a tradable commodity in their own right.

For consumers, PSD2 brings about the possibility of sharing bank account data – payments data - with third parties for the provision of new services. For instance, a service might provide a holistic view across multiple bank accounts allowing a customer to more accurately manage and reconcile their spending. The service could offer switching to more suitable products or make recommendations on savings strategies. For corporates and SMEs payments analysis could help predict sales or offer suggestions on buying strategies. For retailers, combining customers' personal data with other technology (like Bluetooth Low Energy) could enable them to provide bespoke, in-store sales advice to the customer.

The availability and access to transaction data held by payment service providers as well as the ability to manipulate data will widen the scope of payment and retail financial services offered to consumers and merchants. This could mean a shift in a user's main relationship away from the payment provider to an application that enables management of these services. In turn this could shift the user's relationship to the application developer.

Artificial intelligence adds another facet to service development and provision. Artificial Intelligence (AI) simulates human intelligence, including reasoning (problem solving), knowledge (representation and management), planning (set goals), learning (improved by experience), natural language processing (read and understand communications) and perception (input from sensors).

At the back end AI should improve customer security, remove many manual processes involved in payments operations and systems management and result in higher straight through processing rates and increased resilience. At the front end, it should bring about enhanced personalised and possibly, personable, automated services. For example, IBM has created an intelligent computer named "Watson" that is used to demonstrate how in the future AI may be able to help you manage your spending, deliver automated advice on your pension and set up the payments without the consumer doing anything apart from having a conversation with 'Watson'.

Big data analysis and AI presents risks as well as potential benefits to consumers. The super-enhanced ability to profile customers, especially when bearing in mind the increase of data available about them (biometric data, location data, social media, transactional data, product/service use data and other monitoring data) combined with advances in behavioural psychology, decision making sciences, neuro-marketing and artificial intelligence puts privacy at risk. It also exacerbates opportunities for exploitation, exclusion and scams within financial services. The increasing need for expert knowledge to manage these services also reduces the pool of professionals that can provide quality assurance on the algorithms and processes which underpin services, thus reducing the democratic governance of those services. Taken together these changes could create unforeseen detriments which could have an impact on payments.

7.2.9 Tokenisation

'Tokenisation...is the process of substituting a sensitive data element with a non-sensitive equivalent, referred to as a token, which has no extrinsic or exploitable meaning or value...' (Wikipedia, 2016). A particular advantage of tokenisation is that, assuming good practice is

followed, tokens offer consumers greater security. Value-less encrypted, one-time-use only tokens replace the transfer of real personal information which reduces risk.

From a merchant perspective tokenisation is attractive. If the merchant is no longer exposed to sensitive user data, then there is no longer the requirement to adhere to regulations for the protection of such data. For instance, it negates the need for card scheme security compliance (PCI DSS) and moves fraud risk to the regulated payment service provider. The increasing regulatory burden and financial crime risk on e-commerce providers may see them moving to more technical solutions like tokenisation which provide them with sufficient flexibility to implement the payment functionality without themselves having to become payment service providers.

7.2.10 Social messaging, conversational commerce and embedded payments

Social messaging and conversational commerce are predicted as key growth areas in 2016 (Messina, 2016). Conversational commerce includes use of voice biometrics for authentication as noted above, but extends further through messaging, text and voice commands to embed payments within more natural conversation. Uber's integration into Facebook Messenger is cited as a good example (Facebook, 2015), where tapping the address sent by a friend allows the option of ordering a taxi immediately. The user is no longer required to have an Uber account or to open an Uber app to order the taxi. Instead payment is made through Facebook (powered by the payments platform, Braintree).

Embedded payments allow users to bypass the usual login requirements for payment based on pre-registered account information. Amazon's 1-Click is an obvious example of this, where default settings are used, like the default payment card and delivery options, to enact a quick, effortless transaction.

7.2.11 Contactless and wearables (NFC, RFID and BLE)

From a user perspective contactless payments work in a similar way to embedded payments. Contactless also bypasses the need for PIN.

Near Field Communications (NFC) or Radio-Frequency Identification (RFID) are used to enable secure payments. A chip with antenna can be inserted into a mobile phone, card, key fob, wrist band or other wearable item (jewellery, coats etc) and enable payments. There are limits on contactless payments (£30 in the UK) and payments can be blocked if necessary. Data about payments can also be held separately on a linked app.

Paypal and Apple are investing in Bluetooth Low Energy (BLE) technology which allows users' mobile phones to automatically connect with retailers and make purchases without the need to queue or authenticate the payment. The advantages to BLE include its reduced power consumption and ability to connect without reception. Users can choose their level of 'hand-free' and opt to confirm payment verbally or complete a prompt. With BLE retailers are able to locate their customers within store, personally greet them or push marketing information. With previous transactional data to hand retailers can personalise the information they push.

7.2.12 Internet of things

The Internet of Things (IoT) is shorthand for the connecting of various machines and appliances over the internet. Their connectivity allows a continual stream of data to be harnessed about them. In turn that affords information about their state and their use which can be usefully and meaningfully communicated to retailers and users via the internet and apps. Additional services help people set rules to control the use of appliances.

7.2.13 Smart contracts

'Smart contracts are computer protocols that facilitate, verify, or enforce the negotiation of or performance of a contract, or that make a contractual clause unnecessary' (Wikipedia, 2016). Smart Contracts effectively bring contracts to life and significantly reduce the effort for parties in a contract to enforce their rights.

An example of smart contract innovation is from a Hackathon in September 2012 where Team Issueth won a prize for a smart contract system that would provide instant compensation to customers affected by flight delays (Caffyn, 2015), thus connecting airline data, customer data and flight data to facilitate an automated payment, based on a contract overseen by a computer. In future, Smart Contracts could be used in a variety of ways to ensure that payments made by one party are used in a particular way or to halt services automatically when payments are not made. In most cases this should enhance the user experience. However, detriment could be caused where negotiations would be more appropriate than a strict enforcement of a contract. Rights to appeal and liability for redress will need to be taken into consideration.

Distributed ledger technology provides the technology for smart contracts. This technology is discussed in more detail in section 7.2.3.

7.2.14 Developments for SMEs

SMEs have seen some developments in the way they make payments:

One example is the introduction of mPOS (mobile point of sale) that allows small traders to take card payments using their mobile/tablet and a connected device. Examples in the UK include iZettle, WorldPay Zinc and BarclayCard anywhere. Some of these companies are now using these payment relationships to sell add-on services to customers, for example iZettle are providing cash advances to customers which are paid back by the card payments that the SME collects.

Other mPos companies such as 'square' (which doesn't yet take payments in the UK) provide additional services using software such as POS/inventory management for iPad that integrates with their card payment solution. Another example of technology bringing payments to small business is GoCardless. This technology allows small companies and sole traders to collect payments via direct debit from their customer's accounts, for example by window cleaners or dance instructors. Direct debit penetration in SMEs has been somewhat limited due to the infrastructure required to manage direct debits but the technology developed by GoCardless allows anyone to collect via direct debit.

7.3 TIME HORIZON

The technologies that are mentioned here may not yet be available or may require developing. For instance, APIs are freely available. However, APIs would yet need developing to solve some of the detriments identified. Below is a table which outlines the type of time horizon over which some of the key types of detriments may be solved.

Detriment	Code	Category	Short Term (<3 Years)	Long Term (<6 Years)
Poor flexibility or ease of use to control your push and pull payments	UN1	GREATER CONTROL		NEW SCHEME
Difficulty in handling exceptions and failures caused by inability of consumers to control payments	UN2	GREATER CONTROL		NEW SCHEME
Direct Debits are too rigid/lack transparency for customers with unpredictable incomes ; no control over exact dates or amounts; no part payments or flexibility causing exclusion from discounts and returned payment fees	UN7	GREATER CONTROL		NEW SCHEME
Lack of confirmation of receipt (FP)	UN9	CUSTOMER ASSURANCE		NEW SCHEME
Corporate service users would like to know where payments are at all times in case it is not real-time	UN10	FINANCIAL CAPABILITY	OPEN API	
No real-time balances causing financial detriment (overspending causing returned payments, fees)	UN11	CUSTOMER ASSURANCE	OPEN API	
Investigation to solve issues around misdirected payments too complex	UN12	CUSTOMER ASSURANCE	CUSTOM API	
Difficult to know who you are paying leads to misdirected payments and fraud	UN13	CUSTOMER ASSURANCE	OPEN API	
Lack of transparency/clear information on types of payments (and products) for consumer to be able to select best choice with confidence	UN18	FINANCIAL CAPABILITY		NEW SCHEME
Reconciliation costs and treasury management for businesses; also government reporting costs	UN31	OTHER	RICHER DATA	NEW SCHEME
Not enough direct PSPs	SA1	CHOICE / COMPETITION	ACCESS API	
Difficult for PSPs to switch bank provider	SA8	CHOICE / COMPETITION	ACCESS API	
Different in rules and standards within EU to the UK	SA12	COMMON STANDARDS AND RULES		NEW SCHEME
No real substitutability between payment systems in the event of system failure	SA15	COMMON STANDARDS AND RULES		NEW SCHEME

Table 4 A selection of detriments identified by the Payments Community and the time horizon over which technological initiatives may solve them

7.4 TECHNOLOGIES MAPPED TO THE DETRIMENTS

When the technologies are mapped to the detriment categories it shows that they can help across the full gamut of issues identified. 'Choice/competition', 'common standards and rules', 'customer assurance' and 'greater control' all resonate with the PSR's objective to make payment systems work better for those who use them and the desire for increased choice across the value chain, competition and innovation.

Detriment Category	Initiatives Mapped
ACCESS	3
BACK END COMPETITION	2
CHOICE / COMPETITION	34
COMMON STANDARDS AND RULES	33
COSTS / COMPLEXITY	5
CUSTOMER ASSURANCE	35
DIGITAL CURRENCIES	2
E-INVOICING	4
FINANCIAL CAPABILITY	28
FRAUD / KYC / SMALL PSPs	7
GENERAL KYC / FRAUD / AML	10
GOVERNANCE	0
GREATER CONTROL	32
INTERNATIONAL	1
OTHER	13
RETAIL	17
RISK OF CHANGE	1
SCHEME GOVERNANCE	9
SYSTEM VULNERABILITY	1
THIRD PARTIES	4
USER NEEDS	3
Grand Total	244

Table 5: Number of technological initiatives which answer detriments identified by the Payments Community. One initiative may help to solve multiple categories of detriments

Those initiatives which relate to developing layered modelling, standard APIs (including those that allow for the access to customer data), distributed ledger technology should be undertaken collaboratively. However, those that relate to big data analytics and artificial intelligence appear for the time being to be best left to the competitive space. Collaborative effort will be needed to enable 'X as a Service'. However, the packaged services that spring from this enabling will be firmly in the competitive space.

7.5 CONCLUDING REMARKS AND RECOMMENDATIONS

Technological advancements available now and on the horizon are encouraging, especially considering their potential to deal with the issues identified by the Payments Community. Not all change could be implemented immediately however and would need to be phased in over time as technology develops or becomes available. An important step therefore would be to ensure that any short term developments do not stand in the way of or create obstacles to longer term solutions on the horizon.

8 CONCLUSION

Bringing together the Horizon Scanning Working Group's overall intelligence gathering and analysis there are a number of key themes emerging. Digitalisation is taking place around the world at a fast pace. Developments in technology could answer many of the detriments outlined by the Payments Community and create solutions which meet the PSF's objectives that payments be secure and resilient, versatile, responsive and efficient. Key themes we believe will resonate with the Forum include: the move to real time, the use of richer data, improved messaging standards, the use of new, well governed APIs, a layered payments architecture and the potential of Distributed Ledger Technology.

The Group has considered what will appear on the horizon in the short (1-3 year term) and the longer term (3+ years). In particular, it has been concerned with developing an outline of what the future *could* look like for payments. In the short-term the PSF should discuss the following proposals for admission in the strategy:

8.1.1 Short term proposals

Over the short-term the PSF strategy should:

- Support the work of the Open Banking Working Group; and ensure the necessary leadership and support for Open APIs is in place to enable guidance facilitating compatibility as the schemes and the underlying platforms evolve in the medium to long term
- Implement Richer Data through the inclusion of a reference in the payment message and required APIs
- Implement the 'Request to Pay' APIs and 'Confirmation of Payee' APIs independently of existing schemes to demonstrating an 'Overlay API'
- Support the Bank of England RTGS infrastructure review
- Support the general move to ISO messaging and particularly the move globally to a single, instant 'push' messaging.

8.1.2 Longer term proposal

Over the longer term the strategy should aim to:

- Simplify the UK payments scheme platforms by following a layered approach to payment systems implementation together with a migration approach using APIs to minimise disruption.

The development of such a simplified scheme platform would allow the flexibility of distributed federated and/or centralised distribution of the technology platform underlying the schemes, allowing for future localised technological evolutions, simpler access and on-boarding and faster innovations without impacting the entire delivery chain. This proposal is described in the solution concept assessments annexed to this document.

- Monitor and co-ordinate efforts to develop Distributed Ledger Technology (DLT) to ensure that correct use cases are followed and the systemic impact is understood.

If it is to be taken forward, developing DLT as an interoperable 'open standard' will still allow for competition in its implementation.

These proposals, taken together, could allow for significant improvement of the UK's payments systems and offer the opportunity to provide a simplified platform enabling many identified detriments to be resolved.