

# A Verifiable Success

The future of identity in the UK

Scott Corfe

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Scott Corfe joined the SMF as Chief Economist in 2017. Before joining, he was Head of Macroeconomics and a Director at the economics consultancy Cebr, where he led much of the consultancy's thought leadership and public policy research. His expert insights are frequently sought after in publications including the Financial Times, the Sunday Times, the Guardian and the Daily Telegraph. Scott has appeared on BBC News, Sky News, Radio 4 and a range of other broadcast media.

Scott was voted one of the top three forecasters of UK GDP by Focus Economics in 2016.

## FOREWORD FROM OT-MORPHO

The UK ranks as one of the world's leading digital economies, and the Government has helped to make this possible through ambitious programmes such as GOV.UK Verify, which allows a single trusted login across all government digital services.

ID assurance programmes such as Verify have revolutionised how we carry out what are now everyday tasks – such as signing in to a personal tax account, claiming for money owed or checking a state pension. But we are still at the start of this journey. Verify lays the foundations for the UK to go further in terms of secure online verification.

The challenge for governments around the world is to set high standards and create a trust framework that enables secure digital platforms and new biometric technologies to grow. This is a ferociously competitive market and the UK will need to work hard to maintain a leadership role. As our physical and digital lives continue to converge, I encourage the UK to be bold, seize the tremendous opportunity to solve problems around identity theft and fraud, and find new ways to engage citizens in public life.

OT-Morpho is a world leader in digital security and identification technologies. Our ambition is to empower citizens and consumers to interact, pay, connect, commute, travel and even vote in new ways. Our global expertise enables us to bring the best in security and identity technologies to customers in the UK. We are currently working on 135 programs in 75 countries, from supplying 80% of driving licences in the USA, to providing services to most of the world's largest banks, and being the first choice for biometrics for police forces, we work across borders to deliver secure, trusted and cutting-edge solutions.

Imagine a world where you don't have to worry about forgetting your passport, losing your driving licence or being locked out of your bank account again. Such a world may be nearer than you think. This report provides a glimpse of what is possible if we have the right ambitions, the best global expertise and a robust regulatory framework to support innovation.

**Paul Naldrett, OT-Morpho and Managing Director of Morpho UK Ltd.**

## EXECUTIVE SUMMARY

Identity verification processes in the UK have not fully kept up with either technological or social change. The growing proportion of e-commerce has increased the necessity of being able to prove your identity online. Yet physical passports, driving licences and utility bills are not easily used in an online environment.

Around the world, forward-looking countries are embracing the opportunities offered by digital identity authentication and verification. Estonia's "e-ID" enables digital signatures, internet voting and public service access, and the UAE now has a smartphone "passport app". The UK Government is also making it easier to verify identity online with the GOV.UK Verify service. As this report shows, there is a compelling case for the UK to build on the progress already made, to ensure it becomes the world leader in identity verification and authentication services.

The case for continued progress in the identification space is clear. The status quo, which is lagging technological and social change, has a number of consequences:

- **Identity fraud has increased dramatically** – data from Cifas, which operates fraud prevention databases in the UK, show that identity fraud increased by 68% between 2010 and 2016. If current levels of identity fraud persist, the decade to 2020 will see about 1.5 million fraud cases in in the UK. The threats of fraudulent activity in financial services, and fake identities on social media are pervasive.
- **Identity verification is inconvenient** – for example, individuals are often required to provide paper bills as proof of address, yet companies are pushing consumers to adopt paperless billing. While electronic boarding passes are now common place at airports, physical passports are still required for international travel. This need not be the case in the future.

- **Financial and social exclusion** – SMF analysis in this report shows a significant correlation between economic deprivation and lack of access to photographic ID. Those in relatively deprived areas are less likely to have access to a passport or driving licence. Existing identity verification practices are therefore likely to be disproportionately problematic for the poor.

While the GOV.UK Verify scheme is taking steps to make identity verification faster and more digital, there is scope to go much further. The scheme at present focuses on accessing government services rather than providing identity authentication which can be used in a broader range of contexts, such as in the private sector and online interactions such as social media and banking. Encouragingly, use of Verify in private sector contexts is being actively explored, and we believe there are significant benefits for consumers that could arise from this.

We envision a future in which individuals could choose to no longer hold a passport, driving licence, and birth certificate as individual verifiers. Instead, they could opt for all these forms of documentation to sit under one register of entitlement. This could bring about significant cost savings for government, not least from reduced postage and printing costs associated with different types of physical identification. The DVLA, for example, spent about £40 million on printing and postage in 2016/17 – close to 17% of total operating costs within the organisation. Such costs could be reduced, with savings passed onto UK households, if say driving licences and passports were combined.

We envision a future in which identity is increasingly *digital*, rather than physical, allowing for further benefits to the citizen – including making government services more convenient to access, making them more secure and introducing cost savings through greater online service delivery. Biometrics and other technology will help bring about a world in which proving identity and address no longer relies on having physical documentation at hand. Physical documentation will probably be required for some time, given varying degrees of digital uptake across the globe, though the long-term picture undoubtedly looks paperless.

New, digitally-focused approaches to identity verification and authentication in the UK could bring a host of economic and social benefits:

- **An export opportunity.** The UK could become a world leader in providing identity verification to individuals, businesses and governments across the globe, facilitating both online and offline transactions. Research by Smithers Pira suggests the global market for personal ID credentials was valued at \$8.7 billion in 2016 and is forecast to reach \$9.7 billion by 2021<sup>1</sup>.

Like Estonia, the UK could offer “e-residency” status to overseas individuals who wish to use UK identity verification services – for example, to provide digital signatures. Given the strength of “Brand Britain”, and the country’s position as a hub of financial and legal activity, the UK would be well-placed to take a leading position in the provision of international identity verification services.

- **The convenience opportunity** – There is scope for the UK to provide a much more pervasive and comprehensive set of digital identity authentication and verification services. For example, we can imagine a not-too-distant future in which British residents can board international flights from UK airports having presented not a paper passport but a passport app on their smartphone. Indeed, in the future there may not even be a need for app-based passports. If border authorities have an individual’s biometric details stored on a database, then they could grant the individual permission to enter a country based purely on some biometric checks, such as a face and fingerprint scan.

Increased use of digital signatures, perhaps facilitated through GOV.UK Verify, could also eliminate the need for individuals to physically print and sign documents.

- **A democratic opportunity** – Electronic identity verification could facilitate internet voting, increasing civic engagement.
- **Potential cost savings** – For example, by allowing individuals to replace passports, driving licences and birth certificates with one holistic (and digital) register of entitlement. Further cost savings can also be realised through efficiency gains, such as migrating more services online and

reducing transaction times by providing more rapid, online identity verification. A Government Digital Service report in 2012 identified a further £1.7 to £1.8 billion of total annual savings that could be made by shifting the transactional services currently offered by central government departments from offline to digital channels .

- **Improved safety, especially online** – There is a need to improve identity verification and authentication in an online context, such as with internet banking, social media and online dating sites. This could be achieved through new, widely-accepted and government-approved digital identification processes. International cooperation would be required given the fact that so much e-commerce and social media spans countries.
- **Taking the heat out of debates around immigration and welfare reform.** While the facts do not suggest Britain has major national problem with either illegal immigration or welfare fraud, there are widespread public misperceptions around these issues. A more accessible system of identity verification, which could reduce the amount of illegal activity taking place and generate more credible data, could contribute to a more evidence-based and rational discussion around migration and welfare-related issues.
- **Driving financial and social inclusion** – allowing more individuals to establish an identity footprint which they can use to access government, financial and other services in a convenient and efficient manner.

A number of steps will need to be taken to maximise the potential benefits from an overhaul of identity verification.

- **Government needs to be bold** – There are significant opportunities to combine existing forms of identification, such as passports and driving licences, and to make it much easier to prove your identity in a digital environment, building on the work already undertaken as part of the GOV.UK Verify scheme. Government will need to be ambitious if it is to become the global leader in identity verification.
- **Ensuring that identity verification is not overlooked in the Brexit negotiations** – Currently EU “eIDAS” regulations create a European single market for electronic trust services. Given this, the need to

ensure continued UK-EU cooperation on identity verification and digital signatures should be taken into account during the Brexit negotiations.

- **Fostering global cooperation more generally on ID-related issues** – Taking just one example, tackling issues around online identity fraud will require international cooperation and cross-country regulation.
- **Continuing to explore the extent to which the GOV.UK Verify platform can be adopted in the private sector** – Continuing to examine ways Verify can facilitate better identification in e-commerce, as well as the extent to which the platform could form the basis of “digital signatures” for contracts.
- **Better sharing of data** – New sharing arrangements within government can also pave the way for more robust and efficient identity verification and more streamlined delivery of public services. For example, applications for visas and work permits could become more rapid if a greater proportion of identity checks are carried out via cross-government sharing of data.
- **Considering the widespread adoption of an ID verification “kitemark” and trust framework** – Government should look towards providing an endorsement for companies which offer robust identity checks. For example, social media and money transfer platforms could use the kitemark to show that they vet users in a robust way, to check they are who they say they are. A government rating system for identity verification processes could drive competition and innovation in the verification sector, improving security and convenience while possibly reducing costs associated with verification. A kitemark system would provide businesses and consumers with confidence that they are dealing with a company that meets government identity standards.
- **Continuing the drive for greater levels of digital inclusion** – Realisation of the full benefits of digital ID solutions will require government to step up with respect to advancing digital inclusion in the UK. So long as a portion of the population is unable to access digital services – whether that is due to financial reasons or a lack of IT-related skills – government is likely to need to continue providing non-digital services. This in turn limits the ability of government to create online-only services, with the associated productivity and cost benefits.

## INTRODUCTION

Identification is a crucial part of modern life in the UK. From opening a bank account, to travelling abroad, to accessing credit, being able to provide evidence that you are who you say you are is essential.

Despite this, there is no unified approach to proving identity. Passports and driving licences, the most commonly held forms of photographic identification in the UK, are far from universal, particularly among those on lower incomes. This can make it harder for individuals to access the public and financial services they need.

More broadly, identity verification in the UK is not keeping pace with digital innovation. Online crime is on the rise. Identity fraud has increased dramatically in recent years, with the overwhelming majority of this now perpetrated via the internet. Individuals are increasingly being required to prove their identity, and the identity of others, in an online environment. Yet identification processes remain largely stuck in the paper world.

Other countries, such as the UAE, Estonia and Belgium, are allowing electronic identification to dramatically change the way citizens interact with government and engage in commerce. Taking Estonia as an example, digital identification has revolutionised the democratic process, with the country being the first in the world to have held legally binding general elections over the internet. Closer to home, the UK is making it easier to verify identity online for government services via the GOV.UK Verify service.

Expanded or new digital identity verification and authentication platforms in the UK could make it considerably easier for individuals to access public services, pay taxes, travel abroad and engage in commerce. It could also stem the rise of identity fraud which is undermining trust. In addition, there is a potentially significant export opportunity that could arise from the UK becoming a world leader in identity verification services.

## WHO ARE YOU? PROVING YOUR IDENTITY IN THE UK

There is no “one stop shop” for proving identity in the UK. Citizens turn to a wide range of documentation to prove identity, including:

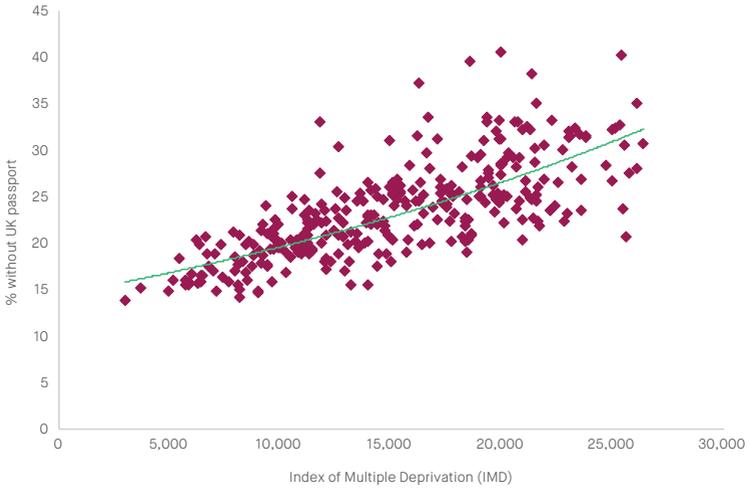
- Passports
- Birth certificates
- Driving Licences
- National Insurance Numbers
- Tax documents – such as P45s and P60s
- Residence permits
- Bank or building society statements
- Utility bills
- Council tax bills
- Tenancy agreements

The two most widely used and accepted forms of photographic identification in the UK are passports and driving licences. However, these are far from universal, meaning a substantial proportion of the population are unable to provide photographic identification when requested to do so.

SMF analysis shown in Figure 1 and Figure 2 shows that individuals without photographic ID are more likely to be in poorer, relatively deprived parts of the country. This might reflect the costs associated with accessing these documents – a standard adult UK passport costs £72.50, while gaining a full driving licence requires an individual to have undertaken driving lessons and passed a test. Those from more deprived backgrounds are less likely to require such forms of identification for their specific purpose, given that they are less likely to have the financial means to own a car or travel overseas.

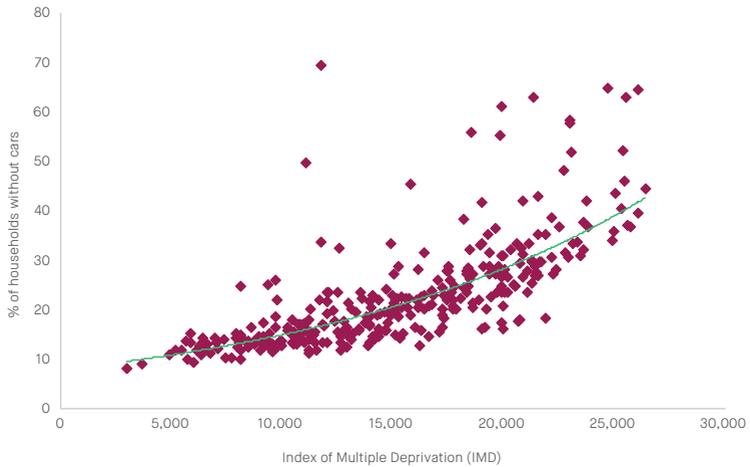
This raises questions around financial and social inclusion if these individuals are unable to access goods and services as a result of lacking photographic identification.

Figure 1 Proportion of population without a UK passport and index of multiple deprivation, local authorities in England



Source: ONS Census 2011, ONS IMD 2015, SMF analysis

Figure 2 Proportion of households without a car and index of multiple deprivation, local authorities in England



Source: ONS Census 2011, ONS IMD 2015, SMF analysis

## CURRENT AND FUTURE PLANS

The Government is taking steps to improve the extent to which identity can be verified in an online context. Being able to provide digital identity verification is increasingly important as consumers expect to be able to undertake a wider array of day-to-day tasks over the internet.

The GOV.UK Verify scheme was launched in 2016 as a means of allowing individuals to access more public services over the internet. This includes:

- Reporting a medical condition that affects your driving
- Renewing your short-term medical driving licence
- Checking your Income Tax for the current year
- Checking your State Pension
- Signing in to your personal tax account
- Viewing or sharing your driving licence information
- Applying for Universal Credit
- Claiming for redundancy and monies owed
- Signing in and filing your Self Assessment tax return
- Updating your rural payments details
- Helping friends or family with their tax
- Checking or updating your company car tax

According to the Government, it takes about 15 minutes to verify your identity the first time you use GOV.UK Verify<sup>2</sup>, and less than a minute any time after that. When individuals use GOV.UK Verify to access a government service, they choose from a list of companies certified to verify identity. The current list of providers is:

- Barclays
- Citizensafe
- Digidentity
- Experian
- Post Office
- Royal Mail
- SecureIdentity<sup>i</sup>

The company the individual has chosen may ask them some questions, or perform other checks using photo identification and financial information before confirming identity to the government department they are trying to use. Each certified company has different ways of verifying identity.

Using certified companies arguably makes GOV.UK Verify a safer way of undertaking identity verification compared to the government acting in isolation. This is because data are distributed rather than stored centrally. The company an individual chooses to verify their identity does not know which government service an individual is trying to access, and the government department does not know which certification company an individual is using. In this sense, privacy is embedded in the Verify framework.

While the GOV.UK Verify scheme is taking steps to make identity verification faster and more digitally-oriented for government services, there is scope for expansion. Firstly, the scheme at present focuses on accessing government services rather than providing identity verification which can be used in a broader range of contexts, such as in the private sector or on social media.

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i Disclosure: SecureIdentity uses technology provided by OT-Morpho, the sponsor of this report

Having said that, the Government is working with private sector organisations interested in building test environments that simulate how they might connect to certified companies<sup>3</sup>. These environments will enable these organisations to understand some of the implications of a private sector Verify framework, including the requirements involved in connecting to Verify and the path to live operations.

The 2017 Conservative Party manifesto acknowledged the case for greater use of Verify, making this pledge:

“We will also make this platform more widely available, so that people can safely verify their identity to access non-government services such as banking.”

However, since winning the general election in June, the Government has yet to provide further details on how or when that commitment will be delivered. The manifesto also mentions that individuals will be able to identify themselves, using Verify, on all government online services by 2020. It mentions plans to develop a strategy to rationalise the use of personal data within government, complying with the “Once-Only” principle under which data is not duplicated. Compliance with the Once-Only principle is meant to be met by 2022 for central government services and by 2025 for wider public services.

At present, GOV.UK Verify is not a full digital service, with most identification service providers requiring citizens to have access to traditional forms of physical ID, such as a passport or birth certificate, in order to register with the Verify scheme. Although other data, such as credit checks, can be utilised for those without access to passports or driving licences, it can be difficult to have a great deal of certainty about the identity of some individuals. We fear that this can lock out those who do not have traditional forms of photographic identification or a substantial credit history. Indeed, National Audit Office analysis<sup>4</sup> suggests a successful verification rate of just 70% on the Verify platform, significantly below the scheme’s target of 90%.

This highlights the challenges that some individuals face when trying to prove their identity. However, these challenges are not insurmountable – we expect success rates for online verification to rise as processes become more innovative over time. For example, we may see social media profiles increasingly playing a role in online identity verification.

As well as expanding identity verification processes, government is also expanding the range of scenarios in which companies will be required to make identity checks. The Digital Economy Act has introduced a requirement for compulsory age checks on online pornography provided on a commercial basis to people in the UK. The Government wants to have this requirement in place in 2018 though it remains unclear at this stage what would form the basis of age checks. One approach may be for adult sites to request an individual's credit or debit card details. However, this approach has numerous flaws. In particular, there is a risk that giving away card details could increase online fraud. Conceivably, we could see an iteration of the Verify platform being used to prove age in this context. However, the Government has not explicitly stated that this will be the case.

## PROVING YOUR IDENTITY ELSEWHERE

Several countries across the globe are providing innovative and digitally-ready identity solutions which are changing the way individuals interact with government and the private sector. The UK needs to consider the merits of adopting similar identity solutions itself, building on the progress it is already making with initiatives such as GOV.UK Verify.

### Estonia – a world leader in e-government

Estonia has become a world leader in adoption of electronic and internet technologies in government. The country's "e-ID", launched in 2002, provides digital access to all of Estonia's secure e-services. Individuals with e-ID are able to use it in multiple contexts:

- As a national ID for legal travel within the EU for Estonian citizens
- As a national health insurance card
- As proof of identification when logging into bank accounts from a home computer
- As a pre-paid public transport ticket in Tallinn and Tartu
- Digital signatures
- Accessing government databases to check one's medical records and file taxes.
- Picking up e-prescriptions
- "I-voting"

With I-voting, Estonia became the first country in the world to allow general election voting over the internet.

The Estonian government offers 600 e-services to its citizens and 2,400 to businesses<sup>5</sup>. In 2012, 94% of the country's tax returns were being made online, taking users an average of five minutes to fill in the sections that had not been automatically completed, between the tax office and local banks.

In over a decade, no security breaches have been reported with respect to the e-ID verification scheme<sup>6</sup>.

Estonia has also recognised the opportunities that exist and could arise from extending such services to non-residents, allowing people from around the world to apply for “e-residency” status. As we discuss later, this represents an export opportunity for Estonia, allowing the country to potentially position itself as a world leader in the provision of identity verification services.

Estonian e-ID has a phone-oriented offer. Mobile-ID allows people to use a mobile phone as a form of secure digital ID and can be used to access secure e-services and digitally sign documents. The system is based on a special Mobile-ID SIM card, which the customer must request from their mobile phone operator. Private keys are stored on the mobile SIM card along with a small application delivering the authentication and signature functions<sup>7</sup>.

### Providing transparency – Belgium’s “mon dossier” application

As part of the Belgian e-Government program, any Belgian citizen can access the “My File” (“Mon Dossier”) application after receiving their e-ID.

With this application, Belgian citizens can consult all transactions performed over the last six months by government officials who have accessed files using their civil register data. There is the exception of exchanges relating to State security (Justice and Homeland Security).

By providing a high level of transparency around how personal data are used by government, there is scope to alleviate concerns around the implications of identity verification for civil liberties. The Mon Dossier application provides some degree of assurance that personal data are not being used unnecessarily or in a manner that individuals do not approve of. Matters of privacy are thus a key component of Belgium’s e-ID system.

## UAE Wallet – your smartphone is your passport

In June 2017, the United Arab Emirates (UAE) launched a new service called UAEWallet, which comes in the form of a smartphone app. Passengers departing from Dubai International Airport can use the app at smart gates instead of their passports. Individuals simply scan a barcode generated by the app as they pass through the airport, and provide a fingerprint for identity purposes.

Figure 3 UAEWallet app



Source: GDRFA Dubai

At the moment, the app can only be used in Terminal 3 (the Emirates terminal), but it is expected to be rolled out across all terminals once the system is linked with other airlines.

While the benefits of the new system are somewhat limited at present, given that it is not universally accepted across countries, it provides a clear picture of the likely future of international identity verification – a world in which your passport is not necessarily a physical document.

The benefits for individuals from such a system are clear. Physical passports would no longer be required when travelling overseas. Digital solutions are likely to speed up the process of entering and leaving airports, reducing travel delays. Journey delays due to, for example, lost passports could be consigned to the history bin.

Other countries are also stepping up to the mark and creating digital passport solutions. Australia, for example, plans to overhaul security at all its international airports, with technology set to replace passports as a means of identifying passengers by 2020<sup>8</sup>. Instead, a self-processing system using fingerprints, iris or facial structure recognition would be used to confirm an individual's identity.

Advancements in biometrics are ultimately paving the way for “paperless passports”.

### **Aadhaar<sup>ii</sup> – improving social inclusion with the world's biggest biometric ID scheme**

An Aadhaar number is a 12-digit random number issued by the Unique Identification Authority of India. Aadhaar is by far the world's largest digital biometric ID system, with over one billion enrolled members.

According to the Indian government<sup>9</sup>, “Aadhaar is a strategic policy tool for social and financial inclusion, public sector delivery reforms, managing fiscal budgets, increasing convenience, and promoting hassle-free people-centric governance.” The Indian government states that Aadhaar acts as a “tool of distributive justice and equality” by improving financial inclusion for those on lower incomes who had previously struggled to prove their identity. Over 30,000 biometric terminals have been installed in India for rural banking applications and national social programs such as RSBY (health insurance coverage for families below the poverty line) and NREGA (the National Rural Employment Guarantee Act)<sup>10</sup>.

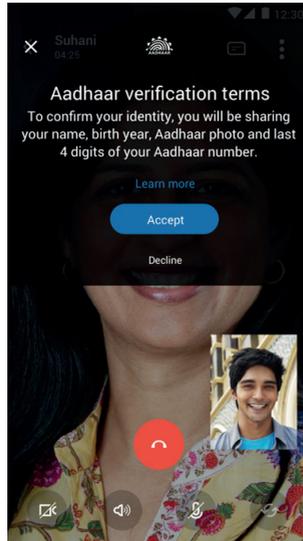
A number of features make Aadhaar a digital identity, and facilitate verification in an online context. Microsoft has recently integrated Aadhaar

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ii Disclosure: Aadhaar uses technology provided by OT-Morpho, the sponsor of this report

into Skype<sup>11</sup>, allowing individuals to verify users' identities online. This has the potential to reduce the risk of impersonation fraud.

Figure 4 Aadhaar verification in Skype



Source: Microsoft

## EMBEDDED MICROCHIPS – AN EXTREME CASE

Perhaps an extreme form of identity verification is from microchips embedded in the human body. For example, the Swedish start-up company Epicenter offers to implant its employees with microchips which can be used to, for example, open doors and use a photocopier<sup>12</sup>.

SJ, the Swedish public railway also allows season ticket-holders to verify their eligibility to travel by scanning information held on near-field communication chips implanted in their bodies.

Conceptually at least, it would be a relatively small step from this arrangement to one where international travellers might carry their passport and visa data on such chips, or citizens carried data about their eligibility to claim government services in a similar way. Of course, the technological, political, social and ethical obstacles would be considerable.

## THE PROBLEMS WITH BUSINESS AS USUAL

Approaches to identity verification vary across the globe. The UK lags behind a number of other countries in terms of the extent to which it monitors identity and utilises the latest technologies in authentication and verification.

We believe there are multiple problems with a continuation of “business as usual” in the UK.

### 1. Financial and social exclusion

By law, all banks and building societies have to check the identity of anyone who wants to open an account or buy any financial product/service<sup>13</sup>. This is one of the procedures that they have to undertake under the Money Laundering Regulations.

However, as we showed earlier, not everyone in the UK has access to photographic identification. A relatively high proportion of these individuals have low incomes, with those from deprived backgrounds more likely to lack access to photographic ID in the form of a passport or driving licence. For example, individuals that have been in prison for an extended period of time may find it particularly difficult to prove identity. It can also be difficult to prove the identity of the relatively young as they often lack a substantial “identity footprint” – for example, not having any utility or council tax bills in their name.

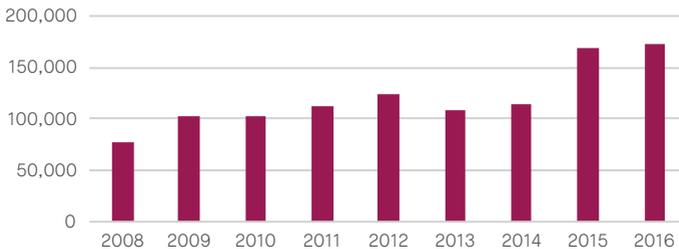
While banks will generally accept other forms of identification if an individual lacks photographic ID, it can delay applications for new current accounts and other financial services. Similarly, lack of photo identification can potentially delay applications for government benefits. The challenges created by lacking certain types of identification can therefore generate time and money costs for individuals.

In addition, lack of widely accepted forms of ID can make it harder for some individuals to use online government services. The majority of the certified verification companies under the GOV.UK Verify scheme, used to access some public services online, require an individual to have a driving licence or a passport.

## 2. Identity fraud and fake profiles on the internet

Data from Cifas, which operates fraud prevention databases in the UK, show that identity fraud has increased dramatically in recent years, rising by 68% between 2010 and 2016. If current levels of identity fraud persist, the decade to 2020 will see about 1.5 million fraud cases in the UK.

**Figure 5** Number of recorded identity fraud cases in the UK



Source: Cifas

Identity fraud now represents over half of all fraud recorded by Cifas (53.3% in 2016) and 88% of ID fraud cases were perpetrated online in 2016. In part, rising levels of identity fraud are likely to reflect the difficulties associated with verifying one's identity online.

As well as financially-motivated crime, inability to verify identity is associated with online grooming of children, stalking and other activities which harm individuals. Trends such as the rise of online dating could also place more at risk of coming into contact with those who are not who they say they are.

A Pew Research centre study<sup>14</sup> in the United States found that half (54%) of online daters have felt that someone else seriously misrepresented themselves in their online profile. Further, over a quarter (28%) of online daters have been contacted by someone through an online dating site or app in a way that made them feel harassed or uncomfortable. Research for Which? in the UK found that more than half of online dating app and website users believed they had seen a fake profile<sup>15</sup>.

Recent research from the University of Southern California and Indiana University suggests that up to 15% of Twitter accounts are in fact bots rather than people<sup>16</sup> – about 50 million accounts.

The rise of the sharing economy – Uber, car clubs, AirBnB and other platforms – also creates a stronger need for digitally-oriented identity verification. While some companies such as AirBnB offer verification services, approaches to verification are inconsistent and the strength of approaches varies dramatically across platforms.

### 3 Identification processes are not keeping up with the way people live

Individuals are becoming increasingly used to seamless payments and transactions when engaging with government, businesses and each other. Common examples include Uber, mobile banking and contactless payments.

Unlike these relatively seamless transactions, identity verification is often cumbersome and inconvenient.

The technologies required for paperless identification have advanced dramatically in recent years. Governments and businesses have a plethora of tools at their disposal which they can use to prove identity. With “e-ID”, facial recognition, voice recognition and even Blockchain, technologically we should eventually be able to enter a world in which individuals can open bank accounts or clear border control without physical documentation.

The UK has yet to fully embrace revolutions in identity verification. This imposes costs and inconveniences on UK households. For example, requirements for paper bills as proof of address come at a time when individuals are being encouraged to adopt paperless billing. For consumers that have adopted paperless bank statements and utility bills, proving address can become inconvenient, requiring the individual to request additional documentation from a bank or utility provider, possibly at a cost.

Online contract signing processes are also convoluted, often still requiring individuals to print, physically sign and scan written documents before emailing them back to another party that also has to print, sign, scan and email. Greater use and acceptance of digital and electronic signatures could dramatically speed up such processes.

Over the past couple of years, the Government has taken important steps to improve its digital identification offer, with the GOV.UK Verify scheme. But there is still much to be done. As discussed earlier, extending Verify to private enterprise contexts is still in its infancy. Furthermore, with an increasing portion of individuals' lives played out online, there is a growing need for services which allow individuals to digitally verify the identity of *each other*.

#### 4. The UK is missing out on an export opportunity that could be seized by others

The UK risks losing out from the potentially significant opportunities that could arise from becoming a world leader in identity verification services.

As well as providing identity verification to its own citizens, non-residents of Estonia can also gain access to an Estonian e-ID. Individuals from across the globe can, for a relatively small fee, become “e-residents” of Estonia. This does not enable an individual to live or work in Estonia, or to access Estonian services such as healthcare, but it enables individuals to use the data captured by e-ID to verify their identity. For example, Estonian e-ID can be used to provide digital signatures for online contracts.

Ultimately, Estonia has recognised that there is a gap in the global market for digital identity verification – one that it is hoping to partly fill.

It would be a pity for the UK to lose out on this export opportunity as others plug the current gaps. “Brand Britain” is relatively strong and the country has a reputation as a safe and reliable location to do business. International legal and financial activities take place in the UK partly for these reasons. There is no significant reason why the UK could not become a hub of international identity verification.

## THE OPPORTUNITY

As things stand, the UK is lagging behind some other countries in terms of the strength of its identity verification, the scope of this verification and the ability to use ID in a range of digital and “real world” contexts.

There are significant costs associated with not fully modernising identity verification and authentication, including high rates of identity fraud and inconvenience for those that do not have access to ID such as driving licences, passports or paper utility bills.

However, the UK can not only catch up with other countries, but could become a world leader in identity verification. For this to happen there are a wide range of avenues that policymakers, government and private enterprise could explore in this space, from voluntary e-ID cards to new, digital, paperless forms of identification. For example, in the near future, individuals could potentially have identity and passport apps on their mobile devices, similar to the Wallet smartphone app recently introduced in the UAE. Combined with the latest biometric technologies such as facial and voice recognition, this could do away with the need for individuals to have physical identification documents when, for example, opening a bank account or travelling overseas.

Here, we describe the potential opportunities for the UK that could arise from adopting a more innovative approach to identification.

### 1. The export opportunity – becoming a world leader in identity verification

The UK could become a world leader in providing identity verification to individuals, businesses and governments across the globe, facilitating both online and offline transactions.

Research by Smithers Pira suggests the global market for personal ID credentials was valued at \$8.7 billion in 2016 and is forecast to reach \$9.7 billion by 2021<sup>17</sup>.

The UK would be relatively well-placed to become a leader in this area, given the strength of “Brand Britain” and the country’s reputation as a safe haven for investment. In addition, the country has a strong international standing with respect to legal and financial services, which could support and benefit from a growing identity verification industry. According to research by The City UK<sup>18</sup>, four of the ten largest law firms in the world, based on gross fee revenue, have their main base of operations in the UK. Over a quarter (27%) of the world’s 320 legal jurisdictions use English Common Law.

International identity verification services could be provided by a range of private enterprises, potentially endorsed by the UK Government for adopting robust, secure identification processes. This is what is currently done with the GOV.UK Verify scheme.

Like Estonia, the UK could also offer “e-residency” status to individuals outside of the country, allowing them to use UK “e-ID” to provide digital signatures and verification. As e-residency need not be tied to citizenship or right to physically reside within a country, it could be introduced in the UK without being dragged into the ongoing debate around the appropriate level of immigration into the country. This will, however, require clear dialogue from government around the purpose of e-residency.

The Government has stated that, from September 2018, GOV.UK Verify will also be able to accept approved identity schemes from other countries<sup>19</sup>. The extent to which this could evolve into a full e-residency style scheme, usable in a range of public and private sector contexts, remains unclear at this point.

## 2. The safety opportunity – curbing the rise of identity fraud

More widespread use of robust online identity verification and authentication practices could curb the rise of identity fraud identified in the previous chapter of this report.

At the moment, verification and authentication processes vary substantially across business platforms, as well as social media platforms, and it is difficult for individuals to gauge the amount of faith they should place in the strength of these processes. Indeed, many online platforms lack any form of identity verification.

Improved, consistent ID verification and authentication processes, perhaps linked to the GOV.UK Verify platform, can provide individuals with greater assurance that others on online platforms are who they say they are.

The UK Government could set out a framework of “best practice” for verifying identity in online environments, including social media, which companies could voluntarily adopt. Those that take significant steps to verify the authenticity of users could advertise this on their websites – for example, with a “badge” or “kitemark”. This could potentially encourage individuals to use the online platforms which offer greater levels of safety.

A stronger approach would be for the government to set mandatory standards for identity verification, though there are several challenges with adopting this kind of approach. In particular it would be difficult to enforce without cross-country cooperation, given that online platforms are often global in scope.

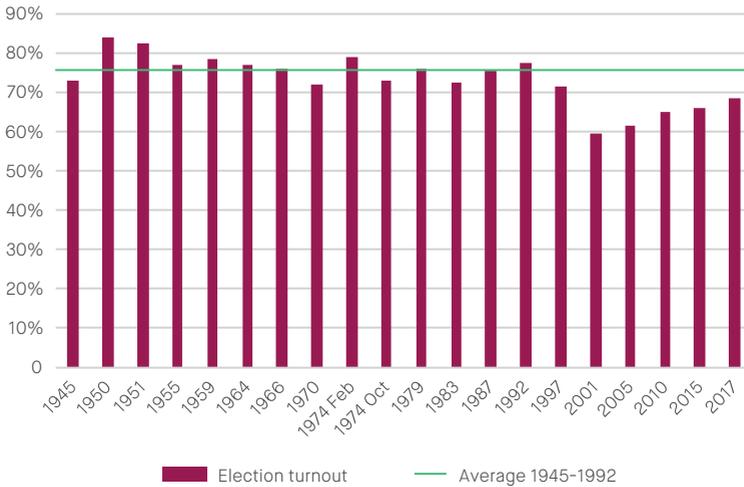
As in Estonia, identity verification processes such as GOV.UK Verify could be used as the basis of digital signatures, providing greater certainty about the source of online documents, and allowing individuals to digitally sign contracts.

### 3. The democratic opportunity – I-voting

While voter turnout in UK general elections has been increasing since 2001, when less than 60% of the electorate voted, it remains much lower than the average seen over the period 1945-1992. Over this time frame, over three quarters of the electorate typically voted.

By providing strong identity verification online, verification systems such as GOV.UK Verify could enable secure internet voting – as currently occurs in Estonia. By reducing the “costs” associated with voting – such as having to travel to a polling station and registering to vote – internet voting could help increase electoral turnout and engagement in the democratic process.

Figure 6 General election turnout 1945 – 2017



Source: House of Commons research papers

This may be particularly relevant with respect to non-general elections, such as the selection of city mayors and local government elections. In these elections, turnout is often relatively low, presumably because individuals do not believe that these are particularly important. Internet voting, enabled by identity verification, could encourage greater participation in these elections by reducing the “transaction costs” of voting.

Experimentation and use of i-voting is increasing. Several cantons in Switzerland are experimenting with electronic voting, for example<sup>20</sup>. However, we should not see internet voting as an elixir which will eliminate low election turnout. The evidence from Estonia is mixed with no overwhelming evidence that it has had a strong, positive effect on turnout<sup>21</sup>.

This suggests that while internet voting may be an enabler of more convenient voting, it needs to be complemented with other factors to boost turnout. For example, individuals may need political candidates that they deem inspiring and worthy of their vote.

One needs to weigh up the benefits of internet voting with the potential costs. Concerns over security, even in the case of strong identity verification systems, could be rife, and this could cast doubt over the validity of online election results. Furthermore, one could argue that internet voting would trivialise and cheapen the democratic process, leading to a greater proportion of individuals voting in a frivolous manner. Arguably, voting should have transaction costs associated with it to deter “non-serious” voting.

#### 4. The convenience opportunity – a future with paperless passports

There is scope for the UK to use new and expanded identification verification procedures to dramatically improve convenience. One can imagine a not-too-distant future in which a UK-based individual downloads a passport app on their smartphone which can then be presented at the airport, much as is the case with electronic boarding passes.

A passport app could allow border security officials to retrieve personal details, photographs and biometric information about an individual from a government database. The latest biometric scanning technologies – from iris readers to facial recognition – could then confirm whether or not an individual is who they claim to be at the airport, based on their digital identification.

This is not the leap of technology or policy that some might believe it to be. Since 2006, the UK has been using biometric passports that contain a small chip that holds data on the passport holder’s unique physical characteristics. When that passport is presented for verification at an airport, that data is checked and compared to the physical presence of the person presenting it. The paper passport, in other words, is simply a physical container for a digital identity. That identity could also be held on a smartphone or another electronic device, perhaps a wearable one such as a watch or other wristband. Indeed, arguably there is not even a need for passports to be stored on personal electronic devices. If border authorities have an individual’s biometric details stored on a government database, then they could grant the individual permission to enter a country purely based on some biometric checks, such as a face and fingerprint scan.

While the UAEWallet app offers a paperless passport solution in the UAE, there are questions around the extent to which something similar could be adopted in an *international* context. A high degree of consensus will need to be reached across countries before paper passports can be replaced completely with digital alternatives.

Although there are these barriers to be overcome, a future of paperless passports and other forms of identification remains feasible. UK businesses and government could lead the way in rolling out these technologies across the globe.

### 5. Cost savings

New identity verification processes, digital or otherwise, need to be seen as a cost-saving *substitute* for existing paper-oriented processes, rather than an expensive complement to existing processes.

There are grounds for believing that reforming and improving identity verification processes could lead to substantial financial gains for consumers, businesses and government. Research for Experian produced by the Centre for Counter Fraud Studies at the University of Portsmouth suggests that identity fraud cost the UK adult population £5.4 billion in 2013/14<sup>22</sup>. As we showed earlier, the prevalence of identity fraud has increased dramatically since then, suggesting that the costs of fraud are likely to have risen significantly.

In addition to these costs are the costs faced by individuals that currently struggle to verify their identity because they do not have a passport or driving licence. This can result in increased time costs associated with transactions and, in the worst cases, lock individuals out of being able to participate in markets.

We envision a potential future in which individuals can choose to no longer hold a passport, a driving licence and a birth certificate. Rather, there is scope for all of these forms of documentation to sit under one digital register of entitlement. This could bring about significant cost savings for government, not least from reduced postage and printing costs associated with different types of physical identification. The DVLA, for example, spent

about £40 million on printing and postage in 2016/17<sup>23</sup>. Such costs could be reduced, with savings passed onto UK households, if say driving licences and passports were not distinct documents.

More extensive use of digital identification also brings costs savings to government through more extensive use of online rather than face-to-face or paper-based public services. This could in turn benefit consumers through lower taxes and fees associated with public services. A Government Digital Service report in 2012 identified a further £1.7 to £1.8 billion of total annual savings that could be made by shifting the transactional services currently offered by central government departments from offline to digital channels<sup>24</sup>.

Digital identity verification and data sharing across government has the potential to reduce data duplication and speed up processes. The GOV.UK Verify scheme is going some way to enabling this and trials have been undertaken at a local government level. In 2017, Warwickshire County Council began the first test of the GOV.UK Verify platform for a local government service, using the service to enable individuals to renew Blue Badge parking permits. Pilots are also being undertaken in the areas of residents' parking permits and older people's concessionary travel.<sup>25</sup>

### CASE STUDY: USING GOV.UK VERIFY TO IMPROVE THE BLUE BADGE RENEWAL PROCESS AT WARWICKSHIRE COUNTY COUNCIL

The application process for Blue Badge parking permits is a good example of a situation where traditional identity verification processes can be time consuming and onerous, requiring local government to acquire details about an individual's circumstances from central government. In addition, Blue Badges, with the parking privileges associated with them, are valuable – meaning there could be a significant proportion of individuals trying to fraudulently gain access to one.

Under a GOV.UK Verify pilot scheme with Warwickshire County Council, a local government service user could consent to a real-time eligibility check against central government data. This was the first pilot of this new capability.

Participating users of the pilot were first asked to prove their identity using GOV.UK Verify. This gave Warwickshire County Council sufficient assurance and confidence in the identity of the user who was applying for a Blue Badge.

Then, the user was asked to give explicit permission for Warwickshire County Council to check their eligibility online against data supplied by the Department for Work and Pensions (DWP).

Warwickshire County Council then carried out an instant online check and let the user know, within that same session, if they were still eligible for a Blue Badge.

Using GOV.UK Verify and having an online eligibility assessment can provide individuals with an improved service that better safeguards privacy and saves time and effort for the users. For users, an online service can be done at their convenience without the need to spend time bringing, scanning or sending any identity and eligibility documents in person.

For organisations such as Warwickshire County Council, online identity verification has the potential to decrease processing time and saves costs by eliminating manual checks and eligibility assessments, manual re-typing and storing of data. It also enhances the security of services and reduces the potential for fraud.

## 6. Taking some heat out of the debates around migration and benefits fraud

While rates of welfare fraud are low across the migrant population, and indeed the UK population more widely, there remains a substantial portion of the electorate that believe such issues are pervasive.

For example, a 2013 study by Ipsos MORI for the Royal Statistical Society and King's College London showed that people estimate that 34 times more benefit money is claimed fraudulently than official estimates: the public thought that £24 out of every £100 spent on benefits was claimed fraudulently, compared with official estimates of £0.70 per £100<sup>26</sup>.

While we do not believe that welfare fraud is a major or high priority problem, greater assurance that it will be prevented could be beneficial to the UK economy. Such assurance could be provided through new, secure identity verification processes.

By reducing the chance of welfare fraud or bogus asylum seeking taking place, new identity verification processes could take some of the heat out of current debates around migration and welfare, leading to a more evidence-based and rational discussion around the economic and social consequences of immigration in the UK, and around the case for welfare reform. At present, too much discussion on these issues revolves around misperceptions.

## 7. Driving financial and social inclusion

New and expanded forms of digital identity verification and authentication could pave the way for greater levels of financial and social inclusion, particularly if these products/services are provided for little or no direct cost. As discussed earlier, at present there are individuals that struggle to prove their identity, due to a lack of photographic identification as well as lack of access to other documents such as utility bills and bank statements proving address.

Governments are recognising the important link between identity and inclusion, most notably perhaps in India where a key rationale behind the Aadhaar identity system is the need to increase inclusion in a country where many individuals on low incomes struggle to prove that they are who they say they are.

New identity verification and authentication systems, which draw on a wide range of data from credit checks to social media profiles, can help more individuals establish an identity footprint, particularly in an online context. This makes it easier for more individuals to access government and financial services in a manner that is most convenient to them.

## SEIZING THE OPPORTUNITY

There are a range of benefits that could arise from bringing identity verification into the 21st century. To take full advantages of the opportunities on offer businesses and governments will need to cooperate with each other.

### The role of Government

Government has a number of key roles to play in helping new identity solutions flourish in the UK.

Firstly, government should set the tone in describing the future of identity verification in the UK, as well as the key objectives of this verification. In our view, government needs to move away from the past focus of ID reform on tackling benefits fraud, illegal immigration and terrorism. The debate needs to focus on the more positive aspects of new identity systems – such as being able to better prove identity online, easier access to public and private services, and more frictionless international travel. There may be grounds for arguing the case for ID as a means of reducing welfare fraud and illegal immigration, as discussed in the previous chapter, but these should not be central issues.

Secondly, government needs to either deliver identity verification services itself, or oversee the private sector provision of these services. The government is already doing the latter to an extent with the GOV.UK Verify scheme. The government should continue to explore the benefits of GOV.UK Verify in a private sector context, and should consider the extent to which the scheme could be used to provide greater assurance about individual identity on social media, internet banking and other platforms. The government should also consider the extent to which the Verify framework could be used to provide digital signatures, for example for electronic contracts in business-to-business and business-to-consumer contexts.

Better sharing of data *within* government can also pave the way for more robust identity verification and more streamlined delivery of public services. For example, applications for visas and work permits could become more rapid if a greater proportion of identity checks are carried out via cross-government sharing of data. The Digital Economy Act 2017 makes new

provisions<sup>27</sup> for sharing data within government which could facilitate this. In addition, the 2017 Conservative general election manifesto mentions plans for a “Once-Only” approach to personal data, in which data is not duplicated across the public sector. This could improve both the accuracy and efficiency of personal data storage in government.

Realisation of the full benefits of digital verification solutions will require government to step up with respect to advancing digital inclusion in the UK. So long as a portion of the population is unable to access online services – whether that be due to financial reasons or a lack of IT-related skills – government is likely to need to continue providing non-digital services.

### The role of private enterprise

As the Government has shown with the GOV.UK Verify scheme, the responsibility for and provision of identity verification need not lie solely with the public sector. Indeed, greater private sector involvement can improve the security associated with identity verification processes by distributing personal data across a number of secure organisations, rather than storing the data centrally.

In addition, a competitive environment in identity verification opens up the possibility for innovative new approaches to verification in the UK, with companies vying to win over consumers by providing the most efficient, safest and cheapest identity verification solution. Companies can also compete to provide innovative identity verification solutions for those that struggle to prove their identity using “traditional” means – such as those without a passport, driving licence or substantial credit history.

Identity verification arguably needs to play a greater role in corporate social responsibility (CSR) strategies, particularly among online businesses. It is widely accepted in a retail context that companies have an obligation to ensure the safety of customers consuming their products. Online businesses, including social media, arguably have a similar duty for helping to ensure safety on the internet. While steps are being taken to provide some forms of identity verification on social media (such as Twitter’s “blue ticks” displayed on verified users), verification processes are far from universal across companies, and strength of verification processes varies significantly.

While private enterprise can develop its own identity verification solutions, there is a case for government recognising “good” identity schemes which include robust audit and certification processes. The concepts for this are already in place with GOV.UK Verify. A company that takes identity verification seriously and has robust processes in place could be allowed to display some kind of government kitemark to assure users about safety. This would help individuals and businesses acquire greater certainty over the degree of faith they should be placing in the identity checks carried out by other parties.

### Brexit and international cooperation

International cooperation will be an important element of realising the full benefits of any ID revolution in the future. Paperless international travel will require support for such a scheme from a number of countries. Similarly, digital signatures need to have international recognition.

Social media and e-commerce span countries. As such there needs to be an international consensus on how to improve safety on the internet.

Brexit has, potentially, numerous implications for the ability of the UK to benefit from advances in identity verification. EU Regulation on electronic identification and trust services for electronic transactions (eIDAS Regulation), adopted in 2014, provides a regulatory environment to “enable secure and seamless electronic interactions between businesses, citizens and public authorities”<sup>28</sup>.

In this regard, the eIDAS Regulation ensures that people and businesses can use their own national electronic identification schemes (e-IDs) to access public services in other EU countries where e-IDs are available. It creates a European internal market for electronic trust services – namely electronic signatures, electronic seals, time stamps, electronic delivery services and website authentication – by ensuring that they will work across borders and have the same legal status as traditional paper-based processes.

Issues of identity verification have already waded into the debate around Brexit, with the UK Government proposing that EU citizens applying for “settled” status in the UK will have their biometric information captured by

the Home Office to “protect against fraud”<sup>29</sup> Ultimately, this could result in a situation where those with “settled” status have a form of digital identity in the UK.

The UK government also needs to consider its future position in terms of abiding by and contributing to European standards with respect to personal identification. CEN/TC 224, from the European Committee for Standardisation, relates to “the development of standards for strengthening the interoperability and security of personal identification and its related personal devices, systems, operations and privacy in a multi sectoral environment.”<sup>30</sup> Given that these standards enable cross-border commerce and travel, there is a strong case for the UK continuing to abide by them and, if possible, to contribute to further developments with respect to them.

### Getting to where we need to be

Realising the full benefits of the “identity revolution” will require action from both the UK government and private enterprise. International cooperation will also be crucial – the benefits of paperless passports will be limited so long as they are not accepted across the globe, for example. Similarly, cross-country cooperation will be needed to improve online safety across social media, e-commerce and banking platforms which span the globe.

Given this, ensuring continued UK-EU cooperation on identity verification and digital signatures has to be a key feature of the Brexit negotiations.

The UK government will need to play a key role in supporting innovation among private enterprise in the identity verification space, and in assuring individuals and businesses about the quality of the verification services on offer – perhaps through a kitemark system. Indeed, the Government’s Industrial Strategy recognises the importance of online identity verification and open data in driving economic growth going forward:

“As well as physical and digital infrastructure, we need to make sure that we also have in place an effective data infrastructure. This means the right elements for an economy in which open data drives growth, efficiency and innovation.

This includes secure services that allow individuals and organisations to prove who they are online – for example, the GOV.UK Verify service, which gives people safer, simpler and faster access to government services like filing their tax or checking the information on their driving licence.”

**“Building our Industrial Strategy”, January 2017 Green Paper**

## CONCLUSIONS

In many respects, we are at an important juncture for identity verification. Widely-used forms of ID such as physical utility bills, passports and driving licences are becoming less useful in a world with a growing proportion of e-commerce and online interaction. While individuals are being pushed to “go paperless” when it comes to bank and utility bills, all too often individuals are required to present original paper statements to prove their address. Too much thinking about identity in both the public and private sectors has been both dated and disjointed.

The costs of the status quo are clear. A large segment of the population struggles to prove identity due to not having access to photographic ID or other widely-accepted forms of documentation. Identity fraud has increased significantly in recent years, and the overwhelming majority of this is taking place on the internet.

While the UK is making headway in addressing these issues through, for example, the GOV.UK Verify scheme, there is scope to go much further in the identity verification and authentication space. Other countries, such as Estonia, have developed advanced, digital identity solutions in excess of what is currently on offer in the UK. Estonia’s e-ID has facilitated internet voting, while the UAE now has a smartphone-based “passport app” which could render physical travel documentation redundant.

There is a risk of the UK losing out on a growing export opportunity here, as governments and businesses in other countries develop identity solutions which can potentially be used and sold on to other markets.

Arguably, now is the time to act and ensure that the UK does not get left behind in the “identity revolution”. The Government’s announcement about storing biometric data of EU citizens wanting “settled status” in the UK means that identity verification is likely to be a prominent feature of the Brexit negotiations. Similarly, the eIDAS regulations which create a European single market for electronic trust services mean that there will be a need to ensure a smooth transition with respect to cross-border identity verification upon leaving the EU.

Critically, identity issues are increasingly international. Individuals and businesses purchase goods & services online from across the world, and interact with people on social media in a wide range of countries. There are major challenges around fighting fraud and providing safety on the internet, which the UK will be unable to address in isolation.

Policymakers should seize the moment and foster an environment in which the UK becomes a global leader in identity verification. At the moment, too much thinking about identity in the UK lacks imagination. The Brexit vote has led to talk about bringing back the traditional blue UK passport. Rather than looking to the past, energies would be better spent thinking of new, digital identity solutions taking full advantage of the latest technologies. There is potential to create new approaches to identity verification and authentication which boost economic growth, convenience and safety.

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## A Verifiable Success

### The future of identity in the UK

Identity verification processes in the UK have not fully kept up with either technological or social change. The rise of e-commerce, online banking and social media has increased the necessity of being able to prove your identity online. Yet physical passports, driving licences and utility bills are not easily used on the internet.

Around the world, forward-looking countries are embracing the opportunities offered by digital identity authentication and verification. Estonia's e-ID enables digital signatures, public service access and even internet voting for general elections. The UAE now has a smartphone "passport app". The UK Government is also making it easier to verify identity online with the GOV.UK Verify service.

This report examines the future of ID in the UK and shows how further developments can radically improve the way individuals access public services, engage in e-commerce and even travel overseas. The benefits of innovation are significant, including reduced risk of fraud, lower costs for government and much greater convenience for individuals. A world of "paperless passports" may not be very far away.

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