

# INFOSECURA

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**INVITATION**

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## Hang on to your cash



In this issue of InfoSecura we take a first look at some programme points of the forthcoming Security Printers Conference and Exhibition in Dublin in March 2018. The invitations for this event will arrive shortly and it is recommended to register early. As a departure from previous Intergraf events, there is no 'official' conference hotel and participants need to make their own reservations. Another reason to act soon. All necessary details can

be found on [www.securityprinters.org](http://www.securityprinters.org).

Apart from this, the main "hot" items in this issue are the continuing push against the use of cash and the fight against document fraud involving the latest technologies. Both of these subjects have moved from mere discussion in expert circles, such as the security printing industry and relevant state authorities, into the consciousness of the general public, sometimes in very unfortunate circumstances. The use of cash is a case in point.

In the last few weeks, nature itself has made a very strong case for the use of cash. The tragic events around hurricane Harvey that battered the coasts of Texas and Louisiana and caused wide-spread electricity outages and the even greater tragedy that hurricane Irma brought to several Caribbean islands and to Florida may have convinced many people of the wisdom to have some cash at hand or of the folly to rely entirely on electronic payments. There were reports in the press of looting in several cities, where people took food from shops and were unable to pay even if they wanted to, because there was no electricity. Our economies and our daily lives now depend to a frightening extent on electricity and to have a means of payment - and also a means of identification with physical passports and ID cards - which are totally "off the grid", should be very reassuring.

A recent editorial in the UK daily The Guardian ('Hang on to your cash. This dash to digitise payments is dangerous' by Brett Scott, Sept 13, 2017) said that the "cashless society" is a euphemism for a "bank payments society", in which every transaction must be passed through a complex of banks, card companies, phone providers and payments apps. In granting financial corporations complete control over the money system, our every economic interaction ends up logged in their databases for analysis.

He goes on to say: 'Commentators often suggest the phenomenon is driven by "consumer demand". It's partially true. Ask a room of people to raise their hands if they wish to be able to use digital payment, and most will do so. But if you reframe the question as "Do you want to not have the option to use cash?" people are more hesitant. We like new options, but we don't like having options removed.'

This probably sums up the position of those in the banknote industry quite accurately. We neither want nor are able to turn the clock back to pre-digital times. But we do not want to deprive the public of a reliable, safe and convenient means of payment and store of value, which is available regardless of the circumstances.

The Editor

Security Printers 2018 comes at a time for our industry that is both promising and challenging. For all involved in the areas of banknotes and ID documents this is a vital opportunity to explore the issues and spot the trends.

# Dublin calling

## A KEYNOTE ADDRESS NOT TO BE MISSED

How many of us would manage to stay off the Internet for more than a day? Most of our information comes from there, most of our interaction with people who are not, by coincidence, immediately next to us, happens via the Internet. To be connected to it is vital for us personally, for our work and for our social life. The Internet has changed us as much as the world around us. Our knowledge about the positive effects of living in the cyber age is pretty complete, but is there a dark side as well? Is our dependency on digital media and the cyber world leading to changed human behaviour for the worse?

In a talk entitled "Cyber: the criminal frontier", the keynote speaker at Intergraf's *Security Printers* Conference in Dublin, the renowned cyber-psychologist, Dr Mary Aiken, will try to provide an answer. She explains that when technology interacts with a base human disposition it gets both amplified and escalated online which means it has worrying effects for the future of society. "The same holds for criminal behaviour and law enforcement says we are facing a tsunami of criminality coming online down the line," she says.

As crime continues to expand and thrive on the Internet, Dr Aiken will open our eyes to the psychology of this new criminal frontier, explore the motivation of cybercriminals, profile the types of criminals that attack digital payment transactions and identity records, and discuss how government and industry need to understand modus operandi in the domain of cyberspace to defend against evolving cybercriminal techniques. Such insights are vital for the success of our work.

The keynote speaker, Dr Mary Aiken is Academic Advisor to the Europol European Cybercrime Centre (EC3) in Ireland and the author of 'The

Cyber Effect', a book that has been widely reviewed and was selected by the Times as a 2016 'book of the year' in the Thought Category, and 2016 'best science pick' by Nature the International Science Journal. Her research interests include human factors in cyber security, organized cybercrime, cyber stalking, human trafficking, cyber behavioral profiling and the rights of the child online.

## MOVING INTO THE ACTIVE PHASE

The time to prepare to participate in the Dublin conference is almost there. Registrations open on [www.securityprinters.org](http://www.securityprinters.org) on October 17, 2017 and there is a reduction in conference fees for "early birds" that lasts until January 23, 2018. Registration ends on 26 February, 2018.

The programme gives ample time for the banknote sector as well as the ID sector. There will be over 70 presentations given by leading experts from banknote and ID issuing authorities, as well as from police authorities, academia and from companies that drive innovation in our industry. To emphasize the common ground between banknote and ID sectors, the conference will start off with a joint session, after which those interested in banknotes and those in ID will participate in separate meetings, to meet again for coffee breaks, meals and of course the social programme. The conference will close with a panel discussion on a subject, the public becomes increasingly aware of: the future of cash.

Intergraf's new Customer Relations & Certification Manager, Doris Schulz-Pätzold, will give an overview of the current situation regarding Intergraf's certification CWA 15374 and ISO 14298, which are steadily gaining importance for suppliers, printers and tender issuing authorities.

*Security Printers* also offers an excellent view of the whole market: over 100 printers and suppliers will be present in the exhibition. The full list of exhibitors and the floor-plan is available on [www.securityprinters.org](http://www.securityprinters.org).

Book your hotel early to ensure your preferred hotel is available at the best rates! *Intergraf has not mandated any housing bureau for Security Printers 2018 and is therefore unable to offer negotiated rates or assist with accommodation needs. Delegates are responsible for making their own accommodation arrangements.*

The Convention Centre, Dublin (CCD) is conveniently located in the heart of Dublin, within easy reach of a wide range of 3- to 5-star hotels. A selection of hotels to fit your budget, all within walking distance of the CCD and of each other is available on [www.securityprinters.org](http://www.securityprinters.org). ■



# THE FACE OF A WOMAN

Technically, the new UK £ 10 note is a direct continuation of the design and security feature philosophy, developed for the earlier £ 5 note, which will be continued for the coming £ 20 and £ 50 notes. Its significance lies in the choice of the portrait on the back.

When the Bank of England announced in 2013 that it would issue a new £5 note printed on polymer, showing a portrait of Winston Churchill on the back and thus replace the portrait of prison reformer and philanthropist Elizabeth Fry, there were howls of protest. Not that anyone protested against Mr. Churchill himself, but that a woman had lost her place on a British banknote to a man, rankled the people, especially British women. (The ubiquitous image of the Queen does not count in this ‘public recognition’ contest, as she is there as a symbol of the state, not of British womanhood.) The Bank of England quickly reacted with a public selection process for portraits on bank notes and chose Jane Austen as the face on the next banknote to be issued, the £ 10, consequently knocking Charles Darwin off his perch.

It was a popular choice and the new note has just been presented to the public at the most appropriate time: 18th July 2017, the 200th anniversary of the death of Jane Austen and also at the most appropriate place, Winchester Cathedral, where she is buried. There, the governor of the Bank of England paid tribute to the great novelist during the public inauguration of the design.

200 years after her death, her literary influence is still strong, not only in Britain, where she is seen as quintessentially English. She combined a - somewhat selective - realism with a new narrative style that moves between the narrator’s voice and the characters innermost thoughts, which was at the time radically inventive.

Her appeal is widespread, almost universal. There are Jane Austen Societies in North America, Japan and China and she has a huge following in India and Pakistan. In the first world war, Austen’s novels were prescribed reading for shell-shocked soldiers and according to *The Economist* in the dark days of the second world war Winston Churchill found it comforting to reread “Pride and Prejudice”. Her

works also became popular TV dramas, with 11m viewers in Britain watching the BBC’s 1995 “Pride and Prejudice” series every week and nearly 4m people watching its first broadcast in America.

## THE STORY...

But what about the new £ note itself? It is the second of the polymer series of the Bank of England and it will enter circulation on 14th September 2017. The features everybody will be looking at are on the back of the note: the 1870 portrait of Jane Austen, adapted from an original sketch by her sister Cassandra Austen in 1810. Next to the portrait is an illustration of Elizabeth Bennet, the main protagonist of *Pride and Prejudice*. The quote below the portrait ‘I declare after all there is no enjoyment like reading!’ came in for some criticism, as it was spoken by one of the novel’s most deceitful characters, Miss Bingley, who, *The Guardian* pointed out, had no interest in books, but only wanted to ingratiate herself with a possible suitor. Beneath this image is Godmersham Park House, the estate owned by Jane Austen’s brother. The foil image over the window is Winchester Cathedral, where Jane Austen was buried in 1817, aged just 41.

## AND HOW IT FITS INTO THE SECURITY FRAME

From a security printer’s point of view, the interesting things happen at the front of the note, although the security features closely follow those used in the £ 5 note. The majority of these features are foil based, although there is some intaglio printing, such as in the “Bank of England” line and in the bottom right corner around the £ 10. There is of course the large portrait of the queen, which is repeated in the extension of the see-through window, where she is, however, looking, in the opposite direction. The window itself shows a finely detailed metallic image of Winchester Cathedral. The foil is gold on the front of the note and silver on the back of the note. When the note is tilted a multi-coloured rainbow effect can be seen. There are several other foil features, such as a colour changing quill, a patch, where the word

Ten changes to Pounds and another patch showing the coronation crown in an apparent 3D effect. On the back of the note, there is a book-shaped copper foil patch, which contains the letters JA. It is immediately behind the silver crown on the front. The new Ten is the first note to have a new tactile feature to aid the visually impaired, a series of raised dots in the top left-hand corner. Following notes will also have such identifying marks.

At the end of his presentation, the Bank of England Governor, Mark Carney, made a very significant observation: "Our banknotes serve as repositories of the country's collective memory, promoting awareness of the United Kingdom's glorious history and highlighting the contributions of its greatest citizens. That tradition continues with the new ten pound note." ■

## CLYDESDALE BANK LAUNCHES ITS SECOND POLYMER BANK NOTE

Scotland's array of polymer £ 10 notes. Image:CSCB



When the Bank of England's new £ 10 note enters circulation on September 14th, it will be followed by another £ 10 note just one week later. This one is issued by Clydesdale Bank and it will circulate in Scotland only. Just like its Bank of England counterpart, it is printed on polymer and will include a Spark Orbital security feature and a window, overprinted with optically variable ink showing the outline of Scotland. Just like the Clydesdale £5 note, which was issued last year, it will feature Robert Burns, the famous Scots poet who died 221 years ago, as well as the landscape of the old and new towns of Edinburgh.

The Bank of England has the monopoly to issue banknotes only in England and Wales, while three banks in Scotland and four in Northern Ireland have the right to issue their own Pound Sterling notes. The Bank of England however, regulates the banknote issues of banks in Scotland and Northern Ireland. This system may be rare, but it is

While in the 19 countries of the Euro zone, Euros look the same, whichever member country you are in, in the UK there are seven different Pound Sterling notes in circulation. Vive la difference.

not unique. Hong Kong and Macao in China have a similar arrangement.

Banknote issuing in the UK may seem a little confusing for outsiders. In Scotland, as well as Clydesdale Bank, the Bank of Scotland and the Royal Bank of Scotland can issue pound notes. In Northern Ireland it is the Bank of Ireland - which should not be confused with the Central Bank of Ireland in the Republic of Ireland, which is part of the Euro zone - the First Trust Bank, Ulster Bank and Danske Bank that also issue pound sterling notes.

The £ 10 note carrying the logo Danske Bank is not - as the name implies - a Danish banknote, but a Northern Ireland one, issue by what was formerly the Northern Bank, that was acquired in 2012 by Danske Bank of Denmark. While the denominations issued by the Bank of England are the £5, £10, £20 and £50 notes, in Scotland and Northern Ireland one can also get £100 notes and the Royal Bank of Scotland continues to issue £1 notes, which in the rest of the UK have been replaced by £1 coins.

In Northern Ireland, both the First Trust Bank and the Danske Bank start their denomination line-up with the £10 note and do not issue any £5 notes.

### POLYMER AVANT-GARDE

In recent years, Scotland's banknote issuing banks have become the champions of polymer banknotes. In March 2015, the Clydesdale Bank became the first bank in Great Britain to issue polymer banknotes, their £5 to commemorate the opening of the Forth Bridge. Later the Bank of Scotland and the Royal Bank of Scotland followed suit with their own polymer £5 and both banks will also follow the Clydesdale Bank in issuing £10 polymer notes. The banks will keep their paper notes in circulation and withdraw them gradually as they become unfit for purpose. ■

## INSIGHTS INTO THE FUTURE OF CASH

Cash transactions are notoriously difficult to quantify and extrapolating the future of cash is also largely dependent on which side of the argument the commentator is on. Central banks provide some objectivity in this, as a speech by the Chief Cashier of the Bank of England showed.

Not all that long ago, people talked about their pay packet, meaning how much they earned in a week or a month. The pay packet usually was a brown envelope that contained a pay slip and a number of banknotes, the salary. Most weekly paid employees took this money home and some, usually the monthly paid ones, put it into their bank accounts. Now the pay packet is mostly euphemistic and just about everyone in the developed world has a bank account into which salaries or any other monies received are paid directly. And instead of going to our bank branch to withdraw cash, we draw it from any cash dispenser, or ATM. It seems like a small change, but it was one that not only made lives easier, as Victoria Cleland, Chief Cashier and Director of Notes of the Bank of England (BoE) said in a recent speech, but one that changed the fortunes of the payments industry profoundly. Ms. Cleland was paying tribute to the cash dispenser, the first of which was installed on 27 June 1967, fifty years ago, in Enfield, North London. In 1972, following innovation from the cash industry, the machines were linked to a central system enabling the 'on line' cash withdrawals most of us now use.

In her speech, entitled 'Insights into the future of cash', Ms. Cleland not only celebrated the ATM but she gave some insights into the development and use of cash. It is well known that demand for cash continues to grow. The value of BoE notes in circulation peaked before Christmas 2016, at over £70bn - an increase of 10 per cent on a year earlier. This is the fastest growth in a decade, and a giant leap compared to the £2.9bn when the ATM was born. The same trend holds in other countries, such as the US, Canada, Australia and the Euro Area, which all have annual growth in the 5 to 10 per cent range; some countries are well in excess of this.

There are some outliers, e.g. Sweden, where the value of notes in circulation has been falling for a decade, and Norway, which saw a slight decline in demand. Yet, even in Sweden, cash still accounts for around 15 per cent of sales and a new series of banknotes were issued recently. In the UK, in the area of payments for transactions, cash use fell 11 per cent to 15.4 billion between 2015 and 2016 - although cash remained the most frequently-used payment method accounting for 40 per cent of all payments and 50 per cent of spontaneous payments. Much of the movements are due to consumer choice, such as online shopping, contactless cards and mobile payments, etc. Worrying about the survival of cash is mainly a

western preoccupation. Globally there are over 500 billion banknotes in circulation (nearly 80 per adult) and cash accounts for 85 per cent of transactions.

The total value of cash spending in the UK has stayed relatively stable over the past decade, albeit with a quicker decline in 2016. ATM withdrawals, the main method of accessing cash, show that the aggregate value of withdrawals have also stayed relatively stable, with an average of £192 billion being withdrawn each year over the past decade. However, domestic spending only accounts for a relatively small portion of cash in circulation, between 21 and 27 per cent in 2014.

Ms Cleland warned that what could change the transactional demand for cash are the relative costs of payment methods to retailers. Whilst cash is relatively cheap to process - 0.15 per cent of tender value compared with 0.22 per cent for debit and 0.79 per cent for credit cards, the gap is narrowing. Were this to reverse, merchants may look to nudge customers away from cash. Ms. Cleland also said, actions from government, for example electronic payment of state benefits, could influence spending behaviour.

About three quarters of UK cash is not used for domestic transactions, but held overseas or used as a store of value. Some, of course, is illicitly used in the 'shadow economy', although the government said that the value of uncollected tax has been broadly stable in the last decade, a time when demand for cash has increased 75 per cent. This would suggest that, contrary to some commentators, the shadow economy is not a key contributor to the strength of cash demand.

Ms. Cleland sounded a confident note when she said that «it is crucial that we as a central bank, with a core objective to maintain public confidence in the availability, quality and security of the currency provide cash that is fit for the future.»

Like a postscript, in July, a few weeks after Ms. Cleland's speech, the British Retail Consortium, an industry group, announced that cards now account for more than half of all retail purchases, and contactless payment cards now account for about a third of all card purchases, up from 10 per cent as recently at October 2015. *The Guardian*, who reported this story, thinks that the latter may be a worrying trend, if one subscribes to the theory that these cards make it too easy to spend money. The

newspaper quoted Niro Sivanathan, an academic at the London School of Economics, who said that parting with cash is “psychologically painful”, but that paying for items with a contactless card “anaesthetizes the psychological pain that accompanies payment, seducing us into splashing out”.

The Bank of England had indeed lately been fretting about rising domestic debt, without a corresponding rise in wages. In a speech at the University of Liverpool, the BoE’s Alex Brazier, said

that consumer credit has been growing very rapidly. In the past year, outstanding car loans, credit card debt and personal loans have increased by 10 per cent, while household incomes have risen by only 1.5 per cent. That debt can pose dangers to the wider economy. It may be fanciful to blame credit cards and especially contactless ones for rising consumer debt, but seeing a reduction in the number of banknotes in your wallet and checking your credit balance weeks after a purchase are clearly two very different experiences. ■

## THE FUTURE OF MONEY: TO BE UNCHAINED?

**Intergraf’s Security Printers Conference 2016 in Seville ended with a panel discussion, in which prominent representatives of ID issuing authorities, security printers and suppliers discussed ID documents of the future. Before the discussion, the moderator, consultant and author David Birch, gave a presentation in which he linked identity to new payments systems, especially those that use mobile phones, which obviously do not need cash. Cash, he thought would and should fade away. He probably did not convince any of the panellists or many people in the audience that both physical identity documents and cash are doomed, but it was a highly interesting session.**

Continuing this train of thought, David Birch has just published a book, “Before Babylon, Beyond Bitcoin: From Money that We Understand to Money that Understands Us” in which he traces the history of money and advances a theory about the form, money will take in the future. He points out that money has evolved over time to suit the needs of society and the economy. When one form of money became too inflexible, it was replaced by another kind, in the way in recent memory, cards replaced cheques.

Mr Birch thinks that even cards are too cumbersome and that the future will be in smartphones. “With payment cards, you could pay retailers. With mobile phones, people can pay each other. And that changes everything,” he writes. Future payments will be ‘frictionless’ and be carried out mainly by smartphone, such as when using the ‘Uber’ car ride service. The app already has the credit-card details and the charge is deducted automatically. The same may soon apply in supermarkets. But can technology alone predict the future of money?

Mr Birch thinks it does and future monies will reflect existing shared identities. The common bond could be the local town, say, or enthusiasm for a football club, or the environment, etc., who will each have their own currency. Money will be dematerialised and a distributed ledger (a key element of bitcoin) will track transactions made in thousands of different currencies. Cash as we know it, will disappear. The exchange rates between multiple different currencies will be managed by smart phones. We will, Birch thinks, eventually be able to leave all this payment stuff to the internet of things.

It is interesting to see how two prominent economic publications, ‘*The Economist*’ and ‘*The Financial Times*’ detect different flaws in Birch’s arguments. The *Financial Times* thinks that Birch has underestimated the political dimension of money. Not all such currencies will be accepted by all vendors and

the danger that competing, virtual currencies would pose to any broader community is real. At a time when the public sphere is being eroded, can we really afford the monetary version of social-media bubbles?

Money has been tied to authority of one kind or another for a long time, although the idea of money as issued by national or transnational central banks is fairly recent. Also, most money today is produced by private, commercial banks whenever they make loans. Birch therefore suggests that we abandon central banks and state-defined money, in order to embrace alternative currencies. For him, these have the advantage of circulating among already existing communities (unlike the Euro, for instance, which was launched with the hope that a single currency would help create a sense of shared identity). Since money is, he argues, simply a way of tracking who owes what to whom, it makes sense for it to be generated by the communities in which those debts were incurred. This means that payments would be separated from the rest of banking. But his idea that we would then leave it to our devices to sort the conversion rates is simple techno-utopianism.

*The Economist* finds another flaw in the argument. Money has to perform as both a means of exchange and a store of value. Would that be the case if there were a vast number of competing and unofficial electronic currencies?

The temptation for some communities to keep issuing money would certainly be great; those electronic currencies might suffer rapid depreciation. Some currencies might be a lot less liquid (harder to get rid of) than others. At best, there could be lots of arguments with customers. Nor will central banks willingly lose control of the money supply, with all the potential adverse effects to economic management. The future may be mobile but it will not be as anarchic as the author thinks, *The Economist* writes. Birch proposes some interesting ideas, but, just to get back to reality, even MasterCard estimates that around 85 per cent of retail payments worldwide continue to be made in cash. ■



## Change and continuation

In June 2017, Clemens Berger became Chairman of the Management Board of the German banknote substrate and security foil producer Louisenthal, succeeding Dr. Wolfgang Seidemann, who became CEO of Giesecke+Devrient Currency Technology in November 2016. Infosecura's editor spoke to Clemens Berger about banknotes, the company and its evolution from a banknote papermaker to a company that offers complete solutions for banknote substrates including the most sophisticated security features.

Louisenthal, which used to be known as Papierfabrik Louisenthal, was acquired by G+D in 1964 and is the largest global private supplier of banknote substrate and foil-based security elements. Louisenthal is a fully owned subsidiary - the Germans call it 'daughter company' - of G+D Currency Technology, supplying not only the parent company, but also dealing directly with central banks and print works all over the world.

Before he took over as Chairman of the Management Board of Louisenthal, Clemens Berger used to be the Director of Sales of the company. He explained that the make-up of the company is strongly customer-oriented. Louisenthal has two manufacturing sites, one in Gmund am Tegernsee in Upper Bavaria and one in Königstein in Saxony. These geographically separate sites allow the company to guarantee their central bank and print works customers a high degree of flexibility in supplying banknote substrates and security

features even in unforeseen conditions. Banknote paper is produced in both sites, foil based security elements in Gmund only.

### A SECURE TRANSITION

One would think that as the new chairman of the management board, Clemens Berger, is a 'paper man' through and through. After all, he studied material science at the Technical University in Helsinki, at a time when the association between Finland and paper was as strong as that between bread and butter, and after graduation he worked for German paper maker Haindl, the Finish paper group Myllykoski OY and US based XEROX as specialist for digital printing, before joining Louisenthal in 2001. It came therefore somewhat as a surprise to see his obvious enthusiasm for Louisenthal's newer role as a manufacturer of foil based security features, an area where the company occupies one of the top spots, with a yearly production volume exceeding 15 million m<sup>2</sup>.



Clemens Berger, the new chairman of the management board of Louisenthal

"Don't get me wrong", Berger said. "Banknote paper is our industrial base, which is very important to us and in which we will continue to invest important research and development resources. We are the number one producer of banknote paper globally, with an output of more than 20,000 t per annum, but we have broadened our portfolio, and we supply our customers, central banks and print works, with banknote substrates as well as integrated security features."

As proof of the company's full integration he showed a sample sheet for a future commemorative banknote for Armenia, which uses Louisenthal's 'Hybrid' durable substrate. It showed the traditional

three dimensional watermark, a laser-cut window of the same motif and a “RollingStar LEAD” optically variable device, OVD, with a symbol of the state that was repeated in the Galaxy security thread.

“There has been a shift in banknote production, which increased the value-added provided by the substrate. The security printing part is still very important and will remain, as it provides the tactile experience of banknote handling and also enables banknotes to be individualized through numbering. Most public security features, however, are embedded into the substrate or applied and overprinted,” Berger explained

#### A DIFFERENT WAY TO BE BRILLIANT

Applied optical variable security features often use holographic techniques, but not all do. Berger explained that Louisenthal’s flagship security feature, the “RollingStar LEAD” OVD does not depend on holographics for its effect but on arrays of micro-mirrors that create vivid movement and colour change. The new emphasis on substrate and integrated security features also means that the design of a banknote is much more closely linked to the substrate than before.

Classic printed security features, such as the see-through feature or micro printing need an active interest and some knowledge on the part of the user. They are often visually linked only to another feature like the watermark and the main portrait on a note. New features such as volume holograms and micro-mirror features such as the RollingStar are self-explanatory and can be used to create visual links between any number of features. They are telling a story.

#### TELLING A STORY

Louisenthal’s new house note is a case in point. What Clemens Berger called the ‘water note’ (above) is a single-sided design study incorporating the security features RollingStar LEAD, a security foil and the RollingStar Registered security thread. Louisenthal describes the house note thus: “The design beautifully supports the security elements. The water on this banknote symbolizes both the sea and the undulating shape of a conch. On the security foil, both elements are mirrored in the printed design and in the watermark. The repetition of these elements helps to clearly identify the motifs and links them to each other. In the centre, the registered thread creates a three-dimensional impression of the seashell and reproduces the colours of the sea in the undulating waves as they change from blue to green.”

Specimen notes are often harbingers of new trends and this one certainly caught the eye of those that

decide on the future look of banknotes. The water note received the 2017 ‘Best House Note Award’ of the International Association of Currency Affairs (IACA). And as the highest mark of approval, voting for this award was restricted to representatives of central banks.

Visually and thematically linked security features are already used by a number of currencies, which does not mean that traditional features such as intaglio printing will disappear. It will however mean that security features will increasingly be part of the ‘content’ design of banknotes from the very beginning.

#### MARKET SECURITY THROUGH INTEGRATION

Asked about the increasing competition in the banknote substrate market, Berger thought that the attempts by the central banks of large emerging economies, such as India, to become self-sufficient in the production of banknote paper, may well lead to some consolidation in the private banknote paper market. Additionally, there are some niche products such as pure polymer substrates with a global market share of less than 4%. Composite substrates are also gaining market share because they offer better anti-soiling properties compared to cotton paper. His guess is that this consolidation will primarily affect those companies that offer the least integration between substrates and security features.

#### HYBRID - TOUCH AND FEEL OF COTTON COMBINED WITH POLYMER LONGEVITY

He is certain that even countries in transition will increasingly seek to improve the quality of their banknotes and try to lengthen their life in circulation. This is evidenced also by the growth Louisenthal sees in its ‘Hybrid’ substrate, which is now used in more than ten countries. Hybrid offers of course longer note life but it has the additional advantage for central banks that they can upgrade their banknotes to a long-life composite substrate without creating the shock and disruption a move to pure polymer would cause. Since a banknote printed on Hybrid feels much like a traditional paper note but offers longevity advantages similar to polymer, it can be introduced without an extensive and sometimes fractious publicity campaign.

In conclusion, Berger said that in the banknote substrate sector, Louisenthal “has always been known for the highest security available. And in today’s modern substrates, most of the security features come embedded in the substrate. We are also looking at adjacent business fields where our technologies and security applications can bring added value. Louisenthal is well prepared for the future.” ■

# Security and Design in Perfect Harmony



**The challenge of designing a new banknote series today is to comprehensively meet the requirements of all citizens as well as those of diverse commercial participants in the cash cycle. varifeye® ColourChange combines impressive functionality with appealing design that is clearly and instantly recognizable.**

These days, banknotes must be as visually appealing as they are secure and functional, and fit smoothly into the cash cycle. The harmonization of several security features, based on different production steps like print, foil, and paper, enhances fast and unambiguous authentication by the user. With varifeye ColourChange, G+D Currency Technology has developed a very complex high-tech security feature that also relies on intuitive perception.

“With varifeye ColourChange, the interaction between the window in the substrate and the foil creates dynamic and colorful images, making the banknote truly eye-catching,” claims Dr. Alfred Kraxenberger, Managing Director of R and D, Technology, and Operations at their Louisenthal subsidiary.

The banknote’s front is enhanced by foil with micro-mirror technology, colors and movement effects. On the back, a finely lasered window provides an additional motif. “If a person holds the banknote up to the light, the translucent window appears shimmery blue in the foil motif. This transforms the LaserCut and high-tech foil into a secure window, which is very easy to authenticate”. The effects are visible even in poor light conditions.

Unlike most other foil elements, varifeye ColourChange is suitable for the integration of additional high-tech design elements on the foil. For security printers, the feature offers four key advantages:

**DESIGN FREEDOM:** Many security features can be used to supplement the design diversity of varifeye ColourChange.

**PROVEN COMPATIBILITY:** The feature can be integrated into all production processes and substrates.

**PRINT EFFICIENCY:** Sheet pile stability and processability have been proven.

**SECURITY EFFICIENCY:** Registered application ensures uniform positioning of the feature on the banknote, thus allowing recognition of the full feature area from the bottom to the top and even on the reverse side of the banknote.

»The design beautifully supports the security elements.«

G+D Currency Technology is a proven global supplier that covers the entire banknote value chain. “We continuously see and understand what is required at each individual phase of the process, and anticipate emerging and future needs, which means we can continually improve the cash cycle,” adds Kraxenberger. ■

**varifeye® ColourChange offers:**

- Attractive and easily recognizable effects
- Window translucency enables color change
- Customized window shapes for special design effects
- Design integration front to back
- Brilliant dynamics
- Excellent counterfeit resistance
- Striking color effects
- Double-impact image source front and back

For further information, details, and contact, please visit:

[gi-de.com/ct](http://gi-de.com/ct)

## LIMITING CASH USE TO FIGHT TERRORISM: A RED HERRING

**In January 2017, the European Commission published a paper designed to judge public reaction to a possible EU initiative to harmonize cash payment limitations throughout the EU in order to combat terrorism funding. The Commission then launched an online public consultation process, which ended on 30 May. The results are now available online.**

One of the reactions to the consultation came from ESTA, the European Cash Management Companies Association. That ESTA was opposed to any restrictions on the use of cash comes as no surprise, but ESTA's opinion coincides very neatly with the vast majority of views expressed by the members of the public that participated in the consultation. It was not a large or very popular consultation, as only about 30 000 people responded, 94 per cent of them as individuals. The bulk of respondents came from Germany (37 per cent), France (36 per cent) and Austria (19 per cent). Response from the remaining EU countries was so low as to be statistically insignificant. In a number of EU countries, Cash Payment Limitations (CPL) are already in place and a majority of respondents from these countries found limitations too restrictive. Moreover 95 per cent of respondents would not agree to the introduction of limitations on cash payments at EU level, regardless of whether they lived in countries with or without existing cash limits.

In the following part of the consultation, the EU asked respondents to ignore their own answers

### VISA'S WAR ON CASH

**International payment card company Visa in July announced a big effort in the USA to convince businesses to go totally cashless.**

Visa has high ambitions; it wants to create a culture where cash is no longer king, the company said. To this end it announced the *Visa Cashless Challenge*, which will award a total of \$ 500 000 or \$10 000 each to 50 eligible small US businesses, such as restaurants, cafés or food truck owners, to go 100 per cent cashless.

'The food-based small businesses Visa is targeting are among those that benefit most from accepting cash. When transactions are for amounts less than \$10, the fees charged cut significantly into profits. Only 28 per cent of food trucks currently accept credit card payments because of the huge losses they incur from them. The bribe from Visa may seem appealing up front but will be mostly paid back to them over the next few years in fees alone,' commented the website *zerohedge.com*.

and imagine, that the EU would introduce CPLs and comment on any possible level. About 50 per cent thought that limits in that case should be set above € 9500. The main arguments against limitations on cash payments were given as cash being essential for personal freedom (87 per cent), convenient (66 per cent), that restrictions on cash payments hamper business and that they are ineffective in the combat against terrorism financing and tax evasion.

### THE INDUSTRY RESPONSE

The last point was also mentioned in ESTA's submission in response to the public consultation. It states that empirical evidence is not very flattering for CPLs, as they have not addressed any of their objectives. Worse, countries, which have CPLs in place are often in a worse situation than those which have not. This should lead to caution when considering imposing CPLs throughout the EU.

ESTA also mentions that contemporary terrorism in Europe has radically changed in the last few years, possibly due to stricter anti-money laundering measures and stricter controls on international transfer of funds. This may have had the effect to push terrorism towards smaller, local terrorist cells, which need fewer funds. Sums involved in the organisation of terrorist attacks in Europe have reduced drastically to a very low level. The amounts at stake would in most cases remain below a 'reasonable' threshold of CPL, meaning that their EU harmonisation would be ineffective. It should also be noted that payments for terrorism purposes are almost impossible to detect. ■

It is perfectly understandable that card companies want to do away with cash, as they charge a processing fee for any card transaction. Visa, however, claims more altruistic motives for its 'war on cash' that Visa spokesman Andy Gerlt proudly proclaimed after the program was announced. The company said that it had recently conducted a study that found that if businesses in 100 cities changed from cash to digital, their cities will have net benefits of \$312 billion per year. According to this study, in New York City alone, businesses could generate an additional \$6.8 billion in revenue and save more than 186 million hours in labour, by making greater use of digital payments. This amounts to more than \$5 billion annual costs savings for businesses in New York. It will be interesting to see, how Visa will justify these extravagant claims when the report is made public later this year.

Credit card and debit card fees are dictated directly by Visa and MasterCard and are imposed on the majority of merchants in a take-it-or-leave-it fashion. From the viewpoint of the public, Americans have

run up a staggering \$1 trillion in credit card debt with an average interest rate of over 16 per cent.

#### THE CASH INDUSTRY REACTS

The ATM Industry Association's reaction was swift and forceful: "By paying these food service owners \$10,000 to reduce their customers' payment choices, Visa Inc. has elevated its commercial interests above the public interest in America," comments Mike Lee, CEO of ATMIA. "This may seem to Visa like an offer that can't be refused, but

these money 'rewards' actually send out a message that the underlying business proposition must be unpalatable to both consumers and merchants when stripped of its \$10,000 sweetener."

ATMIA continues: "This constitutes digital discrimination and bad industry practice. Societies should cater to all their citizens, including the unbanked, underbanked and the digitally disadvantaged. Attempting to buy loyalty in this crude manner will never triumph over basic freedom of choice." ■

## ALMOST 3 OUT OF 4 AUSTRALIANS DON'T CARE ABOUT MOBILE PAYMENTS

**The onward march of mobile payment the world over is relentless, or so it seems. However, the perception that mobile payments are becoming the dominant way to spend money seems to be based on hype.**

An Australian publication (Finder.com.au) recently published an article, which claimed that in spite of the launch within the last 18 months of Apple Pay, Samsung Pay and Android Pay in Australia, the average Australian credit and debit card holder doesn't really care about mobile payments. Only just over a quarter of Australian smart phone users have used their phones to make a banking transaction, the vast majority, almost three quarters have yet to use their phones to pay for a purchase.

Most major Australian card issuers are either linked to Apple Pay, Samsung Pay or Android Pay or have their own contactless payment apps, but the public does not seem to be much interested in the new technology. It is not that Australians are slow in using contactless payments. In 2016, Australia was even named a leader in contactless payment technology. The country quickly adopted contactless card technologies such as Visa payWave and Mastercard PayPass. But payments per smartphone seem to be different.

The article mentions that almost 1 in 10 Australians (9 per cent), find no benefit to using smartphones for payments and another 43 per cent of Australians are not using mobile payments because they're satisfied with using either card or cash. So, with these sentiments in mind, it could be the lack of additional value or features that is stopping cardholders from using their smartphones to make contactless payments.

More importantly, the remaining 20 per cent of respondents hadn't used mobile contactless payments because they don't trust the security of the technology. As digital wallets are protected by encrypted technology and a unique Device Account Number, this reluctance may be more due to unfamiliarity and lack of experience than to any real technical threats. ■

## NEWS

### KURZ joins board of International Currency Association

Peter Mühlfelder, Head of Business Area Security at Leonhard Kurz and Managing Director of OVD Kinegram AG, has been elected to the board of the International Currency Association (ICA) on 14 May 2017. With two other newly appointed members, he will be part of the ICA's nine-person executive committee for the next two years.

### UK wants its digital ID scheme to work globally

The Government Digital Service (GDS) is investigating the international interoperability of GOV.UK Verify and the potential to enable UK citizens to use their Verify accounts internationally. A document on the Digital Outcomes and Specialists (DOS) marketplace, outlines how GDS is looking for a partner to support building the capability of the UK's digital identity scheme to enable UK citizens to use a Verify identity to access services abroad.

The scheme of work is to scope the feasibility of potentially connecting Verify to the eIDAS framework and provide sizings and estimates for the next phase.

# ENHANCING THE RELIABILITY OF AUTOMATIC DOCUMENT INSPECTION AT OUR BORDERS

The author of the article is John A. Peters, Manager, New Business Development of OVD Kinegram in Zug, Switzerland, member of the Kurz Group, which has sponsored this article.

**Over the next 10 to 15 years digital verification using biometrics will become mainstream at our borders, but it will not be a panacea. Digital processing of complex physical security features using automatic document readers will be used to complement biometric verification to enhance efficiency and security at our borders.**

According to the 2016 annual report of the World Tourism Organization, there were almost 1.2 billion international tourist arrivals in 2015 - almost double the figure for 15 years ago. The report also predicts that the number of international tourist arrivals will reach 1.8 billion over the next 15 years. Interestingly, there will be an increasing proportion of arrivals to the emerging countries, and that in 2030, 60% of the arrivals are expected to be in the emerging countries.

We are all aware of the challenges this imposes on all stake-holders: Travelers want to move through the border crossings more quickly; airports cannot afford to install extra resources proportionately; and, every law-abiding citizen wants more security.

Fifteen years ago, the inspection of travel documents was carried out predominantly manually with occasional machine reading of the optical characters in the machine-readable zone. With the introduction of the chip-based biometric passports after 2005, machine-assisted manual inspected became more wide-spread. In more recent years and still today, we are seeing the rapid emergence of automatic or semi-automatic border controls using e-gates or e-kiosks.

## THE FUTURE: WALK-THROUGH GATES

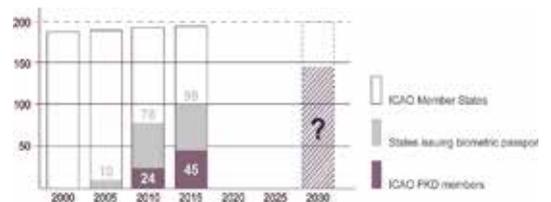
Over the next 10 to 15 years, the pioneers in border management processes predict the wide-spread deployment of so-called «walk-through» gates. These systems would be capable of capturing biometrics such as a facial biometric of the traveller on the move and simultaneously access biographic data using far-field communication from a physical token or a smart phone device.

In order to authenticate the identity of the traveller, the live captured biometric data would need to be compared with biometric data in recorded files. The recorded data must be stored either in a pre-registration database or in a chip embedded in a physical token or smartphone carried by the traveller. In any event, the identity can only be authenticated if these recorded files can be trusted. In the case of a pre-registered database, this is not usually a problem. However, in the case of the traveller presenting biometrics stored on a chip-containing physical credential, the use of a Public Key

Infrastructure would be required. The assumption is that the official government agency will have issued a valid credential to its citizen (the arriving passenger) after establishing sufficient evidence of his or her identity. The authentication system at the border crossing point will need to validate not only the Signing Certificate of the credential but also the Country Signing Certificate to be sure that the credential was indeed issued by the authorized government agency. In order to do this, the systems must also have access to the corresponding Country Signing Public Keys which are usually only available via diplomatic channels from the ICAO Public Key Directory (PKD).

Both the country of citizenship of the traveller and the country of arrival need to be members of the ICAO PKD in order to establish full trust in the digital data stored in the physical credential. This all looks good in theory and thus it begs the question: How much longer will we need a travel document with physical security features?

The past progression and current status of biometric passport implementation and PKD membership is shown below. In 2005, ten of the odd 190 ICAO member states started issuing biometric passports. Ten years later, in 2015 about half of the ICAO member states had announced the implementation of biometric passports, however less than half of those issuing biometric passports were members of the ICAO PKD. The situation today is not very different. With this historical background what can we expect over the next 10 to 15 years given that travel to emerging or developing countries will be predominant?



Most likely walk-through border controls will become main-stream for returning nationals and for pre-registered trusted travellers. However, e-gates, e-kiosks or similar (semi-)automatic border controls will still be needed for those travellers from foreign



## Optical Machine Authentication

### KINEGRAM PRIME

#### Check routines



- Locate printed lines (x, y)
- Check color of printed lines



- Locate metallic lines (x, y)
- Check for size and shape
- Check continuity in print-metal line position and line gradient



- Check color and brightness
- Check position of UV relative to metallized pattern

illumination the colour, brightness and position of a background UV image are checked.

Usually, counterfeiters create «look-alike» images which are good enough to fool the untrained human eye but they do not bother about precision. Imperfections in registration between metal and print are not easy to identify with the human eye but they can easily be confirmed using a document reader with appropriate software algorithms.

### KINEGRAM PRIME

#### Check routines



To put this back into perspective, it is suggested that automatic document inspection processes as well as the machine-assisted manual inspection processes can be made more reliable and secure if the document readers are capable of inspecting complex security features such as Kinegrams. However, for each document model this requires pro-active collaboration between the security feature provider, the document designer and the document reader manufacturer.

To conclude then, while digital verification using biometrics will become mainstream, sophisticated physical security features such as the Kinegram will not only be useful during manual inspection processes, but they will also be integrated in the digital inspection processes at automatic border controls. ■

## A PLAN FOR ACTION ON ID DOCUMENT FRAUD

Identity document fraud is one of the major headaches of the European Union, as it is seen as a facilitator for crime and is linked to terrorism and illegal migration. The EU has the problem that security standards for ID and travel documents are set at EU level, but the documents are produced and issued by the member countries. The European Commission's main role is therefore to recommend, warn and cajole.

The years 2015 and 2016 were unprecedented in the number of illegal migrants arriving in Europe. Many came from war-torn Syria, Iraq or Afghanistan but many also came from countries that were not at war. They simply came to escape hunger and to find a better life. The reactions to this influx in Europe ranged from heart-warming to hostile, and they forced Europeans to examine the generally held assumption that European countries are not countries of immigration. Historically, this claim has always been shaky, but whatever the general opinion, migrants arrived and had to be 'managed'.

Many came without identity documents and many others had ID documents that were forged or counterfeited, because behind this stream of misery were people that profited from it, people smugglers and counterfeiters. Travel document fraud also came under the spotlight in the context of the terrorist attacks in several European countries.

Document fraud has become an enabler of terrorism and organised crime and EU travel documents are in high demand among fraudsters. There are several methods criminals use, but 'look alike fraud' and obtaining authentic documents on the basis of false 'breeder' documents (birth, marriage and death certificates) remains one of the biggest threats, as it is very difficult to detect.

In December 2016, the European Union adopted an action plan that aims to improve the overall security of travel documents issued in the EU, including the underlying management infrastructure. It looks at concepts and processes to manage identity, identifies actions to close potential loopholes and proposes actions for member states, the Commission, the Council and the European Parliament. The Action plan further distinguishes measures on documents issued by third countries, which are limited to support and co-operation. In the EU, security standards for travel documents and border control requirements are set at EU level, while member states are responsible for breeder

documents and the actual production and issuance of travel documents, since these issues are closely related to nationality.

The action plan concentrates especially on registration of identity, issuance of documents, document production and document control. Under the heading of registration of identity, the plan seeks to strengthen the processes of registering the identity and to reinforce the security level of breeder documents. This is to be done by sharing best practices on identity registration and management of population registers such as late-in-life registration, first-time applications and name changing. Also suggested are ways to find out how breeder documents can be made more fraud resistant, e.g. by increasing R&D activities and to promote the use of the Europol handbook of breeder documents. The Commission will also work with third countries to promote and support the introduction of biometric identifiers in population registers there and in member countries and assess the current situation in member countries.

The key objective with regard to the issuance of documents is to harmonize the issuing procedure and reduce the number of stolen documents. There are agreed recommendations on issuing procedures and these should be followed, the plan insists with best practices on this and on biometric enrolment being exchanged. Another urgent task is monitoring of issuance of identity and travel documents to prevent theft of blank documents.

On document production, the Plan asks member countries to improve the overall security level of travel documents, ensure their conformity with EU law and to promote training and guidance to address biometric data quality and vulnerabilities. It also calls on the European Parliament and the Council to adopt as soon as possible the proposals on a more secure uniform format for visas and residence permits for third country nationals to avoid further fraud. For its part the Commission will monitor the conformity of security features in travel

documents; (interoperability tests will be carried out in Ispra from 26-28 September 2017) and develop further guidance for the correct enrolment of biometric identifiers.

It also promises to finalise a study on EU policy options to improve the security of EU citizens' ID cards and residence documents against fraud and forgery risks in view of a possible legislative initiative by the end of 2017. Finally, the plan calls for the modernisation of security features of Emergency Travel Documents.

Recognising that the effectiveness of ID documents is only as good as the controls, the action plan calls for adequate access to control systems and tools, improved data and information exchange to enable the correct verification and electronic authentication of travel documents. It also recommends to ensure timely registering of information on relevant databases as well as access to training initiatives in new areas of document fraud. Member states should therefore systematically register all stolen, lost, misappropriated or invalidated documents in the Schengen Information System (SIS) and Interpol's Stolen and Lost Travel Document (SLTD) database.

It is also necessary to ensure that border guards have better access to relevant systems and that the implementation of the fingerprint search functionality in SIS is speedily advanced. Furthermore, data collection and information exchange on document fraud needs to be improved. The Commission has adopted the new legal basis of the SIS to enhance the functionalities of the system and will provide for a regularly updated list of certificates needed for the electronic authentication of travel documents. It will also boost training activities in new areas of document fraud.

The action plan is now being implemented. The Commission will assess the progress made on the implementation and will report to the European Parliament and the Council on the progress achieved by the end of the first quarter 2018. ■

## AUSTRALIA'S PASSPORTS IN THE DIGITAL AGE

Last year, news that Australia was thinking of abolishing physical passports and replacing them with virtual passports in the cloud hit the Australian and international press. Politicians commented on the plans and expectations rose but details remained scarce. At a presentation in London in July, David Chadwick, Director of Passport Standards and Biometrics at the Australian Passport Office finally replaced speculation with facts.

He said that the Australian Passport Office (APO) is busy doing a number of things to improve the use of passports in Australia. It is redesigning the passport processing system in order to move to full online applications as well as redesigning the facial recognition system. Data matching arrangements are also being upgraded with a facial recognition and a facial identification system. There is also research being done into new facial recognition capabilities and new approaches

to human comparison of faces. One of the strong points of Mr Chadwick's department is collection of research data. Instead of giving such data away to other government agencies and eventually even to private businesses, the government has created a secure central hub that is accessible to e.g. border agencies, police, etc. and where information is instantly available.

The department's research concerns two areas, a technical one and one centred on human perceptions and capabilities. The former explores new approaches in algorithm processes and novel uses of algorithms. In the latter area the department is working on ways to improve human comparison results. Both approaches are vital, as even the best human comparison approach in the world is useless, if the system does not find a match. On the other hand, the best automatic facial recognition system is useless if the human checkers miss a match that is presented to them. Matching unknown faces is notoriously difficult and there are even people that appear to be 'face-blind'.

One of the promising lines of research for the department is to use the 'wisdom of the crowds', which would distribute a small number of face comparison tasks to be performed by a large number of part-time checkers, e.g. all the employees of the passport office, rather than all checks by a small number of full-time checkers. Tests have shown that in spite of great individual differences in face comparison performance, such large number of checkers achieve almost 100 per cent accurate results. Mr Chadwick also said that his agency would present exiting (technical) research results in late 2017.

The next projects of the Australian Passport Office are the complete redesign of the Australian passport, the R series, with a move to a polycarbonate data page and a new design for the visa pages, based on a 2-page spread design showing Australian landscapes. This is a 5-year project.

#### THE DIGITAL PASSPORT

Coming to the digital passport, Mr Chadwick emphasized that the Australian digital passport will not replace the conventional passport, but supplement it. The basis of the digital passport is the chip, which contains data that is tightly controlled by the ICAO standard 9303.

The information on the chip can be electronically authenticated to prove that it has not been altered and that it was signed by the country that wrote it. This information is the logical data structure or LDS. The Australian ePassport contains 4 binary objects or files: DG1- MRZ, DG2 - a facial image

in jpg format, DG15 - active authentication public key info (not used) and EF.Sod - hashes and DSC - used for passive authentication. To eliminate transmission issues, the four binary objects are Base64 encoded. The complete package has a size of 50k.

The information contained in the LDS can be extracted and sent electronically as part of the Advanced Passenger Processing procedure and it is the same as if the border guard in another country has the physical passport of a person in front of him. This information can be trusted and it can be received at a border or an airport even before a traveller arrives. The Australian Passport Office has created 1 million of such files for trial purposes and it is now working with other government agencies to expand their use.

One of the trials involved an electronic gate with a facial recognition device, which takes a photo of the person that approaches. If a matching picture is found in the database, the person can pass. This early trial was very successful and the Australian Passport Office is now moving on to the next stage.

In the future this query/response system might be used for passengers checking in online or in person, whereby immigration can read the digital passport and thus speed-up the border process and increase security at the same time.

To use such a scheme internationally would require agreements with different countries, which would enable participating countries to query each other's databases. Talks about such a scenario have already been held between Australia and New Zealand. But Mr. Chadwick insisted that any agreement between countries must be based on standards in order to succeed and considering that there are over 190 different countries, success will be slow in coming.

The planning for Logical Data Structure 2, which takes into account visas, etc. is well underway at the relevant ICAO Technical Working Group. Additional security is also another aspect to be considered. Currently most visitors to Australia need a visa. Visa applications could be sped-up and made more secure if an electronic copy of the passport (LDS) would be included in the application.

At ICAO, Australia is favouring a digital passport, while other countries may favour passports that use smartphones. It is still early days and the final form of such programmes has not been decided. In future, Australians applying for a passport may be offered a digital version along with the physical one, but, Mr Chadwick thinks, it will be a very long time before the physical passport will disappear. ■

## ID AND PRIVACY FOR BILLIONS



**Aadhaar, a hugely ambitious ID programme for India, was very successful in giving over a billion Indians a documented identity. But now critics say that legislation to protect citizen's privacy has not kept pace with the technology.**

**B**ack in March this year, the chief economist of the World Bank, Paul Romer, gave India's Aadhaar ID programme very high praise. "The system in India is the most sophisticated that I've seen. It's the basis for all kinds of connections that involve things like financial transactions," Bloomberg quoted Paul Romer as saying. It is therefore rightly considered a success. Aadhaar, a 12 digit unique-identity number issued to all Indian residents based on their biometric and demographic data, is certainly the largest of such schemes in the world. In mid August, it had over 1,17 billion enrolled members, and the Unique Identification Authority of India (UIDAI), which administers the scheme and collects the data, claims that 99 per cent of Indian residents, aged 18 and above, have been enrolled. The definition 'residents' is important, as carrying an Aadhaar card is proof of identity, but not of citizenship. The main component of the system is biometric data, although proof of residence is also required. On enrolling, a passport-type photograph of the candidate is taken, as well as fingerprints of 10 fingers and an iris scan of both eyes.

The original idea of Aadhaar in 2010 was to provide better security in the country, especially in the wake of the traumatic terror attacks in 2008. Another aim of the scheme was to tackle corruption and ensure that food handouts and employment opportunities for poorer people were handled more fairly. The government hoped the scheme would prevent corrupt officials from faking the names of people seeking welfare benefits or access to education - potentially saving billions of dollars.

It is difficult to judge how well Aadhaar did in meeting these goals, but it certainly played a role in last year's abrupt withdrawal of the 500 and 1000 Rupee notes that brought large scale - if temporary - chaos to the Indian economy. The Prime Minister, Narendra Modi, was able to make this move as Aadhaar enabled Indians of any social class without a bank account to open one. The government even 'encouraged' banks to open zero Rupee accounts - in effect empty accounts - for the hitherto unbanked, who only needed to give their Aadhaar numbers as identification. This enabled them to deposit any now worthless 500 or 1000 Rupee notes they had, which exceeded the 4000 Rupee exchange limit and thus avoid losing them.



### PRODUCTION AND PERSONALISATION OF HIGH SECURE ID DOCUMENTS



4,000 ANTENNAS/HOUR



LARGE FORMAT HIGH-SPEED WIRE COIL EMBEDDING - WCE2000



SHEET TO SHEET - REEL TO SHEET - REEL TO REEL

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Mr Modi later on gave another reason for his move, saying that it would encourage India to switch from a cash economy to a digital economy.

#### AADHAAR AND PRIVACY

Although Aadhaar is a great bonus to the many millions of Indians who live in rural areas, it has recently been criticized for lack of privacy protection. India's Supreme Court has ruled that privacy is part of the fundamental right to life and liberty guaranteed under the country's constitution, which has potential consequences for Aadhaar.

Officially Aadhaar is a voluntary scheme and in 2013, the Supreme Court issued an interim order saying that "no person should suffer for not getting Aadhaar". In March 2017, the Supreme Court affirmed that Aadhaar is not mandatory for getting welfare, though it can be mandatory for other purposes (such as income tax filings, bank accounts, etc.).

The World Privacy Forum founder and advisor to several governments, Pam Dixon, said legislation is struggling to keep pace with use of biometric identity systems resulting in a high risk to fundamental civil liberties and privacy, particularly in India. Europe, which has the most robust data protection laws is also vulnerable to 'mission-creep' and risks failing the 'do no harm' principle according to Dixon, writing in the journal *Technology Science*, in August.

In India, "despite its initial voluntary directive, no legislation has been implemented to support its roll-out and it has become impossible to access any government or public service, such as getting married or even buying train tickets without an Aadhaar number. Furthermore, with a failure rate of 49 per cent to match individuals in some regions such as Jharkhand, there are significant failings that could leave citizens unable to access key benefits or get to work", the World Privacy Forum wrote.

IT technology running ahead of legislation is not uncommon. "According to the World Bank, 50 per cent of countries with a national identity card system do not have any data protection legislation in place. The speed of technology advancements has made digital biometric systems much more accessible and enabled wide-scale use for policy-makers. India's Aadhaar program put technical deployment before policy development and continues to do so. These actions by the Indian government have led to a marked lack of protective regulatory controls, which has in turn resulted in detrimental 'mission-creep'. The government has failed to ensure that there are adequate safeguards in place to protect citizens." the World Privacy Forum continues.

#### AADHAAR TO GET ITS DAY IN COURT

Based on its historic ruling to make privacy a fundamental right under the constitution, the Indian Supreme Court recently agreed to hear petitions challenging various aspects of Aadhaar. These voice concerns over the infringement of the right to privacy, and over making Aadhaar mandatory for claiming social welfare benefits, as well as for filing income tax returns, and for obtaining and retaining a permanent account number, or PAN.

The *Hindustan Times* claimed that Aadhaar, which has information on more than a billion Indians, could be used for identity theft, government surveillance and security breaches. At least 21 Aadhaar leaks or data breaches have been detailed until April 27 this year, *Hindu Business Line* reported. In April this year, more than a million Aadhaar numbers were leaked by a government website in the state of Jharkhand. The glitch revealed the names, addresses, Aadhaar numbers and bank account details of the beneficiaries of Jharkhand's old age pension scheme. About 210 websites of the central and state government departments were found to be displaying personal details and Aadhaar numbers of beneficiaries, Parliament was informed during the monsoon session in July. A Punjab government website in August exposed the Aadhaar numbers of more than 20,000 people who applied for low-cost housing, the latest in a string of blunders that jeopardize citizen's privacy. Links were hastily removed but PDF files remained online a day after the leak was pointed out.

#### AADHAAR BRANCHING OUT

From its early days as a system to give all Indians, regardless of location, class or caste, a usable identity and unimpeded access to social services, Aadhaar has branched out in several directions, among them finance. The Indian government recently launched an Aadhaar card-linked payments system called Aadhaar Pay that will allow customers to pay using their biometrics. Aadhaar Pay is a new Android-based smartphone app which is directly linked to a customer's bank account. One of the attractions of the scheme will be that if transactions are made via Aadhaar, then no extra charges are levied, unlike debit or credit cards at POS machines.

The Unique Identification Authority of India has also launched an app for Android users. It is called mAadhaar and the idea behind it is that people can carry their Aadhaar card at any time on their smartphone and can produce it whenever required. The actual Aadhaar certificate on paper is not linked to a plastic card, but there is a card-sized cut-off section at the bottom of the document, that could be laminated to form a card.■

# INTERGRAF

## ISO 14298

Management of security printing processes



**ISO 14298** specifies requirements for the management of security printing processes. The security management system will enhance your organisation's resilience to risk and potential threats. Combined with risk assessment, this strengthens your business.



## CWA 15374

Security management system for suppliers to the security printing industry

**CWA 15374** specifies requirements for suppliers of products that include security features or for suppliers of services that ensure the physical security of printed matter manufactured by a security printing company, e.g. producers of inks, foils, security paper.

Achieve **conformity** - Experience **value generation** - Feel **trust**

- Secure your processes with the worldwide standards for the security printing industry
- Ensure information security via ISO 14298 as it is in line with ISO 27000
- Support your preferred supplier status and/or tender responses
- Manage and address security risks in your organisation with clear specifications
- Demonstrate how information systems and production processes are safeguarded
- Help to prepare for the unexpected
- Secure market differentiation

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