

INFOSECURA



Security
Printers 2018
in Dublin:
get ready to
be heard

A magazine for the security printing industry worldwide, published four times a year by Intergraf in Brussels and mailed to named members of the security printing community, such as security printers, their suppliers, banknote issuing, government and postal authorities as well as police forces in more than 150 countries.

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Timelines



Intergraf's Security Printers Conference and Exhibition in Dublin, from 21st to 23rd March 2018, will give delegates a valuable opportunity to talk about what is important for the industry. On page 4 we give an overview of the subjects the conference programme will cover. Companies and individuals in the industry have also been called upon to put forward suggestions for papers that will fill the framework of the conference. This is an ideal opportunity to be heard and you are invited to submit suggestions for papers until May 5th 2017.

Two important industry events have taken place during this last quarter, which we are eager to review in this edition of the journal. The two events are of course the sudden demonetisation of the 500 and 1000 Indian Rupee notes and the equally sudden withdrawal of the 100 Bolivar note in Venezuela. Without making a judgement on the necessity of these actions, both made clear that our industry can cope with extreme conditions. Both examples also demonstrated that cash is often used as a scapegoat for other issues. The allegation in the case of Venezuela, for instance, that persons or groups in Colombia were hoarding vast amounts of 100 Bolivar notes to harm the Venezuelan economy, has been proven not to be a very convincing claim in a hyperinflation situation, when the value of 'hoarded money' falls steeply every day. In the Indian case it was similarly claimed that a large number of 500 and 1000 Rupee banknotes were counterfeited and used to finance terrorism and that a very large 'black economy' was depriving the Indian state of urgently needed tax money. It's possible that there was something in both claims, but their presumed magnitude was likely wrong. These two examples also highlight that it is preferable for monetary policy to be managed by independent central banks.

Another important news item from the last quarter was the issuing of the new German passport. The editor pointed out the lack of visual drama in the design, compared to some other countries' new passports that dazzle the eye. But Germany's decision to retain a functional look is perfectly understandable, as a passport is after all an official document that has several functions. Firstly to identify the bearer and secondly to carry visas, entry stamps and exit stamps, which in the end blemish the visual appearance of a pretty visa page. To be entertaining or to show the beauty of the country and the greatness of its culture is not a passport's primary function; but the fact that there seems to be a 'fashion' trend among passports is in itself encouraging because it shows that issuers expect the public to take an aesthetic interest in the documents they carry.

Also in the last quarter: The decision of Royal Joh. Enschedé to close its banknote division and stop printing banknotes altogether, opting to focus instead on printing stamps, visas and tax labels, 'brand protection', and 'anti-counterfeit' measures. The closure of Royal Joh. Enschedé's banknote division will unfortunately lead to a considerable loss of jobs.

More cheerful news came from Malta, where De La Rue reversed its decision to close its banknote printing facility and to integrate it instead into the newly created Centre of Excellence for Identity and Security Print. This means that there will now be two banknote printing works in Malta, as Crane Currency is also poised to open a new factory there in 2018. The ground breaking took place already in December 2016.

Editor

A handwritten signature in blue ink that reads "Manfred Goretzki".



EXPANDING HORIZONS

In a conversation with Infosecura's editor, the new chairman of Intergraf's Committee of Experts looks at the challenges ahead for the Security Printers Conference and the industry as a whole and expresses his determination to meet them head on. Having an analytical mind and lots of experience, as well as a sense of humour will certainly help to overcome future challenges, together with the hard work of his colleagues in the committee.

In the previous issue of Infosecura, we looked back at the history of Intergraf's *Security Printers Conference and Exhibition*, when we talked to the retiring long-time Chairman of the Committee of Experts, Efthimios Matsoukis. At the last conference in Seville, Mr Matsoukis handed the baton of chairmanship of the Committee, responsible for the content of the conferences, to his successor, Dr Dieter Sauter, Managing Director, Banknote Printing of Swiss company Orell Füssli Security Printing Ltd. Although he heads a company that will soon celebrate its 500th anniversary, Dieter Sauter, a trained physicist, has none of the measured ponderousness one would expect from the representative of such a venerable institution. Instead, he is full of enthusiasm for the future of our industry and its products. But he also clearly sees the challenges the industry, his company and the conference he is now guiding, are facing.

He started the conversation by stating that there are too many conferences and exhibitions for the security printing industry. This not only waters down the value of the discussion of the developments in the industry by too much repetition, it also poses problems, not least budgetary ones, for exhibitors, speakers and delegates, whether they come from the supplier side or from government agencies and central banks.

The positive side of this development is that it forces conferences to excel and to offer genuine value to the delegates. He thinks that *Security Printers* has been doing that throughout its history, but that is something that needs to be proved every time. In Intergraf's case it is the balance that counts: the balance between banknote and ID document sectors that are represented in the programme, between the interests of the banknote and ID document issuing authorities and between the supply and printing or producing industries. It is also a balance to examine practices and products used today and looking at and evaluating novel technologies and approaches. To use a common metaphor, we need to think outside the box, he said. This means recognizing that both branches of the

industry have fundamentally changed and that competitors who challenge us are not necessarily those that we have known for a long time. Our main competitors come from sectors that have nothing to do with banknotes or ID documents. The humble smartphone is a prime example of this.

Cash or cash-like payment instruments will remain for a long time, (as will physical ID documents), but they may look different and have different or perhaps additional functions. Even within the traditional banknote printing sector there are great challenges. Overcapacity is one, as is the move of some state-owned producers, especially in the Far East, to compete with private banknote printers, while taking advantage of their privileged position. At the same time, state printing works in some smaller countries have closed or are closing, such as in Norway and Denmark and in Belgium in the near future. While volumes of banknotes are still rising, it is the relative importance of denominations - small or large - that has changed in many countries. This is altering the use of banknotes in some countries and it points to the differences in the use of cash between developed and developing countries. And in the long run banknote volumes will decline.

These issues require new and creative thinking. Perhaps we should not be satisfied with forever embellishing banknotes for them to reach their most perfect state at the moment they become obsolete - as happened with sailing ships at the point when they were replaced by steam ships - but instead to think of them as a platform for further developments, capable of changing and adapting.

The *Security Printers International Conference and Exhibition* can play an important role in meeting the challenges faced by the industry, Dieter Sauter said. He passionately believes that collaboration, disseminating information and examining issues that concern us all - suppliers, printers and customers - can make a vital difference to our sectors and to society as a whole.

Dieter Sauter is presiding over a committee that has recently changed and Efthimios Matsoukis was not the only member to retire. The Polish member Tomasz Golinski was replaced by Ewa Leszczynska of Polish security printer PWPW, Martin Naber of the Dutch Federal Police and Intergraf's link to Interpol, announced his retirement and will be succeeded by his colleague Wietse van der Schaaf and, to add another link to an important police organisation, Dr Uwe Seidel joined from the Bundeskriminalamt, the German Federal Criminal Police Office. Earlier on, the committee added an American member, Tony Poole, President of the Security Document Alliance in Washington D.C. ■

An early look at Security Printers 2018 in Dublin

Although there is still a year to go, the programme for the next Security Printers Conference and Exhibition is fast taking shape and suggestions for presentations are welcome until May 5, 2017.

Intergraf's Committee of Experts has defined the subjects that will be discussed at the conference and has divided them into sessions. As always, the conference gives equal weight to the banknote and the ID document areas of our industry. While the general structure is there, the programme still needs to be filled by individual presentations. You can find the "call for papers" on the website www.securityprinters.org.

There are many points where both sectors converge and face similar problems, and solutions found in one can inspire creative thinking in the other. The two plenary sessions at the opening of the conference will reflect these contact points, as well as the morning of the second day, the coffee breaks and lunches throughout the conference and the social occasions.

Opening with the present situation, the conference will look at "Banknotes and identity documents in a changing world". Papers have been invited on subjects such as new IDs and new banknote series, innovative technological advances, and advanced payment and ID systems that may lead to dramatic realignments in the industry.

BANKNOTES - PRESENT AND FUTURE

The first of the five sessions in the banknote sector will focus on subjects related to *Public education in an untrained world*, or educating the public, including cash handlers, commercial banks and other users about verifying banknotes. Directly linked to this session is another, entitled *Exploring the future of banknote technologies*. With the ever-growing need to increase the security and sophistication of banknotes, this session will cover advanced anti-counterfeit technologies, the perception vs. the reality of security features, machine-readability, banknote distribution, circulation patterns, and the cost of cash.

Technology can benefit banknote security or be detrimental to it. So addressing the topic of *What are the worst nightmares of a cash society?*, will pinpoint possible dangers ahead. Presentations related to this will explore nightmare scenarios that could disrupt the order of cash usage and offer solutions how to prevent these dangers.

In the end, the future of cash is in the hands of its users. The session *Psychology of cash: a world without it?* will look at public perception of banknotes today, the role of cash in an economic model, usage patterns of cash, and the potential consequences of a cashless society.

To pull the various strands of the debate together, the last of the banknote sessions has as its subject *Cash in a digital world and the consequences of future disruptive technologies*. Here both the advantages of and the dangers to cash will be examined, demonstrating how cash can remain relevant.

ID DOCUMENTS EXAMINED

On the ID Document side, conference sessions will deal with the authentication of identity documents, procurement, ID fraud, non-traditional ID documents and an overall view of what the ID community can expect, and the future of identity.

Advancements in authentication of identity documents will examine the latest technologies for authentication of ID-1 and ID-3 documents including remote verification, new training methods, innovative tools, mobile apps, and supporting IT infrastructures and databases.

The impact of contested procurements - minimising the effect of protests, acknowledges that sometimes tender issuing authorities face challenges and their ID programmes suffer delays and inflated costs. There are lessons to be learned and guidelines for designing requirements that result in fair and equitable awards can be developed.

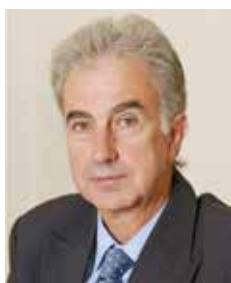
ID fraud: from document counterfeiting to photo morphing - will explore the latest trends in document counterfeiting, with emphasis on photo morphing technologies that complicate the proof of identity, the identification and registration of refugees, and international cooperation of law enforcement for the apprehension of criminals.

Identification documents beyond the traditional. Passports, national ID cards and driver's licenses provide common forms of identification. However, many other forms now exist, and this session will cover new programmes such as seafarer IDs, refugee ID documents, eLaissez-Passer, and permanent residence cards.

The future of identity will look at new forms of verification that may transform the way citizens are identified. Proposed papers in this session will explore technologies such as biometric identity, mobile identity, mobile driver's licenses, and next generation machine-readable passports. ■

A central banker's thoughts about payments

At the last Security Printers Conference in Seville, Javier Alonso of the Banco de España not only welcomed the participants, he also gave an interesting insight into Spain's payment culture.



Javier Alonso

At Intergraf's Security Printers 2016 conference in Seville last autumn, Javier Alonso, Deputy Governor of the Banco de España, graciously welcomed the conference participants to Seville. It is the custom for the central bank of the host country to do this, but Mr Alonso also used this opportunity to share his thoughts on the phenomenon of money with the audience, and especially its use as "means of payment".

He said that in recent years a lot of attention has been directed towards new, electronic payment methods and other financial technology, thus questioning the future of cash. Without doubt, some initiatives will become reality. But it will take time and will require a change in the mentality of the users.

In Spain, besides cash, the most frequently used form of payment by number of transactions, is cards: 2.9 billion transactions between credit and debit cards in 2015 with a total amount of €125 billion, and an average transaction of € 43. Direct debit accounted for 1.1 billion transactions with a total amount of € 306 billion and a transaction average of € 263. Credit transfers, including all transfers between bank customers (but excluding interbank operations), reached 461 million transactions of € 5.8 trillion in total.

Banco de España has accurate figures for these transactions, but no figures for the number of cash transactions or the amounts involved, although a survey of the BdE indicates that 70 per cent of citizens say that cash is their usual means of payment, however for amounts lower than card payments.

Mr Alonso thought that there is probably still room for growth in the use of cards, but that new innovative modes of payments are appearing which could influence the use of cards as well as the use of cash. He cited an example of an instant payment initiative of the Spanish financial system, Bizum, which started to operate during the week the conference was held. It is based on mobile phones and allows transfers between bank accounts to be made in less than 10 seconds. Systems such as these can change most forms of payments, but their success depends on acceptance and familiarity by the public. Convenience is a strong motive for changing habits, but we will have to wait and see how this situation develops. Mr Alonso was, however, convinced that in spite of new payment methods, cash will remain an important part of the payments industry for many years.

Banco de España backed this conviction with action: it entered the business of printing banknotes. Following a change in legislation, FNMT (Fabrica Nacional de Moneda e Timbre) created the new company IMBISA - Imprentade Billetes SA - of which BdE subsequently bought an 80 per cent stake. FNMT transferred its banknote production unit to IMBISA and now the company is the in-house printing works of BdE in accordance with the Eurosysten Production and Procurement Guideline.

Mr Alonso added that if cash will continue to be used, central banks, banks and other stakeholders have to find appropriate ways to optimise the use of cash. To make it as efficient as possible, sharing best practices and expertise with the aim of improving the overall functioning of the cash cycle is necessary. To maintain trust in banknotes, the fight against counterfeiters will also need to continue vigorously. To this end he advocated for the importance of collaboration between central banks, security printers, security feature manufacturers and law enforcement authorities in order to develop proper technologies and regulations to stay one step ahead of counterfeiters. ■

NEWS

Oberthur Fiduciaire has entered into exclusive negotiations with Arjowiggins Security to acquire their banknote paper production plant at Apeldoorn in Holland, historically known as VHP or van Houtum & Palm .

The VHP plant is qualified to manufacture paper for the Euro; has an annual production capacity of around 6,500 tonnes and employs about 130 people.

UAE's first banknote printing plant opened in Dubai

On March 11, UAE's first banknote printing plant was opened at the Khalifa Industrial Zone in Abu Dhabi. The plant's operators, Oumolat Security Printing, aim to provide printing services for central banks across the Middle East.

Oumolat said it "aspires to become the premium choice of central banks for any banknote related matters, including production, consultancy, planning of security upgrades to existing banknote designs, provision of conceptual design ideas and conceiving of new security features and concepts".

A BOLD EXPERIMENT



The biggest cash operation in history created economic upheaval in India. It achieved some of its goals but whether the end result is positive or negative still remains to be seen.

November 8th, 2016 is a date many Indians will not easily forget, whether they had stashed away millions of Rupees at home or sold 25 Rupee samosas on Delhi's Chowri Bazar. It was the day Prime Minister Narendra Modi made 86 per cent of all Indian cash disappear. By declaring all Rupee 500 and 1000 notes (about \$7.40 and \$14.80 respectively) invalid at midnight from that day on, he created an unprecedented cash crisis.

The withdrawal of 23 billion notes made this the world's largest monetary 'exchange', surpassing the euro changeover in 2002, both in terms of volumes of notes involved and of timing. The worthless Rupees could be exchanged until December 30th, but there was a cash limit of Rs 4000 per person. Anything over that could only be deposited into a bank account. Cash withdrawals from bank accounts were limited to Rs 24 000 per week per account and recalibrated ATMs would dispense a maximum of Rs 2500 per day. The government had promised an adequate supply of new Rs 500 and Rs 2000 notes but there were many reports of people waiting for hours at banks or ATMs only to find the machines out of cash.

Soon after the new Rs 500 notes appeared, people noticed variations in printing between some notes. There were quite visible registration faults, creating a double shadow around the Gandhi portrait and other misalignments. The Reserve Bank of India had to declare that the notes were valid in spite of the misprints. However, the resulting insecurity in the population as to what the notes should look like, was a blow to Mr Modi's aim to rid the country of counterfeits. (Indeed the first counterfeit new Rs

2000 notes appeared only two days after demonetisation. These were simple colour copies. The first 'real' high quality counterfeit Rs 2000 note was seized on November 22, in Mr Modi's home state, Gujarat.)

In November and December, papers reported that due to the lack of banknotes, business in many sectors had fallen to a small fraction of what it was before the change. Economists warned that India's growth of 7.3 per cent in the most recent quarter, among the fastest of any large economy, could take a hit if the cash shortage continues. In January the cash-crunch had eased a little and the long lines at banks had shortened or disappeared, as old notes could no longer be exchanged. And new notes appeared in sizable quantities. It is believed that by January 10th, banks had dispensed about 8 trillion rupees in new currency bills.

According to government sources, the move was designed to reduce corruption and tax evasion, prevent terrorist financing and curb the circulation of fake currency. India has indeed a thriving black economy, said to be between about 20 per cent to over 30 per cent of GDP, but the country is still largely rural, and small farmers and small merchants usually do not keep formal accounts.

If the move was really designed to flush-out 'black money' from untaxed economic activities, to be effective, it had to be a closely guarded secret until the last minute, to prevent those holding black money from unloading it before the ban went into effect — the morning after the decision was announced. As a result, the government had not printed enough replacement cash in time for the change, and even weeks later, it continued to struggle to do so fast enough. The resulting cash shortage strangled large sectors of the economy.

However, an additional reason Mr Modi gave later on for the move, making it seem like an afterthought, was that Indians should switch from a cash society to a society using electronic payments. And that seems to have happened up to a point. Apparently, many Indians had switched to electronic payments more rapidly than many experts had predicted. This fact certainly runs counter to the opinions of the Indian delegates, Infosecura spoke to at the last Intergraf conference in Seville. But, perhaps, they were not so wrong after all.

AN UPLIFT FOR CASHLESS?

Newspapers, Indian and foreign, like to put a "human face" on important events and, predictably, there were many reports of dumpling sellers in Delhi, and Rs 200 watch repairers in Mumbai, who adopted mobile payment systems to stay in business. There were reports in mid-December, that



Soon to accept digital payments

across the country, around 70,000 merchants per day were signing up for India's best-selling mobile payments platform, Paytm. Since the note withdrawal, daily transactions on Paytm has grown to nearly six million, an increase of 350 per cent, and the service was adding half a million users each day. This, however, has to be seen in relation to the size of the Indian population, which numbers over 1.2 billion and the very low starting position of electronic payments. The government has ordered banks to add one million card terminals by March 2017, a two-thirds increase from the 1.5 million available before. Sceptical sellers of retail payment systems doubted this could be achieved in a few months, because the infrastructure is not yet in place to process the paperwork involved and to teach merchants how to use the machines.

Looking at the overall payment picture, while the number of digital transactions increased dramatically, the total value of non-cash payments declined 12 per cent in December compared to the average of April to October, according to *Bloomberg*. A main cause is a decline in the amount transferred through the real-time gross settlement (RTGS) system, used for transactions above Rs 200 000. The reason "could be that businesses have taken a hit post demonetisation," '*Cash Essentials*' quotes Manju Agarwal, Deputy Managing Director at State Bank of India, as saying.

The national electronic funds transfer (NEFT), similar to RTGS but usually used by individuals to transfer amounts smaller than Rs 200 000 per transaction, shot up by 32 per cent in value, as expected. But other modes of payment did not follow suit. Prepaid instruments such as mobile wallets, prepaid cards and paper vouchers saw a 51 per cent decline in value in December. Credit and debit card transactions declined by a hefty 79 per cent compared to

the average of previous months, while transfers through the national automated clearing-house remained flat.

WORTH THE TROUBLE?

Mr Modi had hoped that his surprise move would flush about Rs 5 trillion of "black money" out of the financial system. It appeared, however, as reported by the *Financial Times* and *Bloomberg*, that banks had received Rs 14.97 trillion rupees as of December 30th, the deadline for returning the old banknotes, representing 97 per cent of the discontinued banknotes. As Rs 15.5 trillion were scrapped, the "flushed-out" sum seems to be far smaller than the government had expected. This means that either there was not as much black money as the government believed, that black money hoarders found ways to launder the money, or that this money was paid into bank accounts anyway and people thought that the government would be too slow to catch up with the vast number of petty tax avoiders.

Bloomberg said that a full validation of the bank notes is a set-back for Mr Modi who had been relying on this move to burnish his administration's corruption fighting credentials and boost its popularity ahead of key state elections. The anti-corruption measure has dented economic growth and forced millions into lengthy bank queues, although it remains broadly popular. Indians seem indeed to be weary of corruption. For example, since 2015 the 'National Capital Territory of Delhi' is ruled by an expressly anti-corruption party, the Aam Aadmi Party under Arvind Kejriwal, which won 67 of the 70 seats in the local assembly, ousting the long dominant Congress Party that had been tainted by corruption.

In January, as the economy was supposed to return to a semblance of normality, evidence of the measure's costs was mounting, while the benefits look ever more uncertain, *The Economist* comments. Fast-moving consumer goods, a reliable growth sector, fell by 1-1.5% in November, according to research group *Nielsen*. Pricier goods seem to have been hit harder, with sales at Hero Motorcorp, a huge motorcycle manufacturer, declining by over a third in December.

Those who agree with Mr Modi's actions can point to some beneficial outcomes. Banks that received large amounts of fresh deposits will lend this money out and so boost the economy. Big banks even cut the lending rate in January (rumours are that the government gave them a nudge). More Indians will move from living cash in hand to the formal, taxed economy. But cash is still king in India and the most used financial bit of machinery will be the ATM, to put cash in or take it out.■

A question of timing

To withdraw the highest, but meanwhile almost worthless, denomination from circulation before new higher denomination notes are available seems not to be very sensible. But this is what happened in Venezuela.



Just as handsome, if a little paler: the old and the new Bolívar

Although India's withdrawal of rupee notes and - eventual - replacement with other notes was the biggest de- and replacement of currency ever, it was not the only one at the end of 2016. In Venezuela, President Nicolás Maduro announced on December 11, that the 100 Bolívar note, the highest denomination in circulation, would cease to be legal tender within 72 hours. This note, which in mid December was worth less than 3 US cents on the black market, made up 77% of the country's cash. Mr Maduro claimed that his aim was to defeat Colombian 'mafias' that were hoarding vast stocks of 100-Bolívar notes to buy up price-controlled goods in Venezuela, thus causing shortages of just about everything, including food and banknotes. As the Bolívar had lost around 60 per cent of its value between October and December, the notion of currency hoarding seems improbable.

The immediate result of the move to eliminate the 100 Bolívar notes was sporadic social unrest across the country. The government said, the old notes could be deposited in banks and be replaced by new ones of higher denominations, which, however, on the day of the announcement had not been issued.

Although Caracas is one of the most crime-ridden cities in the Americas, even muggers hardly bothered to relieve people of their boxes of soon-to-be-worthless notes, as they were queuing to deposit their cash.

One way for Venezuelans to survive the calamity was to use credit cards, which, according to Luis Oliveros, an economic professor at the Caracas Metropolitan University, so many did, that electronic payment systems in early December collapsed for a while. As roughly one third of the population does not have a bank account, cash transactions are a vital part of the economy.

A LONG OVERDUE BUT BOTCHED MOVE

Although the 100 Bolívar elimination wreaked havoc, some economists think it was long overdue. Issuing new, higher denomination notes is often done in inflationary situations, but old and new notes usually circulate together for a certain time. And governments usually take care to have new denominations already circulating, before demonetising old ones. And it is not Venezuela's first attempt to get a grip on hyperinflation. In 2007 the Banco Central de Venezuela had cut three zeros of its currency, transforming 1000 Bolívar into 1 Bolívar fuerte, which was now worth around 3 US cents.

Although Venezuela has its own banknote printing facility, its capacity is nowhere near enough to satisfy the demand of a country in the grip of hyper-inflation. According to the business magazine *Forbes*, after placing large orders with banknote printers around the world in mid 2015, already in December 2015 Banco Central de Venezuela began secret negotiations to order another 10 billion banknotes, which would have effectively doubled the amount of cash in circulation. That order alone was well above the eight billion notes the US Federal Reserve and the European Central Bank each print annually for economies vastly larger than Venezuela's, and that unlike bolívares, are used world-wide. At that time, however, Banco Central de Venezuela had ceased to print the lower denominations of 2, 5, 10, and 20 Bolívar, as their value was below production costs.

The government had planned to have new, higher denomination notes available by the deadline to replace the 100 Bolívar, that is three days after the announcement. But of course, there was a hitch; the planes carrying the banknotes from the printer in Sweden (obviously Crane AB) did not arrive. Telesur, a TV station close to the government, claimed that the cargo planes bringing the currency to the country were intercepted and rerouted in mid-air. Mr Maduro linked all of this to a larger international sabotage effort led by the United State's Treasury Department and complacent NGOs in order to economically ruin the nation, create social unrest and topple the socialist government. But sabotage or not, the first deadline for demonetisation of the 100 Bolívar was extended to January 2, 2017.

On December 19, 50 000 new 500 Bolívar banknotes finally arrived and the president said that bills of 1,000, 2,000, 20,000 Bolívar and more bills of 500 would arrive soon. "We're going to accumulate them and when we come out with them, we're going to be complete with our monetary policy", Maduro stated. The latest deadline given for the introduction of all new notes and the final demonetisation of the 100 Bolívar was February 20.

Venezuela's new series of banknotes



The abrupt withdrawal of the 100 Bolívar note and the introduction of the new higher denomination will mean that ordinary Venezuelans will be able to leave a large backpack at home and switch to an (almost) normal wallet. But it will not repair the economy. Inflation last year had risen to 800 per cent and the economy had shrunk by 18.6 per cent, according to an estimate by the central bank, a figure leaked in January to *Reuters*, a news agency. The *Economist* states that the IMF expects consumer prices to rise by 2,200 per cent this year. In 2001 Venezuela was the richest country in South America; it is now among the poorest.

Venezuela's fortunes rise and fall with the price

of oil. The *Economist* writes that the causes of Venezuela's difficulties include controls on foreign exchange and prices of basic goods, which lead to shortages and corruption; unrestrained public spending; the expropriation of private industry; and the plundering of PDVSA, the state oil company, which provides nearly all of Venezuela's export revenues. There is, however, some good news for the Venezuelan economy. Oil prices have recovered from \$21 a barrel in 2016 to \$45.

THE NEW BANKNOTE SERIES

The outgoing series of Bolívar notes had a rather handsome, traditional look and the incoming series will be just as handsome. The six new denominations, which are already in circulation, will be a familiar sight to Venezuelans. Banco Central de Venezuela has recycled the overall design of the notes, tweaked the colour a little bit, making some of the portraits more vivid and others less so and changed the overall colour of some of the denominations. The most important change, however, was of course that of the value of the denomination. As the change in value is not directly linear - the old 2 is the new 500, 5 becomes 1000, 10 2000, 20 5000, 50 10 000 and 100 20 000, it was important that the order of the images in the old series was exactly taken over by the new one. ■

INDIA: SWADESHI PAPER - NOT QUITE YET, BUT SOON

Swadeshi or self-sufficiency is one of the mantras of Indian Prime Minister Narendra Modi. It is also the aim of his pet project 'Make in India'. India was inching towards that goal, when demonetisation of the 500 and 1000 rupee notes happened, making large imports of banknote paper necessary. But in spite of this, the sights of the government seem to be set on self-sufficiency.

India's gargantuan remonetisation drive, following its equally large demonetisation of 86 per cent of India's currency in November 2016 has been good news for a number of European and Asian banknote paper makers. But it has been equally good for their Indian colleagues. India is the second largest producer of banknotes - after China - but it is not (yet) self sufficient in producing the raw material to produce the banknotes.

Until recently, India imported around 95 per cent of the necessary banknote paper from suppliers, mainly in Europe. India uses around 22,000 metric tons (MT) of banknote paper every year, accounting

for at least 40% of the total cost of manufacturing the banknotes. For the year ended June 2016, the Reserve Bank of India (RBI) supplied 21.2 billion banknotes and printing costs came to US\$ 502 million. The high cost is likely one of the reasons Prime Minister Narendra Modi was keen to include India's currency in his "Make in India" project. In 2015, he urged the RBI to start producing more of the required paper and ink, with the eventual goal of keeping the entire production process within the country.

It took a little time after the surprise demonetisation of Rs 500 and 1000 for Indians to get hold of new Rs 500 and 2000 notes, which were printed at the RBI press at Mysore, Karnataka. Most of them were also printed on Indian produced banknote paper, although RBI gives no details of how many.

A SLOW START, BUT GATHERING SPEED

Banknote printing in India only goes back some 90 years, when the then colonial power, Great Britain, established the first currency press in the country in Nasik, Maharashtra. Nasik is still producing rupee notes, although meanwhile it has been joined by

a currency press in Dewas, Madhya Pradesh in 1975, and by further presses in Mysore in 1999 and Salboni, West Bengal in 2000. The former two are owned by the Security Printing & Minting Corporation of India Limited (SPMCIL), a part of the Ministry of Finance and the latter two belong to Bharatiya Reserve Bank Note Mudran Private Limited (BRBNMPL), a subsidiary of Reserve Bank of India (RBI).

Before the two latter printing works were operational, the country needed new notes and placed a massive printing order of 3.6 billion notes with American, Canadian, and European companies (including De La Rue) to fix the shortfall. This was an expensive move, costing around \$95 million. It also attracted heavy criticism and spurred on the afore-mentioned construction of further domestic banknote production capacity.

ADDING PAPER CAPACITY

While India is now self-sufficient in banknote printing capacity, in banknote paper production it is still behind. The Security Paper Mill in Hoshangabad, Madhya Pradesh, established in 1968, was India's first. As its capacity was limited to around 2 800 MT it could only meet a small part of India's requirements. After PM Modi urged the RBI to aim for self-sufficiency in all aspects of banknote production, a second paper machine was added to the Hoshangabad site, increasing production by 6 000 MT p.a. A new paper mill was also built in Mysore, close to one of the printing works, with a capacity of 12 000 MT. This was called 'Bank Note Paper Mill India Private Limited (BNPMI)' and it is a joint venture between SPMCIL and BRBNMPL. BNPMI noted on its website that the factory had started its commercial production from April, 2016 on line-1 and July, 2016 on line-II.

With a new security paper production capacity of 20 800 MT p.a. India would in normal times have enough banknote paper to cover most of its needs. But these are not normal times.

At Christmas last year, *The Indian Express* reported that eight foreign firms were in Bangalore to finalise bids for contracts of 27 500 metric tonnes of paper for lower denomination currency notes to be supplied to India from April to December 2017 (a far higher tonnage than the approximately 8,000 tonnes imported over previous years.)

The bidding turned out to be highly competitive, resulting in the price of the banknote paper being almost 10% lower than the price fixed for the last orders placed in 2015-16.

The contracts have been finalised for printing currency notes mostly of Rs 10, Rs 20, Rs 50 and Rs 100 denominations, giving a clear signal that the Rs 2,000 and Rs 500 notes would be printed on banknote paper manufactured in India.

While details of currency paper contracts are not made public, *The Sunday Express* said that the eight firms which will share the massive contract are Lanquart from Switzerland, Komsco from South Korea, Arjowiggins from France, Crane from Sweden, Goznak from Russia, PT Pura from Indonesia, Fabriano from Italy and Louisenthal from Germany.

REACHING SWADESHI IN 2025?

In "normal" years, India needs around 25 000 MT of paper to satisfy its banknote needs. But India is a fast growing economy with an equally fast growing population. The RBI thinks that India will need about 48 000 MT by the year 2024-25 making further strong expansion of banknote paper production capacity necessary. The government is already making plans. *Times of India* noted that the finance minister Arjun Ram Meghwal said, the government is positive about setting up a new banknote paper manufacturing unit in Nashik close to the Nashik Currency Note Press. Moreover, setting up of two new lines and modernisation of existing lines at the Currency Note Press (CNP) of Nashik is also under consideration. ■

ISRAEL CONTINUES POETIC BANKNOTE SERIES

The Bank of Israel (BOI) has been working on the new series of New Israeli Shekels (NIS), the C series, for quite some time. In 2014, the first note, the NIS 50 was issued, followed in 2015 by the NIS 200. Dr Ilan Steiner, Director of the Bank of Israel's Currency Department, spoke about the new series at the Security Printers Conference in Seville in October last year. Now the BOI has

unveiled the design of two more denominations, the NIS 20 and the NIS 100. These two denominations - Israel's New Shekels come in only four values - will be launched at the end of 2017.

The Bank of Israel has already made samples of the new notes available to manufacturers, providers and operators of vending, counting and sorting machines which are required to calibrate their machines to accept the new banknotes. All NIS denominations have different sizes, whereby the



height of the note stays at 71 mm while the length increases by 7 mm per denomination, starting at 129 mm for the NIS 20 note to 150 mm for the NIS 200. Keeping one of the dimensions stable obviously makes calibrating machines easier.

HONOURING WOMEN

The coming two notes, like the two previous ones, feature the portraits and works of poets, but they both celebrate women, thus striking a gender balance. The NIS 20 note is dedicated to Rachel Blubstein, called 'the Poetress' and her poem "Kinneret", written in micro text on the front of the note, a theme repeated on the reverse with the shoreline of lake Galilee (Kinneret). The dominant colour of the note is red.

The NIS 100 bears the portrait of Lea Goldberg alongside her poem: "In the land of my love the almond tree blossoms" in micro text, and the image of almond tree blossoms. Both notes also have further poems on the back. The dominant colour of the NIS 100 is orange.

Both notes feature watermarks of the portrait and the denomination value, a security thread that changes colour with three windows in which the portrait and denomination appear; intaglio printing on both sides, micro-perforation showing the denomination, micro text, a 'Kinogram Volume' security foil stripe and colour changing and transparent ink.



The Bank of Israel will soon publish additional details regarding the launch date of the two remaining denominations. ■

Puffins and pixels

Norges Bank will put the new 100-krone and 200-krone notes into circulation on 30 May 2017. The other denominations will be launched in 2018 and 2019. The series gained much pre-issue publicity, due to its unusual design.

Like its Scandinavian neighbours Denmark and Sweden, Norway seems to be on the path towards becoming a cashless society. Banknotes in Norway don't seem to cause much excitement - until recently. Norway is a large and sparsely inhabited country with spectacular natural beauty and very few truly cosmopolitan cities. Even Oslo, its capital, seems more respectable than culturally cutting-edge. Again - until recently. Norway has used its considerable oil-wealth not only for the betterment of the population and to have a cushion for bad days, but also to become

one of the cultural hot spots of Europe. Architecture is one of the leading arts and so is design generally - and banknotes are right in the middle of this.

A UNIQUE COMPROMISE

In 2013, Norges Bank, Norway's central bank, started a design competition for a new series of Kroner notes that caused great excitement among design enthusiasts world-wide. Many of the designs were very bold and modern, but even Norway's central bankers are not complete revolutionaries. They started out with an overall theme, all denominations had to adhere to: the sea. They also decided to combine a retrospective, iconic motif on the front with a modern, abstract cubic pattern on the reverse, choosing the designs of two competitors rather than that of one winner. "This combination is completely novel in international banknote design" Norges Bank said.

Each denomination features an easily recognised

primary motif on its front side that communicates central characteristics of Norwegian maritime history. The motifs are based on proposals by Metric Design and Terje Tønnessen. The pixelated reverse side of the banknotes contrasts with the iconic front sides. The motifs are merely suggested in the cubic pattern, while the organic pattern is an abstract depiction of the sea. The cubic patterns developed from a proposal by Snøhetta, a famous Oslo design agency, are designed to follow the Beaufort scale, a scale for measuring wind speeds.

Both ofront and reverse motifs in the banknote series are closely associated with the sub-themes of each denomination: the 50-krone note: the sea that binds us together, the 100-krone note: the sea that takes us out into the world, the 200-krone note: the sea that feeds us, the 500-krone note: the sea that gives us prosperity and the 1000-krone note: the sea that carries us forward.

The notes use intaglio for printing the primary motif on the front, and in the tactile marks on the edge to guide visually impaired people. All notes have the same motif of the watermark, the head of the Atlantic puffin and the denomination.

In the bottom-left corner of the note there is a rectangle containing a ring, which, when the note is tilted, appears to float. The denomination is also shown. At the right side of the banknote one can see three segments of an anchor chain integrated into the paper. When the note is tilted back and forth, the chain appears to move or run out. The chain is featured on all the denominations except the 50-krone note. There is also a security thread.

Norges Bank give copious information about the new series on its website including about the printer, Oberthur Fiduciaire and the papermaker of the 100 and 200 Krone notes, Louisenthal.

The bank even discloses the price: Norges Bank is paying approximately NOK 0.55 (€ 0.06) per note for the denominations to be issued in 2017. This represents an approximately 20 per cent cost increase compared to what the bank is currently paying. The increase is due to enhanced security features and the protective coating that is expected to increase the lifetime of the notes by up to 50 percent.

Norges Bank's costs for developing the new banknote series are estimated at NOK 50 million. Most of this is associated with the preparation of original artwork and test prints at the banknote printer. Costs for information and communication are estimated at NOK 20 million.■



A LONG LINE OF HEROES

Bank Indonesia's new series of banknotes and coins aims to reinforce the sense of the shared history of the multi-faceted country and instil pride in its many different cultures. This is sometimes easier said than done.

On December 19, 2016, Bank Indonesia, Indonesia's central bank, issued seven new banknotes and four coins. The Bank said that they all have improved security features and fresh new designs which feature national heroes, sceneries and traditional dances. At the launch in Jakarta, Bank Indonesia Governor Agus Martowardojo told reporters that "our security is among the best in the world". "We have 12 security features for the Rp 100,000 note, including its colour, ultraviolet features, security thread and a recto-verso feature." The new notes are the Rp 100,000, Rp 50,000, Rp 20,000, Rp 10,000, Rp 5,000 and Rp 2,000 and Rp 1,000, while the new coins are Rp 1,000, Rp 500, Rp 200 and Rp 100.

The Governor said all previously issued banknotes and coins would remain valid until Bank Indonesia announced their removal from circulation. However a date for this had not yet been set.

Indonesia is a very diverse nation, geographically, ethnically, culturally and even religiously, consisting of 1 300 islands in South-East Asia with a population of around 250 million people. It is officially a secular country with six recognized religions, although 87 per cent of the population are Muslims, making it the most populous Muslim nation in the world. The 11 national heroes depicted on the new banknotes and coins reflect this diversity, as they came from every point of the country. But these fighters against colonialism and for independence also came from different religions. This fact recently led to social media comments that quickly spread like wild fire and even attracted the attention of the Jakarta police.

The Jakarta Police are investigating alleged defamation of Indonesia's national heroes on social media. The post said "What a great country with an Islamic majority. From hundreds of heroes, five of the 11 heroes (on the new banknotes and coins) are infidels." The post also criticized the portrait of Cut



Bank Indonesia's new Rupiah series, featuring national heroes on the front and local dances on the reverse.



Meutia on the new Rp 1,000 bill, (top left) saying that she should have been pictured wearing a veil, as it would show her true status as an Islamic scholar. While in the past, comments such as these would have remained a small local grumble, social media transforms them instantly into a political issue. The job of those responsible for banknote issuing at central banks has not become easier.

SHRINKING THE RUPIAH

For some time, Bank Indonesia had contemplated redenominating the Rupiah, a plan it had now revived. Under this proposed policy, the bank will cut three zeroes off the face value of rupiah notes, in an attempt to simplify the currency system. For example, RS 25 000 would be shortened to RS 25.

Theoretically, these new currency units should not reduce purchasing power or cause any currency volatility, the bank said. If and when implemented, redenomination would serve to overhaul and even strengthen Indonesia's existing financial infrastructure. Currently, because of the size of the rupiah, stores must have cash registers that can deal with at least nine digits and banks have to accommodate transactions up to the trillions. The sheer number of digits in each transaction increases the possibility of errors and the need for regulation, the Indonesian paper *The Diplomat* wrote. ■

A BOON FOR THE UNBANKED

Technologies used in the identity and financial sectors are converging. One thing that is gaining traction in both areas is biometrics.

There is ample evidence that the next challenge to existing financial and identity systems will come from the biometric sector. What is perhaps unexpected, is that some of the most advanced applications of biometric technology are not happening in advanced countries in Europe or North America, but in counties where the majority of the population have never had a passport, let alone a bank account.

One of the countries, where biometrics are used to help the "unbanked" is India. The basis for using biometrics for banking is Aardhaar, a 12-digit unique-identity number issued to Indian residents based on their biometric and demographic data. The data is collected by the "Unique Identification Authority of India (UIDAI)", a central government agency, and stored in a central database. As of January 2017, 99 per cent of Indians aged 18 and above have Aadhaar cards, as more than 1,111,000,000 residents have enrolled.

The Indian bank DCB Bank will soon let customers carry out transactions, including opening bank accounts, using an iris scan to verify that the Aadhaar number and the bearer match. The bank ran a pilot programme in January at around 10 branches in rural or semi-urban branches, processing about 200 accounts, including opening 100 fresh ones. The CEO of DCB Bank told India's *Economic Times* that many customers complain about not receiving debit cards or PIN. "We already have an ATM which does not require a debit card or PIN, and can operate with only the person's

Aadhaar number. In addition to fingerprint, you can also use iris scan to authenticate a person with Aadhaar." *ET* had earlier reported that the Unique Identification Authority of India (UIDAI) had asked smartphone manufacturers to consider making their phones Aadhaar-enabled so that people can authenticate their Aadhaar biometrics on the phone itself to use the various services.

Last year, DCB Bank installed India's first Aadhaar Number and Aadhaar fingerprint (biometric) ATM and at the launch, a bank official said that "someday not too far, all Point of Sale (the traditional Card swipe at shops) transactions will go biometric using Aadhaar". (However, the vast majority of purchases are still made in cash.)

ITS ALL BASED ON AARDHAAR

While private banks are turning to biometrically enabled ATMs, the governments itself, as the instigator of Aadhaar, is planning to launch its own project - in cooperation with banks. New Delhi is working on a biometrics-backed payment system that will be connected to a user's Aadhaar number. An initial rollout of the system would work with the Bharat Interface for Mobile (BHIM) app with Aadhaar. However, the aim is to enable banking operations, like depositing or withdrawing money from an ATM or paying for purchased without the use of a mobile phone.

"With "Aaardhaar Pay" people will not need to carry their phone for payments. They can visit any merchant, share their Aadhaar number and verify themselves using biometrics to pay and receive money," Minister for Electronics and IT, Ravi Shankar Prasad said. ■



Top right: Inside front cover with the Brandenburg Gate
 (all images for this article:
 Bundesministerium des Inneren)

Last year, Norway's new passport won a design award for its stylized images of mountains and fjords, which light up with northern lights under UV, while Sweden's new passports depicted urban scenes in daylight and - under UV - with lit-up windows and streetlights and some years ago Switzerland started the trend to make passports more visually interesting with its colourful design showing little vignettes depicting the beauties of its Cantons. And now the design of the new German passport was revealed - the document is already being issued as of March 1st, 2017 - and it shows that Germany has different priorities.

No one could call the new German passport showy or witty, at least not when looked at in daylight. But perhaps there is a deeper reason for the lack of frivolity in its design. Although understated, the overall theme of the design of the

A visa page spread and (right) the data page and page one of the new German passport under UV light



Germany has introduced a new passport that presents a large number of very impressive security features but few visual surprises.

passport is "freedom and unity". The two halves of Germany where reunited in 1990 and this is the first real redesign of the passport since then. The two symbols representing this theme throughout the passport are the "federal eagle", the national symbol of Germany, which goes back directly to the Weimar Republic that ended with Hitler's Third Reich in 1933, and indirectly to the first unification of Germany in the 19th century. The Brandenburg Gate in Berlin also has a link to unification and freedom, as it stood on the infamous wall separating East and West Berlin, and when that wall fell, it became a physical "Gate to Freedom". The passport design therefore seems

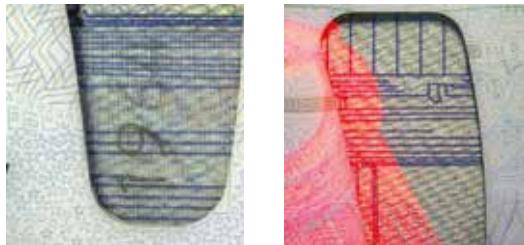
to be directed towards the German citizens themselves rather than to the foreigners that will inspect it, unlike, e.g. the UK passport which seems to try to convince foreign inspectors of the natural beauty and the artistic greatness of the UK.

The visa pages of the passport show broad structured bands of pastel colours - multi-coloured guilloches - and the federal eagle, a bit more colourful than the old version but not radically so. Under UV light the picture becomes a little livelier. There are again bands of colour and the eagle serves as a re-occurring motif, with the Brandenburg Gate shown on the inside of the cover.





The window in the data page with details (top and right)



If the passport is perhaps a little short on visual panache, it makes up for it in technical punch. It is packed with security elements, some of which are new and innovative. The most obvious change is that the stiff, hard cover of the book is gone, replaced by the same size flexible cover of all ICAO passports. The polycarbonate data page is modelled on the German ID card and shows the bearer's portrait in colour, printed in inkjet by 'InnoSecFUSION', a system, which is also used to print the serial number. The date of issue and expiry are laser engraved as a tactile feature.

The data page with the Identigram protection



The data page is protected against copying by the Identigram, a complex, full-surface feature consisting of kinematic structures, the passport holder's image in holographic form, a three-dimensional image of the federal eagle and a holographic repetition of the machine-readable zone.

One of the more interesting security features is the window, close to the right or upper edge of the data page, which uses, among others, lenticular technology. It contains personal information visible from both sides. From the data page, the complete date of birth of the bearer is visible and from the title page, when the page is tilted, parts of the date alternate with a secondary portrait of the bearer.

(right) Two inside data pages under UV light



Two details of the personalized security thread

A further interesting feature is the personalized security thread, a metallized, machine readable thread, which contains the serial number of the document and the name of the bearer as well as optically variable elements which become visible when the page is tilted.

There is also a variety of watermarks on the visa pages showing the federal eagle surrounded by the stars of the European Union in different positions and the paper pages as well as the back cover carry the laser-perforated serial number with perforation holes, that diminish in size from front to back of the book. Like the previous generation of passports, the new one carries an embedded contactless chip on which the passport holder's personal data, photograph and two fingerprints are stored.

There is a wealth of other security features, from negative and positive micro printing to blind embossing of the notes of the national anthem, the heraldic eagle and the letter D in the polycarbonate data page. In the frond and back endpapers, there are transparent security fibres luminescing under UV light as well as visible security fibres partly luminescing under UV light. etc.

MORE OF A SPARKLE IN THE DARK

Under UV light, the new German passport shows a little more sparkle. The pages feature fluorescing guilloches, the federal eagle and images of the Brandenburg Gate, often using split-fount printing.



The middle spread features a complete split-fount rendition of the Brandenburg Gate, that can only be seen using UV light.

Undoubtedly, Germany's new passport will be extremely difficult to counterfeit and it will probably be a model for many other countries for technical excellence. That was obviously and rightly a priority of the German Ministry of the Interior. Germany's great artistic tradition got a little overlooked. ■

FINGERPRINTING STILL GOING STRONG

Fingerprinting as a simple and effective means of identification is becoming ever more popular in spite of there being many alternatives.

China's Ministry of Public Security announced that all foreign visitors will now be fingerprinted at border points to enhance national security. The practice began at Shenzhen airport close to Hong Kong, before being gradually rolled out at other entry points around the country. The measure will apply to all foreign passport holders aged 14 to 70, but the ministry did not say whether other biometric data would be collected as well.

Most visitors to China need a visa, though many cities have visa-free deals for visits of a few days to boost tourism. Last year 76 million foreigners entered and exited, mainly from South Korea, Japan, the United States and Russia.

IDENTIFICATION AND FRAUD PREVENTION

Meanwhile in Germany fingerprinting will be used to control immigration and prevent misuse of the German welfare system. The BAMF, the federal migration agency, has directed all its regional offices to ensure that all refugees are fingerprinted when they arrive in the country. This will ensure that applicants do not register several times or use several identities to claim social benefits for asylum-seekers. Arriving asylum seekers are given a highly secure identity document, the 'arrival certificate (Ankunfts nachweis), which is being issued since mid February in all regional reception centres. The

certificate includes biometrics, including fingerprint data, which is stored in a central database.

FINGERPRINT AUTOMATION

Reading fingerprints may be getting faster but taking them is still slow and laborious. The US Office of the Director of National Intelligence wants cybersecurity experts to help in developing a completely automated fingerprint authentication service. The DNI's Intelligence Advanced Research Projects Activity (IARPA), has launched a new "Nail to Nail (N2N) Fingerprint Challenge," with the aim of improving live and forensic biometric fingerprint recognition until human operators are no longer needed. N2N fingerprints capture the entire fingerprint from the edge of one finger nail bed to the other. For this a trained operator holds and physically 'rolls' the subject's fingers over a surface in order to capture the complete print. However, this only captures the parts of the finger touching the sensor, providing significantly less surface area and decreased matching performance for live and latent fingerprint recognition.

The Challenge will officially run in two stages to autumn 2017 and conclude in a final live test in Washington DC. Their captures will then be compared to base data and finalists will be eligible to win prizes from a total prize purse of \$325,000.■

PASSPORT TRENDS 2017

Netherlands-based multinational company NXP Semiconductors has identified three distinct ePassport trends: increasing functionality, stronger security and the emergence of 'virtual mobile identity'.

The secure technology firm says: "Out of 900 million passports issued, 730 million are ePassports and according to ICAO, 120 states claim that they are currently issuing ePassports. The infrastructure supporting ePassports has also expanded. There are over 5,000 automated border crossings (ABC) gates worldwide, enabling over 20 million ABC crossings daily."

EVOLVING FUNCTIONALITY

It adds: "ePassport functionality is continuously evolving. ICAO first introduced Basic Access Control (BAC), then Extended Access Control (EAC) and is now migrating to Supplemental Access Control (SAC) protocols. All ePassports use the same data format, known as the Local Data Structure (LDS), to store and 'seal' data to protect it from tampering. The data that is embedded in the chip remains the same for the whole lifespan of the document and can't be modified."

READ-AND-WRITE CAPACITY

A new format called LDS2, which is a backwards-compatible extension to previous

generations of ePassports and not far away from publication, will change that. It enables the digital storage of travel data such as electronic visas and travel stamps directly on the chip, and allows the complete passport booklet to be available in digital format. In addition, the read-and-write capacity allows new biometric data to be added. Countries will have more choice in national policy, and give people the option of submitting biometrics if they want to participate in a trusted-traveller programme. Introducing the concept of passport applications opens up opportunities to efficiently automate the processing of passengers and their documents. This frees up time at borders so officials can attend to more high-value activities, and increase return on investment in the border-clearance infrastructure."

When it comes to stronger security, NXP says: "The European refugee crisis, the rise in international terrorism and the increase in criminal activity spiked the demand for stolen and forged passports. This development advances the distribution of ePassports on a global scale. Countries that already

issue ePassports are looking to increase the security further. As a result, the future will see more data being transferred from the physical pages of an ePassport to the secure and tamper-resistant Integrated Circuit (IC). The IC is designed to resist attempts to steal, modify or misuse the data, and ceases to work properly if physically tampered with.

In reality, the chip in the ePassport has more capacity and functional flexibility than just supporting the ICAO 9303 protocols, which offers untapped opportunities to implement electronic forensic security features. It provides functionality that may be used on an international and/or national level, depending on feature implementation and international cooperation. Customer-specific functionality implemented in the chip can introduce additional security and efficiency in the process of border management and can elevate document security and fraud prevention to an unprecedented level."

PASSPORT PLUS VIRTUAL MOBILE IDENTITY

The third trend that NXP has identified is ePassport

complemented by Virtual Mobile Identity. The company says: "Answering the demand for leaner administration and stronger security, the ePassport is evolving from just being a travel document to being a government-issued root credential for other applications, including a virtual mobile identity. In the future, the single, secure digital ID in combination with technology such as NFC, will allow ePassport owners to identify themselves, to interact with and authenticate applications via NFC-enabled mobile smartphones or wearables. ICAO is using the 9303 NTWG (New Technology Work Group) to work on potential future policies and standards for a virtual mobile identity."

The company adds: "Future advancements in flexibility, accessibility, security and interoperability of the ePassport ecosystem will allow users to securely derive credentials to other electronic devices beyond passports, including mobile phones. For the secure chip in the document to serve these trends, ultra-thin design, larger memory as well as higher cryptography and communication speeds are required." ■

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AUSTRALIA'S NEW BIOMETRIC BORDER CHECKS

In 2015, Australia started a debate on so-called 'passports in the cloud', a totally de-materialized form of identification. While that idea is still stuck 'in the clouds', Australia has concrete plans to use biometrics to enable travellers to keep their passports in their pockets when crossing the country's borders.

In May 2015, Australia's Ministry of Immigration and Border Protection introduced the Seamless Traveller initiative with a budget of AUS \$ 93.7 million (€67.6 million) to make travel to and from Australia easier and to simplify the visa system. One of the more ambitious parts of the programme, announced recently, is to use biometrics to replace current electronic passport stations, introduced over the last decade, with a new generation of eGates that will use a combination of fingerprint, face and iris scanning.

The ultimate aim is to build a "contactless", self-processing system that would do away with the need for travellers to show their physical passports. "People, whilst they'll still have to carry their passports, may not have to present them at all in the long term," Australian Immigration Minister Peter Dutton said. "But in the immediate term, this will make it easier and it quicker, for people going in and out of our airports."

By 2020, the minister said, more than 90 per cent of passengers would avoid paperwork or manual processing by staff. The biometric system will be used to identify and process international travellers at airports and other entry and exit points.

The first trial of the technology is planned for July at Canberra Airport, followed by introduction in Sydney and Melbourne in November, and nationwide rollout by mid-2019. The hope is that freeing up immigration staff at airports will enable them to focus on any passengers of interest rather than manning passport gates.

The government has asked the industry to come up with ideas and the exact form of the Australian system will depend on which companies submit bids. The mix might include iris scanning, facial recognition, and the traditional standby, the fingerprint, although other options could also be considered.

The deadline for bid submission was January 31, and the ministry told US website Smithsonian.com that they anticipate selecting a vendor by the end of April and starting a pilot system at Canberra International Airport in June 2017. Australia would

be the first country to implement touchless biometric scanning at all of its international entry points.

Australia has collected biometric data such as fingerprints and facial recognition from certain visa-holders as they arrive in the country since 2012. This is partially to identify persons of interest, as well as being a strategy to establish identities for political refugees, those whose documents have been destroyed or lost, or those who originate from areas where documentation is lacking or substandard.

CONCERNS ABOUT PRIVACY

Whenever a government collects biometric data, privacy concerns are certain to follow. Industry website *The Stack* reports that the new system will be based on a controversial law passed in 2015 that gives the Australian government greater control over the collection of biometric data from citizens and foreigners entering the country, including minors and incapable persons without the consent or the presence, of a parent, guardian or independent person. The law 'streamlines seven existing personal identifier collection powers into a broad, discretionary power to collect one or more personal identifiers from non-citizens, and citizens at the border...'

While the law does not specify which biometric data can be captured, it mentions facial images, fingerprints and iris scanning and states that the gathering techniques should not be 'cruel, inhuman and degrading' and must take place 'with humanity and with respect for human dignity.'

"Biometric technology is extremely mature," Smithsonian.com quotes Mizan Rahman, founder and CEO of US biometrics company M2Sys, as saying. "And with passenger manifests, immigration knows who is coming. It's not like they'll be searching you against 100 million people. Passport scanning can be avoided."

Of course, such systems depend on people behaving correctly and patiently, even when there is a break-down and crowds are gathering at the gates. "The department has robust contingency arrangements in place should system errors effect passenger movements and processing," the Australian border agency assures.

There are critical voices too. "I don't know anything that can 100 per cent do what they want," Rahman adds. "Automation is good, and you want to do it where you can, but you have to be practical, too. What does no-touch point provide you? I don't understand what more Australia will get out of no-touch that they don't already get from their SmartGate system." ■



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